



DEPARTMENT OF THE NAVY

TRAINING SQUADRON TWENTY-EIGHT (VT-28)
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TRAINING

TRAINING SQUADRON TWENTY-EIGHT INST 3710.14

Subj: VT-28 FLIGHT INSTRUCTOR'S GUIDE (FIG)

Encl: (1) VT-28 Flight Instructor's Guide

1. Purpose. To publish a comprehensive "Best Practices" guide detailing policies, techniques, and recommended procedures for Fixed Wing flight instructors within VT-28.
2. Scope. This instruction promulgates standardized instructional practices applicable to the safe, effective, and orderly conduct of instructional flight operations in a single compendium. In no case shall the FIG supersede directives of higher authority. It is not a substitute for the sound judgment of Instructor Pilots.
3. Action. All Fixed Wing flight instructors shall be familiar with this instruction. Items annotated by "shall" are compulsory in nature.
4. Review. Annual review of this instruction is mandatory. Recommended changes are encouraged and should be forwarded in writing to the VT-28 Standardization Officer via the squadron Training Department.

A handwritten signature in red ink, appearing to read "J. M. Staud".

J. M. STAUD

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VT-28 FLIGHT INSTRUCTOR'S GUIDE



2010

Safety, Quality, Efficiency, and Performance

The Skipper's Philosophy

Welcome to the VT-28 Ranger Family! We are truly the best primary flight training squadron in the United States Navy. We set the standard for training excellence and others strive to emulate us. Safe mission accomplishment is imperative and quality training is paramount. Safety is a byproduct of disciplined training through the knowledge and application of squadron SOP, FTIs, NATOPS, and other flight related pubs. Nothing we do in the training environment is worth hurting people or breaking aircraft.

Your job as a flight instructor will be both rewarding and challenging. You may recall both positive and negative instructors from your days as a flight student. Well, now it is your job to ensure you create a positive cockpit-learning environment to show each student the joy of flying. I can honestly tell you that when your first on wing comes back after their solo with their eyes the size of half dollars, you made a difference by ensuring your on wing had the right skill set to sign for an aircraft and return to Navy Corpus safely. Talk about job satisfaction. There is truly no better job.

As for the challenge, every student is different and some learn more quickly than others. Patience is a must have for every IP in order to be an effective flight instructor. As a flight instructor, you set the example for the students from the way you behave, dress, and carry yourself. They look up to you as a role model and someone whom they strive to be like. As an instructor, the standard I expect is one of professionalism reinforced with a positive attitude and hard work ethic. Treat our young student officers as officers, for we are developing both pilot and officer-like qualities.

Being a flight instructor is not always easy. We use NATOPS, SOPs, flight training instructions, and course training standards for evaluating and grading each flight. I expect every student to come prepared for every flight and any lack of preparation needs to be dealt with immediately to ensure every student understands the standard expected. Trust me, get this corrected early if you ever see it, for passing the sub-standard performer on only hurts the student and is not right thing to do. It is imperative for each instructor to uphold the highest degree of quality on every student sortie and to expect the students to uphold their part as well. Our "Bible" is the Master Curriculum Guide (MCG) with the Course Training Standard (CTS) as the metric. Make sure you grade the students as you see it per the CTS, and you want to make sure you use cause and effect to identify and provide solutions for student errors during flights – this will give them guidance on how to improve and make them better pilots. A critical part to becoming a productive and effective flight instructor is getting into the fold of the instructor ready room, and this is one avenue where corporate knowledge from the seasoned instructors gets passed to other instructors. We also publish a quarterly "Ranger Review" and hold monthly AOMs/AIMs to address recent trends.

Please make sure you read this FIG, for others who have gone before you have learned some of these lessons the hard way. Primary flight training is meant to be challenging for the students. Never forget that we are training tomorrow's Naval Aviators. Never sacrifice quality for quantity and enforce our standards of training excellence. That is what we get paid for and the fleet demands professional aviators be delivered. Your personal dedication is what makes VT-28 the best Primary flight training squadron in the United States Navy.

J. M. STAUD

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General Information

Upon checking in, turn in your NATOPS Jacket to the NATOPS Office and your Log Book to Logs & Records. Follow the Check-In sheet around the Base, Wing, and Squadron. When you see the flight surgeon, complete your Admin Up-chit, High Risk Screening Form, and G-Loc brief (if he/she is willing). Have the FITU OIC sign your High Risk Screening form during your check-in interview and have it filed in your NATOPS Jacket. If you were unable to complete the G-Loc brief, coordinate with the Ground Training Officer to get it done.

Your first 90 days in the squadron will be spent in the Flight Instructor Training Unit (FITU). The FITU is external to the squadron, managed by Training Wing FOUR and led by the FITU OIC. Since the FITU is external to VT-28, your schedule is advocated by the Program Manager and Scheduling Officer within the FITU and your progress is monitored by the Training Officer at the squadron.

You should not have a ground job or stand duty while in the FITU. You will typically fly only one event per day during the NATOPS and Contact stages and two per day during the Instrument stage. Therefore, you will have a great deal of time off. Use that time to hit the books and to decompress from sea duty. Upon completing the FITU plan on working hard. You will normally stand 3 to 4 watches per month and fly 2 to 3 events per day.

There are two types of duty: Operations Duty Officer (ODO) and Runway Duty Officer (RDO). You will have to complete the PQS and under-instruction watches prior to finishing the FITU. Do not overlook these responsibilities! All watches are broken down into two shifts that generally run from 0630 – 1400 and 1400 – Last Plane on Deck (or sunset if RDO). Department heads stand a week long Command Duty Officer (CDO) watch instead of the others.

Leave is usually not a problem after you have completed the FITU. Since there are limitations on how many instructors can be on leave at the same time, you should submit your leave request as early as possible.

Training Department Organization

The Training Department is responsible for training new instructors, managing the qualifications and advanced upgrades for current instructors, and ensuring standardization.

Training Department

- Training Officer – Manages the Training Department
- Assistant Training Officer – Manages the Training Department in the Training Officer's absence.
- Standardization (Stan) Officer – Ensures quality standardized instruction for **all** phases of training. A highly qualified instructor pilot is assigned within each phase to assist the Stan Officer.
 - Cat I Officer (Instrument Stan Officer)

- Cat II Officer (Day and Night Contact Stan Officer)
- Cat III Officer (Formation Stan Officer)
- Cat IV Officer (Navigation Stan Officer and CNATRA Stage Manager)
- Pilot Training Officer – Liaison between the Training Department and the FITU.
- Ground Training Officer – Publishes weekly Ground Training Schedule and assigns qualified IPs to instruct classes.
- Training Clerk – Civilian staff who maintains training records.

Instructor Under Training Syllabus

NOTE: Computer Assisted Instruction (CAI) is self-paced computer courses completed in the CTW-4 Training Building.

Events	Number of Events	Description
T-34C Aircraft Systems	NA	Lecture and exam
Flight Rules and Regulations	NA	Workbook and exam. Coordinated with Mr. Tinsley at 961-4927/2511. Must be completed before you can fly as an IP.
T-34C Aerodynamics	NA	Workbook and exam. Coordinated with Mr. Tinsley at 961-4927/2511. Must be completed before you can fly as an IP.
Instrument Ground School/IRATS	NA	Lecture and exam – Complete within 60 days of your expected Instrument checkride. Set up via NATOPS office.
Flight Instructor Training Course	NA	Lecture
Course Rules	NA	Lecture and exam
Aviation Safety Program	NA	Lecture
Bailout Trainer	NA	Lecture
CRM	NA	Lecture (attend Intermediate not Primary course)
Emergency Procedures	NA	CAI and exam
Spin Familiarization	NA	Exam
NATOPS Open and Closed Book	NA	Exams
Out-of-control Flight	NA	Exam
Safe for Solo	NA	Lecture and Exam
Visual Navigation Flight Procedures	NA	CAI and exam
Day Contact Procedures	NA	Lecture and Exam
Night Contact Procedures	NA	CAI and exam
Basic Instrument Flight Procedures	NA	CAI
Advanced Instrument Flight Procedures	NA	CAI, Lecture, and Exam. (attend Primary course)
Formation Flight Procedures	NA	Lecture and exam
Tactical Formation Flight Procedures	NA	Lecture
Cockpit Procedure Training	3 simulators	Normal and emergency procedures
NATOPS Instrument Training	2 simulators	Instrument approach procedures
NATOPS Zero	1 ground event	Preflight, strapping-in, aircraft nomenclature.
NATOPS Flights	5 flights	Normal and emergency procedures, aerobatics, recover from OCF conditions, instrument approach procedures.
NATOPS Checkride	1 flight	Exams complete prior to flight.
Day Contact Flights (Fam)	5 flights	Learn to instruct day contact events (takeoff,

Events	Number of Events	Description
		landing, turn pattern, stalls, etc.)
Day Contact Flights (Aero)	3 flights	Learn to instruct aerobatic events
Day Contact Flights (OCF)	2 flights	Learn to recognize and recover from OCF flight conditions. Learn defensive positioning for OCF prevention.
Day Contact Flights (VNAV)	2 flights	Learn to instruct visual navigation events.
Day Contact Flight Checkride	1 flight	Evaluates your knowledge and instructional technique of standardized Contact flight procedures.
Basic Instrument Flights (BI)	2 simulators	Practice basic instrument procedures
Basic Instrument Flights (BI)	2 flights	Learn to instruct basic instrument events.
Advanced Instrument Flights (RI)	2 simulators	Practice advanced instrument procedures.
Advanced Instrument Flights (RI)	8 flights	Learn to instruct advanced instrument events.
Advanced Instrument Flight Checkride	1 flight	Evaluates your knowledge and instructional technique of standardized Instrument flight procedures.
Night Contact	2 flights	Exposure to night flight in the local area.

You will complete the simulators with civilian instructors, many of whom you probably already met if you came through Corpus Christi as a student.

NATOPS flights are completed with NATOPS instructors. As a future Instructor Pilot, you are expected to show up well prepared for every flight. You only have 5 flights until your checkride so hit the books early! The NATOPS is intentionally more general than the Flight Training Instructions (FTIs) that detail every step of every maneuver. Although you are not required to perform maneuvers in the NATOPS phase in accordance with the FTI, you will find it very helpful to read the FTI procedures along with the NATOPS procedures before performing NATOPS maneuvers.

Upon completing the NATOPS phase you will begin learning how to instruct Student Naval Aviators. You absolutely must learn the FTI procedures verbatim. Your flights throughout the remainder of the FITU will be with Standardization (Stan) Pilots who are considered subject matter experts in a specific phase of training. They will expect you to show up to the brief with all of the FTI procedures completely memorized. Flying the T-34C is usually not a problem for fleet aviators. Therefore, each of your checkrides, after the initial NATOPS check, will evaluate your knowledge of the FTI governing that phase of training and your ability to teach a student in strict adherence with its procedures.

Squadron Career Progression

For each training phase there are four types of qualifications: I (IUT), Q (Qualified), X (Checker), and S (Standardization). There are five categories of instruction: Day Contact (DCON), Night Contact (NCON), Instrument Navigation (INAV), Formation (FORM), and Out-of-control Flight (OCF). A "Q" allows you to instruct SNAs. An "X" allows you to perform SNA check rides. An "S" allows you to instruct and evaluate IPs.

The Qualification Timeline shows the typical flow of qualifications for an IP throughout his tour in VT-28. Upgrades to "X" or "S" are not automatic and require you to request the upgrade from the respective Cat Officer. The "S" qualification requires a standardization

MPTS—The Syllabus

One of the reasons for MPTS is to provide better objectivity and consistency in our evaluation of students. In order to provide that objectivity you need to understand the rules and concepts put forth in the MPTS document. One of the best features of MPTS is its flexibility. It will allow you to tailor a flight to a particular student's needs. However, as you tailor the flight, you must make sure that it meets all the requirements put forth in MPTS.

Don't fall into the trap of simply becoming an evaluator. Our primary job is to teach. Then as the student progresses, we must ultimately evaluate their performance. You have to look at the majority of your students for what they are. Some show up with a wide spectrum of flight experience, but on the whole they are clueless. That is perhaps how you will feel the first time you crack open MPTS. The following are some highlights of MPTS, items that will come back to bite you if you don't follow the stated procedures. It is imperative that you understand the MPTS syllabus and apply it with sound judgment.

Ready Room Unsat (RRU).

Since you commence every flight with a brief it is likely you will be faced with giving a student a pink sheet for an unsat brief. There is a little bit more to a **Ready Room Unsat** than a verbal debrief:

1. Be sure to type up an ATF without WINFLIR. MPTS dictates that any RRU be graded as an Unsat/Incomplete with a "2" in the General Knowledge/Procedures line. Be sure to be very specific on the ATF as to exactly where the student was deficient.
2. Thoroughly debrief the student. Inform them that they will proceed to an Initial Progress Check (IPC) with a Stan qualified instructor in the appropriate stage and they are responsible for everything that they have been instructed on up to their stage of training. Consider whether the student was complacent in their study habits, or if they are truly having problems studying and comprehending. The first way to determine this is by reading their aviation training jacket (ATJ) and previous ATFs. If there is a trend of problems, then try to provide them with alternative ways to absorb the body of knowledge before them. If the trend points towards a less than professional student, it's your job to adjust their attitude and remind them that we are not in college anymore, that they are OFFICERS, who happen to be in a course of training. Finally, send them to Student Control to route paperwork. Don't forget to inform the ODO and notify Schedules of the student's status, so they can denote it for future scheduling.

Warm Up Flight (86)

When a student arrives for their brief they need to have their mini ATJ containing copies of all their previous ATFs, and additional paperwork, such as supplemental ATFs. Along with checking previous performances, verify that they are not in a warm up (86) window by checking the date last flown (Julian date) against today's Julian date. This is a common oversight. Schedules usually catches it, but the system is not foolproof. There are actually two types of warm ups (86)-1. OPTIONAL 2. MANDATORY

OPTIONAL-If a student has not flown within 7-13 days (Julian date minus Julian date) they rate an optional warm up. Brief the flight as scheduled. If the student goes out and flies up to

MIF for the flight, grade it as scheduled and they will proceed to the next event. If the flight is marginal or unsat, then it is automatically a warm up; they will then re-fly the event. If performance does not necessarily warrant an Unsat or Marginal grade, but there are items below MIF, then it is your call whether to grant the warm up. In either case, the event on the WINFLIR must reflect the proper flight so the ATF will be correct.

MANDATORY- If a student has not flown for 14 days or longer, they rate a mandatory warm up. The event will be graded XX86 (dependent on last flight completed). Upon completion of the mandatory warm-up, they additionally rate an optional warm-up. Performance will dictate whether they have an optional warm up or proceed to the next syllabus event, as above.

DON'T FORGET TO CHECK LAST DAY FLOWN! It is bad form to go back and find unsats that should have been warm-ups... particularly if they get to an IPC/FPC situation.

Adaptation Flights (84)

These flights are for students with airsickness issues. Per CNATRAININST 6410.2, all SMA airsickness episodes, passive or active, shall be documented on the grade sheet. In addition, on training flights after C4002 or after a second airsickness episode, section A of the Airsickness Notification Form must be completed and the SMA shall be referred to the Flight Surgeon.

Complete/Incomplete

MPTS allows for some flexibility to get the "X" in case the weather or time interferes with your flight. Just use common sense and the following guidelines and you will keep the student progressing through the syllabus.

The sortie is complete if all of the following are true.

1. 75% of the Hours per the X as denoted in the syllabus were flown.
2. Enough flights remain in the block so the student can complete and practice the specific maneuvers you were unable to accomplish.

The second requirement requires some common sense and judgment on your part.

<u>C4101</u>	<u>C4102</u>	<u>C4103</u>	<u>MIF</u>
3	2	3	

In the above example of where the student has made MIF in block but it did not happen on the last flight that this maneuver was attempted. You need to do this maneuver on a 4104. If you can't, then the student has not met end of block requirements. This leads into regression issues. Just remember always check the grades for the last flight a maneuver was attempted. If the grade was below MIF, they must get it up to MIF by end of block. If you are unable to do that maneuver in the last flight of the block, then it is incomplete.

Regression

Regression is based off of the MIF requirement from the previous block.

The ATF program will remind you that a student has regressed as you grade their ATF. There are a variety of scenarios that fall within the regression rules.

1. If a student is flying in a new block and they are graded below MIF from the previous block then the flight is Unsat. They must maintain their previous block's grade, and show progress towards the current block MIF (unless it is the same as the previous block).

2. If the flight is an end of block flight then it's pretty easy. They must meet MIF for that Block, or the flight is Unsat.
3. A student may receive a 3 on a maneuver that requires a 4 (where previous 4 proficiency was demonstrated) for up to two graded items and/or two consecutive sorties and still receive overall satisfactory grade. This rule applies provided the IP is satisfied the student is ready to progress. If the two-items/two sorties rule is violated, or regression is to a 2 where a 3 is required, grade the sortie Unsat.

Remember, regression only applies for grades that were previously a MIF. For example if MIF is a 3 and the student was graded a 4 or 5 on the previous flight, but received a 3 on this flight that is not considered regression.

MIF vs. CTS

Don't get MIF and CTS confused. MIF is Maneuver Item File and CTS is Course Training Standards. MIF is the MINIMUM particular grade/or level of proficiency a student must achieve in a particular block of training. Specifically- Unable (2), Fair (3), Good (4) and Excellent (5). In the first stages of contact the first block (4000) a student will be Unable in many areas. This is expected. As they move through the Blocks 4000-4100-4200, the level of proficiency or MIF will increase. CTS are explained in part VIII of your Master Curriculum Guide. It gives you specific parameters for maneuvers. Example: BAW +/-10ft, 10deg and 100 ft. CTS is equivalent to Good (4). Remember MIF is never the goal; it is the bare minimum the student must achieve by the end of the block.

When you assign a grade other than a 4 (good), you must justify it in a cause and effect manner on the ATF. If MIF is a 3 and the SNA performs to that level, provide a write-up on the ATF that will help them achieve a 4 or better next time. If MIF is a 4 and the student in fact only lost 150ft on their ATS but received a 3, then you must point out why. The maneuver description is not covered in the CTS. Specifically – if the student only lost 150ft on the ATS attempt but was holding 20-15 degrees AOB for maneuver entry then they really did not properly do an ATS.

Sometimes MIF is a 4; in that case the grading is fairly easy because the parameters are in black and white. Other times MIF is a 3 or a 2, below the CTS parameters. A 3 is generally accepted as not up to 4 (CTS) but consistently *safe*. A 2 generally means they know the procedures (otherwise grade general knowledge appropriately) but are *unable* to perform it to any degree of proficiency. If all you do is demonstrate a maneuver and the student never attempts it, then they receive NG (1)-doesn't count for anything. A student should know the procedures, even for demonstrated items.

For a grade of 5, it is safe to say that the student flew the maneuver well within the parameters of the CTS and showed absolutely little if any deviation throughout. For example, in the landing pattern: Flew the downwind on altitude with an occasional deviation +/- 50 ft and hit the 180/90 and rolled out on altitude and airspeed and touched down on centerline in the first third of the box. Not once, but consistently, throughout their time in the pattern, then it would warrant a 5.

The bottom line is that any grade of a "2" or a "5" *requires* comments justifying the grade. Any grade of a "3" *should* have comments to give the SMA guidance on how to improve to CTS. Obviously, you really need to know CTS in order to combine that with the FTI and give the appropriate grade. MPTS is designed to be objective. CTS and MIF enables it to be so.

While fulfilling the sometimes more subjective roles of an instructor, don't write yourself into a corner by including parameters in your comments which are not IAW CTS.

Aviation Training Form (ATF)

Typing out a thorough ATF after a 3X day can be trying. However, it is imperative that you take the time to properly document the flight. The ATF is one of your primary debrief tools. A student should be able to walk away from the debrief and reference the ATF for insight into ways of improving performance. Sometimes it takes more than one medium to get the lesson across. And remember, the student isn't the only one that reads these ATFs. In some cases, poor SMA's will attrite or go to a Review Board at completion of Primary. You need to make sure that your ATF's are professional, and clear, particularly when documenting poor performance trends. If they go before a Training Review Board (TRB) for flight performance, the grades and their respective comments will be scrutinized to help pinpoint deficiencies in the student's training. Don't be that deficiency. If the package is forwarded to the CO or Commodore, they will be equally unhappy and may send the student back for more training due to insufficient cause for attrition. Do it right the first time.

ATF COMMENTS

1. General comments- Training area utilized. Out Lying Fields (OLFs) and runways utilized. Course rules entry for home field. General comments on overall performance. If a flight is exceptional or unsatisfactory you must denote that in the first line of the ATF along with a list of the events that caused the unsat. Also feel free to comment on student motivations, or lack of evidence thereof.
2. You **must** say "Safe for Solo" or "Not Safe for Solo" on solo flight checks. You **must** also explain why additional training was performed (84, 86, 87 flights) or why a flight was graded incomplete. Ref CNATRAININST 1542.140 (MPTS) for further detail.
3. Graded Items- Any maneuver that you grade 2 or 5 require comment. Any grade of 3 should have comment. Show specific cause and effect documentation and suggestions to correct noted problems.
4. Document any airsickness event by checking the "airsick" box on the details page of the ATF and counsel the SMA IAW COMTRAWINGFIVEINST 1500.43A. Be sure to document this on the ATF.
5. Landing Pattern/Landings- Try to always make a comment on the overall pattern and landing consistency regardless of the grade given. This is a particular area of difficulty for many students.
6. Special Syllabus Requirements- Any special item that you demonstrated. For example- Skidded turn stall or Prop Feather in-flight.

Contact Syllabus

Your First Onwing

Below is a sample plan for successfully training your onwing for his first checkride and solo flight. The most important thing to remember is to have a plan. Your onwing will complete three blocks of training before his Solo Checkride: C40, C41, C42.

	C4001	C4002	C4003	C4004	C4101	C4102	C4103	C4104	C4201	C4202	C4203	C4204
Type of Flight	Onwing	Onwing	Onwing	Onwing	Onwing	Offwing	Offwing	Offwing	Onwing	Onwing	Onwing	Onwing
Ground Operations	Start	Taxi Fam	Prac	Prac	Ground Proc Check				Prac	Prac	Prac	Prac
Takeoff	Demo	Intro	Prac	Prac	Prac				Prac	Prac	Prac	Prac
Departure	Demo	Intro	Prac	Prac	Prac				Prac	Prac	Prac	Prac
Trim	Discuss	Trim Drills	Prac	Prac	Prac				Prac	Prac	Prac	Prac
Turn Pattern	Demo	Intro	Prac	Prac	Prac				Prac	---	---	---
Level Speed Change	Demo	Intro	Prac	Prac	Prac				---	---	---	---
Slow Flight		Demo	Intro	Prac	---				---	---	---	---
Power Off Stall		Demo	Intro	Prac	Prac				Prac	Optional		
Approach Turn Stall			Demo	Intro	Prac				Prac	Prac	Prac	Prac
Spin			---	---	Demo				Prac	Prac	Prac	Prac
OLF Operations			Waldron	A-County	Waldron				Waldron	Homefield	A-County	Waldron
Landing Pattern	Demo	Demo	Intro	Prac	Prac				Prac	Prac	Prac	Prac
Full Flap Landing	Demo	Demo	Intro	Prac	Prac				Prac	Prac	Prac	Prac
No Flap Landing	---	---	---	---	Demo/Intro				Prac	Prac	Prac	Prac
Go Around/Waveoff	---	---	---	---	Demo/Intro				Prac	Prac	Prac	Prac
HAPL	---	---	---	---	Demo				Prac	Prac	Prac	Prac
LAPL	---	---	---	---	Demo				Prac	Prac	Prac	Prac
PPEL	---	---	---	---	Demo				Prac	Prac	Prac	Prac
PPEL(P)	---	---	---	---	---				Prac	Prac	Prac	Prac
LAPL(P)	---	---	---	---	---				Prac	Prac	Prac	Prac
Course Rules/HFE	Shamrock	Shamrock	Shamrock	Shamrock	Shamrock				Shamrock	Shamrock	Shamrock	Shamrock

Students are required to know the procedures for every maneuver in a given block during the brief for the first flight of that block. However, the amount of information your onwing is responsible for on C4001 can be overwhelming. Most instructors will break down the C40 block to help their onwings get started properly. A possible example follows:

- C4001 Turn Pattern, Level Speed Change, VFR checkpoints and CR to/from NGP.
- C4002 Takeoff, Slow Flight, and Power Off Stall. Course rules to/from the high work areas.
- C4003 Landing Pattern. Course rules to/from Waldron.
- C4004 Approach Turn Stall. Course rules to/from A-county.

The C41 block is primarily focused on offwing flights so that your student is exposed to different instructional techniques. When your student returns in the C42 block you will have a very short time to prepare him. Your expectations should be high. Try to thoroughly expose

your onwing to every possible scenario that might come up on a C4390 checkride. Plan to give malfunctions/emergencies from start through shutdown on every flight in this block. Use the Malfunction Setup section as a checklist to make sure you cover everything. Also, reinforce systems during the briefs in the C42 block with particular attention to the associated EP's.

- C4201 Engine and Fuel System
- C4202 Propeller and Oil System
- C4203 Electrical System
- C4204 Landing Gear System

Offwing Contact Flights

Your first five contact flights will be offwing events. During the brief you should find out what working areas the student has not been to yet or what course rules they need to see. You should also review their gradesheets and target any problem areas the SMA has been having. Tailor your flight accordingly. They should go into their C4200 block having seen all areas and course rules so their On-wing can concentrate on preparing them for their C4390.

C4390: The Safe-for-Solo Checkride

Once you receive this qualification you will brief with the CAT II Stan-O and he/she will provide a detailed handout on C4390 procedures and expectations. The following is some basic overarching information.

Perform a thorough review of the students Contact flights. Look for any irregularities in scheduling, grading, etc. Make sure any Unsat flights that should have been warm-ups were not counted. Cover all of the discuss items listed in the Curriculum Guide, but pay particular attention to the student's course rules knowledge. Make sure the student performs a North to South or South to North transition. Review departures from the high work areas back to Navy Corpus and a normal course rules entry into Waldron since most C42 block flights have the student perform a PPEL to Waldron or A-county with a course rules return from an outlying field. Here are a few example scenarios:

C4390 North: Have the student simulate calling the RDO on ICS after completing the Ground Run-Up and Takeoff checklists. At some point you need to see the student bounce in the home field pattern. This is the time to inform the student if he is going to bounce or depart first. If you decide to give a PPEL(P) following takeoff make sure you are above 500' with interval before initiating the emergency. While transiting North along the beach line setup a PPEL into Mustang followed by a HAPL and LAPL at Mustang or the Port-A mudflats. Coordinate a high area for the student and reset him on course rules so he can demonstrate a standard entry. After completing the high work, have your student coordinate a North to South transition for a course

rules entry into Waldron. If the PPEL into Mustang did not go well, coordinate a PPEL while enroute to Waldron. The student should return to Navy Corpus via course rules through Pt Shamrock.

C4390 South: Have the student simulate calling the RDO on ICS after completing the Ground Run-Up and Takeoff checklists. At some point you need to see the student bounce in the home field pattern. This is the time to inform the student if he is going to bounce or depart first. If you decide to give a PPEL(P) following takeoff make sure you are above 500' with interval before initiating the emergency. After completing the high work in the south high, proceed to either the South Mudflats or Chapman Ranch for HAPL/LAPLs. Have the student perform a PPEL into Waldron. The student should return to Navy Corpus via course rules through Pt Shamrock.

C4390 Low: Have the student simulate calling the RDO on ICS after completing the Ground Run-Up and Takeoff checklists. At some point you need to see the student bounce in the home field pattern. This is the time to inform the student if he is going to bounce or depart first. If you decide to give a PPEL(P) following takeoff make sure you are above 500' with interval before initiating the emergency. After departing Navy Corpus have the student proceed to Waldron. Be sure they do not switch at Bob Hall Pier since they are not going to the high areas. After you are satisfied they would make it to Waldron properly coordinate a PPEL. While departing Waldron complete HAPL/LAPL's at Chapman Ranch. Coordinate a south high area for the student and set them up at 2,500' under the working area so they can demonstrate a course rules climb into the area. The student should return to Navy Corpus via course rules through Pt Shamrock.

Contact Standardization Instructor

Stan Instructors are subject matter experts. It took a great deal of time for you to develop this level of proficiency. Your goal is to pass on to the IUT as much of that knowledge and experience as possible. For example, we only have 5 flights to get an IUT prepared for a checkride on basic contact maneuvers (TP, ELP, ATS, etc.). An Instructor Pilot, even if he or she is brand new, should be able to fly any maneuver to within CTS while discussing the steps along with their technique aloud. Therefore, the SI must be persistent and re-fly a maneuver, if necessary, until the IUT gets it right. Emphasize talkies!

Instructor Grade Sheets

All flights are graded Pass/Fail except EOB flights. However, the comments should be detailed and identify weak areas for the next SI to address. Checkride comments should conform to the standard verbiage, unless the IUT fails. Finally, IUT's should complete three supervised short breaks before attempting on their own. Make a note on each ATF when observed.

Examples:

Normal ATF:

General: All maneuvers conducted IAW FTI, NATOPS, and local directives. Good introduction to aerobatics. Needs further practice on barrel roll.

BRL ROLL: Only reaches 45 degrees nose up due to lack of steady pull on entry. IUT tended to recover 200' below entry altitude and fast because of the lower nose attitude over the top. Practiced the maneuver 4 times with improvement.
Completed second short break.

Checkride ATF:

General: All maneuvers completed IAW FTI, NATOPS, and local directives. LT Flyer is fully qualified to instruct student (and instructor) DCON events for a period of one year. This qualification expires: 31 Mar 03. Exam verified complete.
Completed third short break.

(Include "and instructor" for annual requals if the IP has reached that level of proficiency. If the IUT fails the checkride, use the normal ATF format.)

End Of Block (EOB) Sorties

Unlike the student syllabus, blocks in the IUT syllabus do not follow the building block approach. Instead, they are focused on specific areas: basic contact, aerobatics, visual navigation, and out of control flight recognition and recovery. The master curriculum guide requires us to maintain maneuver continuity throughout training. Therefore, just because you are doing an OCF flight there is no reason you cannot take a few minutes and have the IUT practice a regular approach turn stall or loop. See the notes in the Recommended Flow section.

Briefs

Conduct briefs in a briefing room or a quiet area. The IUT is required to have a thorough knowledge of the flights discuss items and of the procedures for any "+" item in the block. Ensure that they do. Also, IP's are required to review an SNA's training progress in the brief and develop a plan to focus on training deficiencies (i.e. needs to see A-county, never been to Chapman, trouble with LAPLs). IUT's should begin developing that skill with their training. They should have a flight profile planned that focuses on weak areas, maneuver continuity, and course rules. SI's review the IUT's grade sheets and ATS as a backup.

Thoroughly cover:

- (1) Specific objectives
- (2) Techniques and required procedures for accomplishing those objectives. The first brief of any block should thoroughly cover the FTI procedures for the "+" items. Additionally, the SI **should** explain his techniques (expressed as such) and the reason(s) why they work. However, IUT's do **NOT** have to use your techniques. For example, if an SI is teaching IUT's that they must teach students to retard the PCL immediately to idle in the flare or they will "float all the way down the runway," that is a technique, not the required procedure in accordance with

NATOPS. The SI can teach this as long as he emphasizes that it is one of many techniques that work.

(3) Planned profile, contingencies, and ORM considerations. Discuss weather considerations and SNA quality of training. How should the IUT tailor an SNA's flight profile in marginal weather? As we all know, things don't always go according to the plan. Discuss contingencies for handling those times. For example, what are an IUT's options when he is doing his first offwing flight and gets the inevitable "All high areas are full, say intentions".

(4) The Pre-briefing Guide. The first part of the briefing guide, including the ORM section, is NOT optional. IP's and SNA's routinely skip this portion of the brief. This needs to be completed prior to the entire brief, not just prior to the NATOPS brief. There is valuable training for the IUT to be had. For example, IUT's are rarely able to recall when an SNA is eligible for an optional versus a mandatory warm up, what flights he can fly offwing out of the FITU, how many offwing flights an SNA can do, etc. Finally, the ORM brief is outside of training. It is real world. Both pilots must "supervise," not just the pilot in command, by ensuring the crew sticks to their ORM plan to reduce the severity and probability of any hazards. This is the SNA's reminder to be assertive (CRM) and the IP's chance to set the "safety first" mind set before they ever reach the aircraft.

(5) MPTS discussion of grades including an in depth analysis of all the blocks on an ATS. Reinforce that information with the IUTs. Also discuss the required items in a good ATF.

Debriefs

- (1) Utilize a cause/effect analysis with an emphasis on CTS. Be thorough!
- (2) Complete the ITF and place in the locked boxes located in OPS, STUCON, or outside the IP lounge.

Stan IP Inputs

CAT-Os and SIs should talk to each other at least once a month regarding trends, good or bad. Additionally, the Stan Officer cannot be expected to make up Ranger Reviews without sufficient inputs. All IPs have been asked to input ideas to be published, but it's the STAN PILOTS who should be the biggest contributors. SIs see everything from SNA flights, to IUT flights, to checkrides. You should be submitting something every month or, at the very least, quarterly!

Course Rules Proficiency

- Course rules and PPEL entries into NGP, NGW, and RKP...more than once each!
- Sunrise and Oso transitions, at least once.

- PPEL/HAPL into Mustang...at least twice. Maneuvering for high key over the houses for noise abatement should be the norm. If you lose the engine and the student is off at low key at least you are over a mud flat instead of a neighborhood.
- Delta...at least once.

Recommended IUT flow

Block	Description	Notes
C5001 – C5004	Basic contact	Ensure IUTs are seeing all of the course rules. C5001 is primarily SI demos with talkies. C5002 focus on IUT getting the maneuver up to CTS from the rear cockpit. C5003 though C5004 focus on improving maneuver proficiency and talkies, talkies, talkies.
C5101 – C5103	Aerobatics	In addition to aerobatics, add one of the following maneuver sets to the flight: (1) HAPL or LAPL (2) PPEL, PPEL(P), LAPL(P) (3) ATS, STS These are not graded, but should be documented in the comments. The intent is not for the IUT to spend a great deal of time perfecting the additional maneuvers, but to maintain maneuver continuity, even if they attempt them only once.
C5201 – C5202	OCF	Not every maneuver needs to lead to an OCF condition. Yes, make sure the IUT is proficient and safe regarding OCF recovery. However, the IUT will gain a great deal by being asked to grade maneuvers the SI performs. The SI should perform those maneuvers and make common, even subtle, errors and force the IUT to really begin instructing. For example, do an ATS and ask the IUT how much altitude you lost. You may be surprised at how many have no idea! Start reinforcing CTS and objective grading within its criteria.
N5001 – N5002	VNAV	These can be completed at any time, but should be completed here if not already done.
C5005*	Basic contact EOB	This is an EOB flight and MIF is the same for this flight as it is for the checkride. If the IUT is not ready, then unsat them here and let them redo the flight, just like we do with our onwings. By saving this flight for last, we can negate the continuity issues caused by long

Block	Description	Notes
		weather delays, etc. while affording the IUT one last practice before his checkride.
C5390	DCON checkride	IUTs must perform! We must get them there ready!

* Syllabus Note on II-10 states: Once C5004 complete, C5005 sortie may be flown at anytime prior to C5390.

Instrument Syllabus

T-34 APPROACHES GROUPED BY TYPE

AIRFIELD

APPROACH NAME

REMARKS

Procedure Turn Approach:

Alice Int'l (ALI)	VOR-A VOR 31	<i>*Use localizer (30X) for DME</i>
Brownsville/S. Padre Int'l (BRO)	VOR or TACAN-A	GPS-A
College Station/Easterwood (CLL)	VOR or TACAN 10	VOR/DME 28
Corpus Christi Int'l (CRP)	VOR/TACAN 17	
Galveston/Scholes (GLS)	VOR 13	
Laredo Int'l (LRD)	VOR or TACAN 32	
Mc Allen Miller Int'l (MFE)	VOR 13	
NAS Corpus Christi (NGP)	VOR 22	VOR/DME X 31L
Palacios Muni (PSX)	VOR 13	
Sinton/San Patricio (T69)	VOR/DME 14	
Victoria Regional (VCT)	VOR 12L	VOR/DME 30R

Holding Pattern Approach:

Alice (ALI)	GPS 13, 31	VOR-A
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Bay City Muni (BYY)	GPS 13	
College Station (CLL)	GPS 10, 16, 28, 34	
Harligen/Valley Int'l	GPS 13, 17L, 17R, 31	
Kingsville, Kleberg County	GPS 13	
Mc Allen Miller Int'l (MFE)	VOR 31	
NAS Corpus Christi (NGP)	VOR/DME Y or TACAN Y 31L VOR/DME Z or TACAN Z 31L GPS 4, 17, 22, 31L, 31R, 35	
NAS Kingsville (NQT)	TACAN 13L/R	LOC/DME 13R <i>*PPR Required</i>
Palacios Muni (PSX)	GPS 13	
Port Lavaca (PKV)	GPS 14	
Rockport/Aransas County (RKP)	GPS 14	
San Antonio (SAT)	GPS 30L, 12R	
San Antonio/Stinson Muni (SSF)	VOR 32	
Sinton/Alfred Bubba Thomas (T69)	VOR 32	GPS 32

Arcing Approach:

Bay City Muni (BYY)	VOR/DME A	
Beeville Muni (3R0)	VOR/DME 12	
Brownsville/S. Padre Int'l (BRO)	VOR or TACAN-A GPS-A	
College Station/Easterwood (CLL)	VOR or TACAN 10 ILS 34	VOR/DME 28 LOC BC 16
Houston/Ellington Field (EFD)	TACAN 4 TACAN 17R TACAN 22 TACAN 35L	LOC 17R, 22, 35L

Laredo Int'l (LRD)	VOR/DME or TACAN 14 LOC/DME 17R	LOC/DME BC 35L
Mc Allen Miller Int'l (MFE)	VOR 13 VOR31	
NALF Orange Grove (NOG)	TACAN 13	<i>*Check field hours</i>
NAS Corpus Christi (NGP)	VOR/DME Z or TACAN Z 13R VOR/DME or TACAN 17 VOR/DME or TACAN 35 VOR/DME Z or TACAN Z 31L ILS Z or LOC/DME 13R	
NAS Kingsville (NQI)	TACAN 17L, 17R, 31L, 31R	
Port Lavaca/Calhoun County (T97)	VOR/DME-A	
Rockport/Aransas County (RKP)	VOR/DME or TACAN-A	

Straight-in Approach:

Alice Int'l (ALI)	GPS 13, 31	
College Station/Easterwood (CLL)	VOR or TACAN 10 VOR/DME 28 GPS 34	
Corpus Christi Int'l (CRP)	VOR 17	GPS 13, 17, 31, 35
David Wayne Hooks (DHW)	LOC 17R	
Galveston/Scholes (GLS)	VOR 13	GPS 13, 17, 31, 35
Harlingen (HRL)	GPS 13, 17L, 17R, 31	
Lackland AFB (SKF)	TACAN 33	GPS 15, 33 <i>*PPR Required</i>
Laredo Int'l (LRD)	VOR or TACAN 32	
NALF Orange Grove (NOG)	TACAN-A TACAN 31	<i>*Check field hours</i>
NAS Corpus Christi (NGP)		

VOR/DME Y or TACAN Y 13R
 ILS Z or LOC/DME 13R
 ILS Y or RNAV(GPS) 13R
 GPS 4, 13L, 17

Palacios Muni (PSX)	VOR 13
Rockport/Aransas County (RKP)	GPS 14
San Antonio (SAT)	GPS 3, 12R, 30L
Sinton/Bubba Thomas (T69)	GPS 32
Port Lavaca/Calhoun County (T97)	GPS 14
Victoria Regional (VCT)	VOR/DME 30R

Localizer Approach:

Alice Int'l (ALI)	LOC 31	
Austin-Bergstrom Int'l (AUS)	ILS 17L, 17R, 35L, 35R	
Brownsville/S. Padre Int'l (BRO)	ILS 13R	LOC BC 31L
College Station/Easterwood (CLL)	ILS 34	LOC BC 16
Corpus Christi Int'l (CRP)	ILS 13, 35	LOC 31
David Wayne Hooks (DWH)	LOC 17R	
Galveston/Scholes (GLS)	ILS 13	
Harlingen/Valley Int'l (HRL)	ILS 17R	LOC BC 35L
Hou./David Wayne Hooks (DWH)	LOC 17R	
Houston/Ellington Field (EFD)	ILS 17R, 22, 35L	
Lackland AFB (SKF)	ILS 15, 33	<i>*PPR Required</i>
Laredo Int'l (LRD)	ILS 17R	LOC BC 35L
Mc Allen Miller Int'l (MFE)	ILS 13, 31	

NALF Orange Grove (NOG)	ILS/DME 13	<i>*Check field hours</i>
NAS Corpus Christi (NGP)	ILS Z 13R	ILS Y 13R
NAS Kingsville (NKI)	ILS Z or LOC/DME 13R	
San Antonio Int'l (SAT)	ILS 3, 12r, 30L	
Victoria Regional (VCT)	ILS 12L	

Basic "T" Approach:

Alice Int'l (ALI)	GPS 13, 31	
Austin-Bergstrom Int'l (AUS)	GPS 35L	
Bay City Muni (BYY)	GPS 31	
College Station/Easterwood (CLL)	GPS 10, 16	
Corpus Christi Int'l (CRP)	GPS 31	
Harlingen/Valley Int'l (HRL)	GPS 13, 35L	
Mc Allen Miller Int'l (MFE)	GPS 13, 31	<i>*31 enters Mexico Airspace</i>
Port Lavaca/ Calhoun Co (T97)	GPS 14	
Randolph AFB (RND)	GPS 14L, 14R, 32L, 32R	
San Antonio Int'l (SAT)	GPS 3, 12R, 21, 30L	
Sinton/ San Patricio (T69)	GPS 14	
Galveston (GLS)	GPS 31, 35	
Ellington Field (EFD)	GPS 4	
Lackland AFB (SKF)	GPS 15, 33	<i>*PPR Required</i>
NAS Corpus Christi (NGP)	GPS 13R	

PAR/ASR:

NAS Corpus Christi (NGP)	PAR/ASR
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NAS Kingsville (NQI)

PAR/ASR

GPS Information

The KLN 900 GPS Module is a very useful tool for both navigation and increasing situational awareness. The information provided in the IUT 14200 block of training is not enough to become a proficient user of the system. The following information should be used as abbreviated supplemental information and not a substitute for the NATOPS, FTI, or KLN 900 User Manual.

General

Aside from enroute navigation and low altitude instrument approaches, the KLN 900 is useful for in-flight calculations and information. The best way to become familiar with the following functions is by trial and error on the GPS training device and the actual unit in-flight.

The left knob/screen on the GPS display unit is primarily used setup and route planning functions. The right knob/screen is primarily used for airport and navaid data. A complete discussion is located in the KLN 900 Pilot Guide (located in Ready Room). The following pages are commonly used on local area and cross-country flights.

LEFT SIDE

CALC – The calculation pages are used to find in-flight winds and true airspeed. CAL 1 and CAL 2 are used to input various data such as altitude, OAT, altimeter setting, and CAS. The CAL 3 page displays TAS, total winds, and headwind/tailwind components.

SETUP – The setup page is used to set the initial conditions for GPS operations and display information. Most of the units are properly configured with a few exceptions.

SET 3 – This page changes the filter used to determine the nearest airfield. A setting of 3000ft and HRD surface will ensure only airfields with sufficient landing distances IAW Standardization Notes are displayed.

SET 8 – This page is used to enable/disable airspace alerts. Normally this would be turned off (unless you want message flashing every minute). Turning this function on provides a nice backup on VNAV flights to ensure you remain clear of SUAS and Class B/C airspaces.

OTHER – This page display information the manufacturer couldn't place anywhere else.

OTH 1 – Uses aircraft position to determine the frequency of the nearest FSS.

OTH 2 – Uses aircraft position to determine the frequency of the controlling ARTCC. (Note: Center frequencies are often dictated by traffic volume and altitude. The GPS does not take either into effect.)

TRIP – The trip pages provide information about distances between any two airfields, nav aids, intersections, etc. It also allows you to input airspeed, fuel flow, and required reserves in order to determine fuel required to continue flight. The trip page will also provide ESA and SUAS information about the route loaded in the flight plans.

TRI 1 – Information for Present Position to selected fix. Calculates distance, bearing (straight line), ETE, and fuel required.

TRI 2 – ESA and SUAS information for TRI 1.

TRI 3 – Information for selected fix to selected fix. Calculates distance, bearing (straight line), ETE, and fuel required.

TRI 4 - ESA and SUAS information for TRI 3.

TRI 5 – Information for any flight plan. Calculates distance, bearing (straight line), ETE, and fuel required.

TRI 6 - ESA and SUAS information for TRI 5.

RIGHT SIDE

D/T – Distance/ Time pages. When used in conjunction with the FLP page set up on the left side, the D/T pages will display “jet log” information.

D/T 1 – Distance and ETE information

D/T 2 – Distance and ETA information

D/T 3 – Distance and TRK information

D/T 4 – Flight time information. Departure Time, present time, ETA, flight time, and ETE. This is very useful on any flight; especially if you forget what time you take off. (NOTE: Ensure the correct time zone is selected. Use the right cursor and inner knob to cycle thru the time zones.)

15300 BLOCK

Every attempt should be made to fly these flights as an out/in.

Typical O/I Southbound:

LOCOE ONE Departure

Approaches at CRP, T69, IKG, ALI, *BRO, HRL, MFE.

Typical O/I Northbound:

WORRY ONE Departure

Approaches at CRP, PSX, VCT, *3R0, SAT, AUS, CLL

Typical O/I Eastbound:

WORRY ONE Departure

Approaches at CRP, PSX, LBX, GLS, EFD

NOTES:

These airports have GPS arcing approaches.

Houston Approach will only allow practice approaches if they are not busy. Ellington Field (EFD) is usually more accommodating than David Wayne Hooks (DWH)

CTW-4 conducts INAV training in an actual IFR environment. The following are some guidelines to aid an IP when instructing INAV events:

- List specific approaches, holding pattern and PT to PTs on the ATF in the comment section.
- Coded local IFR flight plans are listed in Appendix C of the Course Rules book as well as the Blue Brains. Typically a TANGO-3 (IFR from/to NGP with approaches/holding in the Corpus terminal area) or GCA-1 (GCA box pattern) will be used for local INAV events. Upon completing the pre-taxi checklist and prior to calling for taxi place either the TANGO-3 or GCA-1 on request with Clearance Delivery. You will need to provide the first event requested as well as a Departure Procedure if desired for the TANGO-3 or the number of PAR's for the GCA-1. For example: "NAVY 8G7XX, request a TANGO-3, first event hold at CRP VORTAC for 15 minutes." After the clearance has been requested, taxi to the run up and upon reaching Step 4. "Radios, Nav aids, NACWS, GPS" on the takeoff checklist, let Clearance Delivery know that you are standing by to copy clearance.
- Coded flight plans to airports outside of the Corpus Terminal area require more lead-time. Call Base Operations (x2505) prior to preflight to file the flight plan. I recommend copying your clearance after the pre-taxi checklist just in case the requested flight plan did not get into the system. This may save time rather than waiting until the takeoff checklist to discover that there may be a problem with your flight plan.
- Review the SNA's previous ATFs and ATS to help expose the student to different approaches and focus on weak areas. Primary events are generally completed within the local area, which includes: the Corpus terminal area, the Valley, Palacios/Victoria, Beeville, and Kingsville/Alice/Orange Grove/Kleberg. Out and in events can generally be conducted within a radius that includes: Laredo, the Valley, San Antonio, Austin, College Station, and Houston (ensure a Standard Terminal Arrival publication is brought on flights to Houston). Flights outside of this rough boundary are tough to complete due to MCG time constraints. It is important to avoid having the SNAs shooting the same approaches at NGP and CRP on every flight.
- When NGP is conducting single runway operations you are only allowed to do one approach to a full stop at NGP. This typically occurs on north flow days and Sinton tends to get very busy on these days. ATC may approve the VOR 17 at CRP if traffic permits, however do not count on it. When on North flow it is usually easier to go outside the Corpus terminal area to complete the event.
- If going south to "the valley" ATC prefers us to use Harlingen and/or McAllen vice Brownsville as it can be quite busy.
- ATC is aware of our training requirements and understands that deviations may need to be made for training. If a deviation is necessary, you need to request the deviation with ATC. 'NAVY 8G7XX, request deviation to the west for training.'

- When requesting direct to an intersection for point to point navigation it is recommended to use the terminology “request pilot navigation to XXXXX.” Otherwise ATC will typically give you a heading direct to the point.
- When runway 31 is in use at NGP an arcing approach can be accomplished by requesting to arc from TOPTY to HAULS for the TACAN Z 31L.
- CTW-4 aircraft are not allowed to shoot an approach to RKP when the Navy VFR traffic pattern is open. Generally Monday through Thursday, 0900 to 1700.
- ATC will normally assign a canned departure and missed approach instructions for NGP and CRP. The canned climb-out instructions are located in the Blue Brains.
- When holding on a properly aligned approach course, use the term “full procedure turn” if you want to shoot the full approach. Otherwise, ATC is expecting you to shoot the approach from the inbound turn in holding.
- Ensure TFRs are checked along with NOTAMS prior to departure.
- Useful websites:
 - <http://adds.aviationweather.gov> for weather
 - <https://fwb.metoc.navy.mil/fwb121/> for DD175-1 (CAC login required)
 - <https://www.notams.jcs.mil> for NOTAMS
 - <http://doni.daps.dla.mil/allinstructions.aspx> for OPNAV 3710
 - <https://www.extranet.nga.mil/> for General Planning (CAC login and registration required)

I4390: The Instrument Navigation Checkride

Once you have upgraded to an INAV checker the CAT I Officer will cover what is expected of SNAs on the checkride. This is not an instrument card check. However, the student should have a basic understanding of IFR terms and procedures. Grade the event in accordance with the course training standards. If EPs are simulated, do it early in the event to allow an opportunity to correct any deficiencies.

Required knowledge for the I4390 includes but is not limited to:

- All information covered in IGS
- All information and symbols in the Low Altitude Instrument Approach Plates
- All information and symbols in the Low Altitude Enroute Charts
- Be able to describe, in detail, how to shoot any approach
- All items on a DD-175 and single engine jet log
- Mandatory voice reports (at all times)
- Enroute weather information
- Lost Comm procedures, to include FIH and local letter of agreement
- Holding procedures and airspeeds
- All FTI information
- All emergency procedures
- Calculations: lead radial, turning onto arc, ground speed, missed approach timing
- OPNAV 3710.7U weather requirements for takeoff minimums, to execute an approach, destination and alternate minimums for filing IFR flight plans.

- Crew Resource Management
- Intersection holding (single and dual NAVAID)
- In-flight change of flight plan

Instrument Stan Instructor

Standardization Instructors are subject matter experts. It took a great deal of time to develop a high level of proficiency. The goal is to pass on to the IUT as much of that knowledge and experience as possible. Every pilot returning from the fleet knows how to fly instruments however, the IUT must learn to teach instruments in a standardized manner while flying the aircraft, instructing the SNA and coordinating with ATC.

IUT's should be exposed to all of the local areas prior to the checkride. The local area includes: the Corpus terminal area, the Valley, Palacios/Victoria, Beeville, and Kingsville/Alice/Orange Grove/Kleberg. Help the IUT become familiar with building scenarios that maximize efficiency.

The ITF comment section should be detailed and identify weak areas to be addressed on the next flight. Check flight comments should conform to the standard verbage, unless the IUT fails the event.

Formation Syllabus

FORM Instructor Information

General

This will be the student's first exposure to multi-ship operations. Most students will be paired up with another student to progress through the Form syllabus as Form Partners. This particular aspects needs to be emphasized with the students. Section integrity is a principle that applies to the partner's preparation for the brief and flight as well as in-flight situations. This will be the first time that a student must rely on another student for their success or failure in a stage of training.

F4001

Brief - Ensure the SMAs have attended the Form procedures brief prior to starting forms. The F4001 brief is absolutely the most important part of this flight. You need to take the time to go through the entire form evolution and a section NATOPS brief. If you take the time now, it will make the follow on briefs and flights go a lot smoother. Total time for a good Form 4001 brief is about 1 to 1½ hours, slightly less depending on the students. Treat the students as a section for the brief, but ask each student specific questions to ensure that both are equally prepared. If it is apparent that one student has arrived unprepared then note that on the ATF. Their lack of preparedness will be amplified in flight. Discuss area orientation, course rules, comms and their relevance to the formation sequence. This is a segue into section leadership and management.

The remainder of the brief should be a detailed discussion, question and answer format of the flight from chocks to chocks. Additional items to be emphasized are consideration for your wingman, trim, and error corrections.

Flight - About 50% demonstration. Demonstrate each item the formation sequence. Show the various correct and incorrect positions for each maneuver and how to correct back into position. Emphasis should be placed on good BAW while in the lead position. Provide specific parameters for error correction. For example: No more than 300 ft/min on the VSI to correct for altitude deviations. Focus on smooth, constant roll rates and Dash 2 considerations. Provide area orientation while in the lead position to include pointing out course rules checkpoints for the form area and T.P. McCambell.

F4002/4003

Brief - Review problem areas. Discuss how to conduct low work (F4003). Review ELP procedures including how to handle the emergency as a section, particularly PEL procedures. Some additional Form principles to emphasize include trim, recognition and anticipation. The aircraft must be trimmed to be stable as Lead and smooth as Wing. Recognizing when you are getting out of position earlier will allow for smaller corrections. Anticipate being in position so that you can stabilize in position.

Flight - The student that was lead on F4001 should be Wing for departure and recovery on F4002 and back to Lead for F4003. Lead for F4003 MUST see course rules if not seen on F4001.

If Lead for F4003 has seen course rules to and from NGP on F4001, recommend executing ELP/PPEL to T.P. McCambell this flight.

Brief - Review conduct of low work. IP's need to discuss in private who will get the EP to start the low work and the flow/rejoin.

Flight - Section PPEL to T.P. McCambell **after** switching to button 16; Single ship HAPL/LAPL. If aircraft or weather prevent using T.P. McCambell, try getting Mustang and Port Aransas. Back at home field, do pattern work back at homefield, include PPEL(P) and LAPL(P).

Complete touch-n-go's on F4003 to ensure they are maintaining proficiency and to help F4004 go quicker. If the students need more landings then annotate that on the ATF so the IP on F4004 can properly plan the flight. If you do pattern work, DO NOT forget to complete PPEL/P and LAPL/P.

Student Habits - The learning curve is usually high.

- 1 Lead - Many have problems thinking ahead of the section. They forget about all of the wingman considerations. Examples: (1) Fail to roll/climb/descend using smooth controlled inputs thereby exceeding Wing's capabilities. (2) Not maneuvering properly in the working area to allow the section to move on to the next maneuver.
- 2 Wing - (1) Over-controlling the aircraft. (2) Fail to pick up relative motion and correct early.

Instructor Tips - Be patient. Give the student ample attempts at each maneuver. A 2.2-hour flight is not unusual for these sorties. If BAW is rough, take the controls and check their trim. If it is good, then bad BAW is probably due to squeezing the stick too hard. A pen through the fingers will fix that problem. You can lightly shake the stick to see how hard they are holding onto it. You will be able to tell if they have a death grip. Force Wing to hold the bearing line through all maneuvers. If they do this alone, it will make the power corrections obvious. Don't let them fixate on the ventral fin. Look at all the checkpoints and scan the whole aircraft including the pilot. Keep Lead in the same general area on the canopy. If the tendency is to be sucked, the student will be looking at lead through the front windscreen. When on bearing line and sitting naturally, the student should be looking through his side canopy glass to keep lead in sight.

F4004

Expect to conduct pattern work again but ensure you review SMA's performance in pattern on F4003 to determine the amount of attention required. Ensure a HAPL, LAPL, or PPEL has been completed on F4003.

Discuss difference in visual checkpoints for 45°AOB turns and difference in power requirements. During turns sequence, one set should be 30° AOB in each direction, second set should be 45°AOB. If discussed in brief, Cruise sequence may be demonstrated on this flight.

About half of the students will still have problems with bearing acquisition and join up for Break up and Rendezvous.

F4005 (Safe for Solo Check)

Brief - ATJ end of block review. Ensure all items are up to MIF. **This flight will also be the first time the student sees a demo and an attempt at Cruise Turns from the Cruise position. For the conduct of the Cruise Turns, use 45 degrees AOB to help in the closure rate between the Lead and Wing aircraft. Any turns less than 30 degrees AOB and less than 90 degrees of turn will not aid the wing aircraft in regaining his proper Cruise position.**

Flight - Excluding any additional contact requirements, the flight is the form solo sequence with the addition of 45° AOB (if not previously completely) **and Cruise Turns** (if not already completed) Conduct one turn in each direction and 2 B&Rs, one should be an underrun.

Student Habits - Most students who are still having problems at this stage are having trouble with the Break up and Rendezvous or Lead Change. Only small percentages have problems in other areas. The landing pattern may result in some students being unsat for the flight. SNAs tend to get behind in 45° AOB turns. It is easier to add power aggressively on the 45° AOB turns and then back off than to catch up once behind.

Instructor Tips - Give the student every opportunity to correct him or herself. Look for safe conservative habits. However, do not let them deviate from the FTL. Hold them to a standard. Do not sign off a student safe for solo if they are not. Shotgun solo is not the answer for poor performance. The student is either up to MIF or they are Unsat.

Maneuver Breakdowns/Student Habits

Head Placement - Many students will try to fly Wing by leaning forward and looking out the front windscreen. When they do this they will almost always fly sucked. So remind them to sit upright and place Lead in the front quadrant of the left or right side of the canopy. This will help put them in position and they won't be obstructed by the canopy bow.

Signals – Disclaimer: Optional signals are mandatory for the first two flights. After first two flights, optional signals are, in-fact, optional, however we “encourage” students to do them to help foster the “team” aspect of the flights. Most students will nod their head so aggressively that the aircraft will go into a 1000ft/min descent. Just tell them to nod as far down as their head will go while simultaneously keeping their eyes on lead. Don't acknowledge with the aircraft. They need to give signals using a three count (i.e. cross under) or 3 times (i.e. rollout). On the first couple of flights you will be pointing out all the area checkpoints. Don't let your student's air work deteriorate while they are looking around. Lead needs to be trimmed prior to giving any signals or he/she will cease to be a stable platform. Cadence is a problem on the first couple flights. After completing the third head nod for power or turns, ensure they add 'ready execute' to their cadence, and upon 'saying' execute, initiate the input. Remind them that all their movements should be transparent to Wing so as they add or reduce power it should be slow and deliberate. They need to keep their signals above the canopy rail.

Running Rendezvous - Beware of crossing behind Lead at low altitude, you will get a healthy dose of prop wash. Wing tends to not keep the exhaust stack buried, resulting in insufficient stepdown. SNAs will try to drive in on the bearing line vs. keeping Lead at 11 o'clock. A good transition point from the exhaust stack buried to the 20' stepdown position (and to pull power) is about the time you can read NAVY or MARINES on Leads tail section. This is the time Wing should be trimming. Discuss this in the brief and remind them during the flight.

Dash 2 Considerations - Keep the sequence moving. That means finish one maneuver and roll right into the next. Use the mirrors to help keep track of Wings position. Climbs and descents: it is easy to lose Wing initially. Keep rates of roll smooth and **constant** (goal is for turns to be at a slow rate, but if SMA rolls too quickly, just ensure the rate remains constant and stress the importance of slowing it down in the next turn). This will help Wing to match Lead's roll rate. Keep track of Wing during B&Rs.

Straight and level - Most students overcorrect initially because they are crushing the stick and making huge power adjustments. SMOOTH is the word of the day. Their left hand should rest on the power quadrant and just use their fingers vice moving their whole arm to make power adjustments. Try giving them one axis at a time. If they are gripping the stick too hard, have them put a pen through their fingers on their right hand...they must trim and grip the stick lightly. If they are having problems due to large power corrections, make a “c” around the PCL and create a bracket that they now must work within. This is designed to help create muscle memory of what small power corrections feel like. They tend to bore sight on the Ventral fin over the cutout checkpoint, so get them to scan the whole aircraft. Force them to correct step-down, bearing line and then closeness. When you demo acute and sucked, show them how to correct and talk through the three-step input process used in the correction.

Turns Into - Remind SNAs to always correct to the bearing line, then correct for relative closeness. One common problem is the tendency to drop the nose in the turn. This causes

airspeed to increase, driving Wing acute. SNAs don't anticipate power corrections into and out of turns.

Turns away - Once again if they are on bearing all they have to control is being too close or too far out on bearing. SNAs don't anticipate power corrections into and out of turns. This results in Wing becoming sucked immediately. Wing will now correct for bearing and find himself far away on bearing. This is a situation where the correct inputs go against students' nature. They need to add power and smoothly drive into lead while maintaining the bottom of lead's fuselage on the horizon. They tend, however, to instead correct with aileron and return to the sucked position, which looks much closer. All corrections come in 3's: in this case, add power to create closure, power off to stop closure and add power once motion stops to hold position. A common error is to correct, take the correction out, and not add a little power back in to maintain their new position. This pretty much applies to every maneuver. Also remember that no matter what you are doing, acute requires a turn into to get on the bearing line and sucked requires a turn away . . . regardless of the phase of flight (unless you are really out of position). Once SNAs are proficient, turns are linked, as they will be on the solo. The IP's will coordinate linking the turns over Ranger Formation Common (126.3) and then instruct their students to do so.

Cross under - The FTI tells the student to decrease power and drop down into the 20 ft step-down position. Most times the student will pull off too much power and end up sucked right away or they will not add power to stabilize and drift sucked. On the cross, most students fly with their chin. As they switch their scan from one side to the other, the jaw/wrist connection kicks in and they put aileron input in the direction their head moved and stop sucked. One way to fix this is to focus on their scan as they cross. Have them focus on the exhaust stacks tangent to the wing until they pass both, then shift their scan to the far ventral fin and watch it until they have it almost over the cutout. Another problem is not using power to control nose to tail distance. You are driving from A to B as is Lead, but you are taking the long way . . . thus you need to add power. Another problem is altitude control in the slide across. The stud needs to keep the exhaust stacks tangent to maintain step down.

Break up and Rendezvous - Wing tends to break late. It should only take as much time to come in and set torque for Lead to be abeam. This break sets the 800-1000' interval. If Lead holds altitude in the turn, both aircraft will bleed off about 8 knots. Both aircraft must rollout and reset 150 knots. Some amplification on the FTI/technique to utilize upon both aircraft rolling out is: **Airspeed** - rapidly correct to 150 KIAS utilizing power, **Altitude** - Lead correct to working altitude, Wing ensure that Lead is on or slightly below the horizon, **Power** - both a/c reset power to 630 ft-lbs after reaching 150 KIAS, **Clock** - Lead begins timing for 20 seconds, and Wing watches for Lead's wing flash. The biggest problem on the bearing line is the tendency for Wing to descend (not keep Lead on or slightly below the horizon) causing increase in airspeed. Closure will be faster initially, but will slow as you get closer to Lead. An analogy for why this is true is the runners on the track example. Wing starts in lane 1 and Lead in lane 8. As Wing gets closer, he moves from lane 1 toward lane 8. With constant airspeed, the relative speed slows as Wing gets into lanes 6 and 7. The corrections on the bearing line are sometimes counter-intuitive. If you reference the leading edge of the tail and the leading edge of wing tip . . . tail to the left of the wingtip, then you are sucked and need to turn left (away); tail to the right, there is sky between wingtip and tail (acute) and you need to turn to the right (toward). The tail should overlay the wingtip. Teach them the big picture. If they focus on checkpoints, it leads to large vertical tail movements and oversized corrections. Wing should be using $20^{\circ} \pm 5^{\circ}$ AOB to correct. The join up and

turn away positions are another problem area. For the join up position, most student's end up maneuvering down then right vice coming diagonally down and right in one smooth movement. They tend to not have enough step-down and are sucked in the join-up position. For turn away position most never use enough power on the slide and end up sucked or come up too high and fail to keep the bottom of Lead's fuselage on the horizon.

Under run - These tend to be over exaggerated. The student will dump excessive nose vice lower-level-idle. Additionally, the student will not match Lead's angle of bank until well outside the radius of Lead's turn. Force them to match leads AOB as they approach Lead's 6 o'clock. The ideal position prior to rejoin is about 11 o'clock, 3 planes back. Do not allow students to add power until they catch the bearing line utilizing aileron after safely crossing under Lead. The goal is not to arrive in the turns away parade position, it is to place the aircraft in a safe position to rejoin on Lead. Students want to verbalize the procedures vice doing them. Aviate, Navigate, and Communicate. The IP will know they are under-running . . .you probably forced it.

Lead Change - The most common error with the lead change is right at the beginning. Some students will actually pass the lead and look away. A slow response from Wing will result in both SNAs thinking they have the lead and not looking at each other. Sometimes Wing will take the lead, but continue to look at the old Lead...resulting in potential confusion. Watch their heads when they are doing the lead change to see where they are looking at. The IP in the new lead is in the best position to watch both SNAs to ensure they are looking where they are supposed to. Another error is to take too much lateral separation. It becomes dangerous when they try to turn back into Lead to correct. Not many students are very good at flying off of another aircraft that is below and slightly aft of them for any prolonged period of time. For lateral separation ask the SMA what the T-34's wingspan is. This allows them a reference of the 20 foot lateral separation that is required upon passing lead, to help them avoid opening up too far. Some confuse the AOA on the prop arc for the 20-foot step-down position in the Cross-under. Remember, you have 20 feet of lateral separation so when you are in the correct position; the ventral fin is aft of the cutout. It requires a larger than expected power addition to stop with the AOA on the prop arc. Most students drift aft of it due to insufficient power or poor closure control. The cross under is the same here except you have even farther to drive, requiring a larger power.

HFE - The Lead student will have a tendency to quickly wrap up the turn to parallel the runway and then abruptly roll out. This usually leads to Wing rapidly correcting into Lead and then just as rapidly trying to get away as Lead rolls out. Lead will at times try to give Wing more room by offsetting more for the break...don't. Lead seems to like to go deep at the 90, forcing Wing to go even deeper...don't. The idea is for Wing to fly his own pattern, but if doing so creates a dangerous situation, Wing needs to wave-off.

Cruise Formation Syllabus

CRUISE FORM Instructor Information

General

This will be the student's first introduction to three-dimensional (3D) form between two aircraft. This block of forms tends to be the most challenging block of forms for students and upgrading IP's alike. This block of forms totally encompasses all Form techniques learned in the first block of forms with the addition of precision aerobatic maneuvers, IMC parade maneuvers and more formation flown from the Cruise position.

F4201

This first flight in the F4200 block will be the most challenging for the student. Never before have the students seen anything like 3D maneuvers much less the corrections they need to make to correct for position. The flight will not be flown as and Out and In as per the Form FTL. The brief on F4201 is very important. The students shall be very knowledgeable with all maneuvers completed in the second block of forms, but be aware of the poorness of which the Cruise section of the FTL is written. Starting with the section take off, all the way throughout the flight to the section landing. In the brief the IP shall cover the entire sequence of the flight, from course rules to Foxtrot training area, the sequence at which the flight will be conducted is as follows:

1. Departure from NGP via Section Takeoff
2. Course rules to Foxtrot
3. Parade to Cruise
4. Climb up into the area
5. "Fence In" checks
6. Cruise Turns
7. Cruise Wingovers
8. Cruise to Parade
9. IFR Parade Turns
10. Break up and rendezvous with a joint up to the right
11. Cross Under
12. Lead Change
13. IFR Parade Turns
14. Parade to Cruise
15. Cruise Turns
16. Cruise Wingovers
17. Cruise to Parade
18. Break up and rendezvous to rejoin the flight
19. Cross Under

20. Lead Change
21. Parade to Cruise
22. Pass ATIS
23. "Fence Out" Check
24. Course Rules to Shamrock
25. Section Approach to NGP

A thorough briefing of both "Terminate" and "Knock it off" calls shall also be covered. Reasons for making the radio calls, and the format in which they will be made should be discussed. Brief the students on how much the IP is going to have to ride the controls to prevent a midair collision. When things go bad in the Cruise Maneuvering it gets ugly quickly, and it is the dash 2's IP's responsibility to get the aircraft to a safe position. Stress the importance of the Lead aircraft's flight parameters for Cruise Maneuvering. Upon entry to the NAS airspace, make sure the lead aircraft requests a VFR straight in approach to give tower a heads up that the section will not be coming in for the overhead break. Once given the clearance to land, the lead airplane will set up his landing downwind to give the dash 2 aircraft fresh air on landing and no prop wash to fight through. Lastly if the lead airplane lands on the side of the runway opposite the taxiway, dash 2 will have to make a "Tactical call sign, 2's Clear" call once the aircraft is under control and a stop can be made prior to the lead aircraft. This call is to let the lead aircraft know it's now safe to pass in front of the dash 2 aircraft.

F4202/4203

These flights can be flown as out and ins in the same day. Conduct of the flight will consist of weaknesses observed in the student's first flight with planning to give the students proper time to improve on those maneuvers. If any maneuvers were not completed or completed below MIF those maneuvers as well will be completed before the F4203 flight is called complete. Although there is no set sequence, the following sequence for F4202/4203 is provided as a guideline:

1. Departure from NGP via Section Takeoff
2. Course rules to Foxtrot
3. Parade to Cruise
4. Climb up into the area
5. "Fence In" checks
6. Cruise Turns
7. Cruise Wingovers
8. Complete any incomplete or Below MIF maneuvers from F4201
9. Cruise Lead Change
10. Cruise Turns
11. Cruise Wingovers
12. Cruise Lead Change
13. Complete any incomplete or Below MIF maneuvers from F4201
14. Section Approach to NGP

Maneuver Breakdowns/ Common Student Errors

Section Take Off – All signals and radio changes are the same as basic forms up to the run up signal. Upon completion of the run up signal both students will set 500 ft-lbs and check their engine instruments. Lead will then proceed to push the power up to 950 ft-lbs while Wing sets power at 1015 ft-lbs. Remember to tell the students to keep a good press on the brakes as not to roll any before take off. The dash 2 will give lead a thumbs up, lead will return the thumbs up, flatten out his fist and begin the section take off signal. Explain to the students to place their elbow as far back on the canopy rail as far back as possible as not to hit the handle and mirror during the chop. Both aircraft will release brakes when the hand chops below the canopy rail. After the role is started wing will be able to adjust power as required in order to keep position on the lead aircraft. Once approaching 60 kts lead should begin a nice, slow back stick pull to set his nose attitude for take off. As the lead begins his slow back stick pressure wing's cue to start his back stick pull is the extension of leads nose strut. At around 80 kts both aircraft will smoothly leave the ground, for the "gear up signal" keep your student at a happy medium. Don't let him keep his chin in his chest for too long, keeping dash 2 from adjusting his power, but keep the head down long enough for dash 2 to at least see it (about a 2 second count). Wing student should brief the Wing IP to check to fuel caps for them since they should not be taking their eyes off lead during the section takeoff.

IMC Turns - In some aspects these turns are easier. These turns adapt the "Welded Wing" concept. All the student has to accomplish is keeping all Parade checkpoints matched up throughout the turn into and away. As lead students want to be in too much of a hurry. Remind them of their parade rate of roll, and their wingman will be more successful in his or her attempt.

Break up and Rendezvous with a join to the right - No different from the joins to the left except the checkpoints for the starboard side. Fuel scupper drain between the legs, "NA" or "MAR" underlined by the ventral fin, and exhaust stack tangent to the leading edge of the wing. In the F4200 block B&R's will be conducted from either side of the lead airplane. Make sure as the lead IP the students breaks AWAY from wing.

Cruise Maneuvering - The hardest maneuver completed in the F4200 block! Performed from the Cruise position at 850 ft-lbs torque, maintaining the proper checkpoints and distance between aircraft throughout the maneuver. Let the student know his goal in the maneuver; Stay at a three wingspan distance and a thirty foot step down somewhere between the 45 degree bearing lines off lead until the completion of the wingover. As lead students allow themselves to get slower than 100 kts. Brief them on the importance of keeping within their airspeed parameters. If lead is at 90 kts at the top of the wingover, wing will be much slower and on the verge of stall. Anything over 200 kts the students are trading way too much altitude for that extra airspeed which is not needed to complete the maneuver. The hardest portion of teaching Cruise Maneuvering is getting the students to see the point at which they need to put in a correction for a lead or lag pursuit. Common student tendencies include allowing wing to get way too acute off lead. As soon as you see lead's horizontal stab move behind the stars and bars on the tail of the aircraft, it is time to put in a lag pursuit. Turning even farther away from the lead aircraft only puts wing in a position to pass lead on the turn.

Tail Chase – Much easier than Cruise Maneuvering, Tail Chase is an exercise that is accomplished using longitudinal lead and lag pursuits (Nose to tail). An easy way to explain to the students how to correctly fly the maneuver from dash two is describing a box in their front windscreen. Explain to the student that the only time the lead aircraft leaves the “Box” is on the initial pull, when the lead aircraft reaches the students top canopy bow begin his pull to place the lead back in the “Box.” In essence “Lag at the bottom, Lead at the top.” Very important as lead to maintain the parameters described in the FTI. 50-60 degrees nose up is very important to your dash 2 in accomplishing a correct barrel role. All these maneuvers as lead can be accomplished at 2 g’s, lead shall not pull any more than 3 g’s in the maneuvers.

Section Approach - Make sure the flight lead has the section joined up in parade before Point Shamrock for the section approach. For the radio call to Navy Corpus Tower it is very important to request a VFR straight in for the runway. As lead be very airspeed conscience lowering the gear right at 150 kts may over speed your dash 2’s gear, keep the airspeed slow enough for both aircraft to lower their gear. Just before the initial it gets very busy in the lead’s cockpit, make sure your student is thinking ahead and knows what signals to give.

Formation Stan Instructor

With form upgrade events: For the first two flights the IUT should be in the front cockpit to get the student’s view. After that, the IUT flies in the rear cockpit. Stan instructor should take controls from time to time in order to fly proper checkpoints for the front cockpit as per the FTI so that the IUT in the rear cockpit can see what checkpoints he/she needs to use in the rear. Form upgrade events are a great opportunity for Out and Ins. Don’t go overboard and fly all the upgrade events on the road, though. At least two flights should be flown locally so the IUT can see all course rules, including CRP ops and Ingleside landmass for HAPLs, LAPLs and PPELs. In addition, when flying locally, full form profiles can be flown with plenty of time to practice all the maneuvers and techniques without worrying about reaching your destination. Finally ensure at least two flights incorporate cruise turn practice for the F4005 Cruise form demo. Emphasis should be placed on smoothly controlling cruise position using radius of turn.

For Cruise Form IP upgrades, the IUT will occupy the front seat on the first flight to get the student’s view. All subsequent flight will be conducted from the rear cockpit. Cruise form upgrades ARE challenging. IUT will show up with a good working knowledge of the sequence and all aspects of the new maneuvers introduced in the Cruise Form block of training.

VNAV

VNAV Instructor Information

This is the shortest syllabus in the entire program, therefore it is imperative you get as much as you can out of each flight. Students are expected to show up knowing the FTI and have a flight plan plotted on their chart, as well as the Jet Log completed. If they do not, it is grounds for a RRU. On cross countries, students should plan at least one leg in its entirety, with allowance for “on the fly” routes for weather, destination changes, etc. The route should have at least 8-10 points with MSA and Route Abort Altitude computed. For local routes, students shall come with

both the north and south routes planned. Refer to COMTRAWINGFOURINST 3710.11 for the required routes.

Share with students your experiences in flight school and the fleet to emphasize the importance of knowing how to navigate visually, using charts for mission accomplishment, etc.

Emergency Procedures

Emergency Procedure Mnemonics (Knowing the mnemonic alone is not adequate knowledge, use only once procedure is memorized cold)

Engine Failure during Flight

- Speed
- Clean
- Check
- Feather
- Look
- Lock
- Airstart (> 1,500', No MOVEOFF)
- Bailout
- Emergency Engine Shutdown - Execute
- Mayday, Mayday
- Configure it (Enter ELP, Gear and Flaps as required, Canopy, Battery)

Condition for NOT attempting an Airstart (MOVE-OFF)

- Mechanical Failure
- Overheat
- Vibration
- Explosion
- Overheat
- Fire
- Fumes (strong)

Precautionary Emergency Landing

- Turn
- Climb (or accelerate)
- Clean
- Check
- Determine
- Deliver
- Reduce
- Lower
- Enter Profile

Smoke or Fume Elimination (ORC-C)

- Oxygen 100% Don
- Reduce airspeed
- CEC/AFT cockpit outside air– Fresh air increase
- Canopy Emergency Open (if required)

Electrical/Wing/Unknown Origin FireLocate & Isolate

- | | |
|---|--|
| <ul style="list-style-type: none"> • VMC (BG-ORC-FLR) • Battery – OFF • Generator – OFF | <ul style="list-style-type: none"> • IMC (UN-ORC-BL) • Utility Bus Switches – OFF • Nonessential Equipment – OFF (NG-TV-LAST) |
| <ul style="list-style-type: none"> • Oxygen 100% – DON • Reduce Airspeed • CEC – Off/Aft cockpit air – OFF • Fire (Eng Fire proc if fire persists) • Land ASAP • Restore electrical power | <ul style="list-style-type: none"> • Oxygen 100% – DON • Reduce Airspeed • CEC – Off/Aft cockpit air – OFF • Bailout (if fire persists) • Land ASAP |

Nonessential Equipment (NG-TV-LAST)

- NACWS
- GPS
- TACAN
- VOR
- Landing/Navigation Lights
- Air conditioner
- Strobe Lights
- Transponder

Bailout

- Crew
- Canopy
- Cords
- Harness
- Crouch
- Dive
- Pull
- Optional Items
 - Slower & Lower
 - Talk & Squawk
 - Turn-off & Turn away

Out-of-Control Recovery

- Neutralize
- Idle-ize
- Analyze (Altitude, AOA, Airspeed, Turn Needle)
- Clean Up (Gear & Flaps – UP)
- Recover Up (Anti-spin/OCF inputs & recovery from unusual attitude)

Ditching

- Speed
- Clean
- Check
- Feather
- Look
- Lock
- Airstart (> 1,500' and no MOVEOFF)
- Bailout
- Emergency Engine Shutdown - Execute
- Configure it (Flaps down, Canopy)
- Optional items: (B-MOP)
 - Battery - OFF
 - Mayday, Mayday
 - Oxygen Mask – Remove
 - Parachute – UNFASTENED
- Exit & Inflate

Utility Bus Switch No. 1 (BIG-N-TV-FORT)

- Vent Blower
- Instrument, Console, Flood and Utility Lights
- GPS
- NACWS
- TACAN
- VOR
- Fuel Quantity
- Oil Pressure & Temperature
- RMI (Forward & Aft)
- Transponder

Utility Bus Switch No. 2 (BARF)

- Beta Release
- Air conditioning
- RMI (Compass)
- Flap Power & Position

Power settings without torque indications:

PEL descent	205 ft-lbs	77-80% N1	150-175 pph
Normal cruise	650 ft-lbs	85-87% N1	200-225 pph
PEL climb	850 ft-lbs	90% N1	250-275 pph
VMC-FOUO (~120 kts)	300 ft-lbs	81% N1	175-200 pph

- These are estimates and will change with altitude

Headwork, Systems, and Emergency ProceduresLoss of Useful Power: Rollback

14.2.1 ...typical of a fuel control unit pneumatic sensing system malfunction.

- A loss of the FCU's pneumatic function means a loss of fuel topping and torque limiting. Therefore, in addition to all of the NATOPS guidance on the use of the EPL keep in mind that you have no torque limiting as you set power for the PEL climb.

14.2.1 (Note) ...maintain N1 above 65% to ... ensure the generator stays on line.

- In a low power situation (such as a descent) with a small rollback, your first indication of the rollback may be a GEN OFF light.

14.2.1 (Last Paragraph) If application of power results in compressor stall indications...execute Compressor Stall procedure...

- Don't forget to disengage the EPL as your first step, instead of retarding the PCL below stall threshold, since the use of the EPL during compressor stalls is a Warning.

Precautionary Emergency Landing (PEL)

14.5 The purpose of the PEL is to maneuver the aircraft to intercept the emergency landing pattern (ELP) as soon as possible.

- You are a NATOPS pilot first and foremost. You will achieve the highest possible rate of descent by retarding the power lever to idle, lowering the gear, and descending at 140 knots while conducting 45-60 degree AOB clearing turns straight into high key or even the runway if needed. Do not perform this maneuver with SNAs, but make sure you are comfortable flying the profile. Additionally, if you are in a situation where you have simulated that you have already shut down the engine and still want to expedite the descent, you will need to leave the power at 205 ft-lbs to simulate the feathered condition.

Uncontrollable High Power

14.6 (Warning) Certain failures can cause wide power surges from maximum to as low as minimum fuel flow. Engagement of the EPL ... may raise the low end of the surges ...

- Advancing the EPL lessens the severity of the low-end fluctuations, which are caused by activation of the primary governor fuel topping mode. Furthermore, we usually simulate this emergency by holding the PCL in place but in reality the PCL will move freely.

Electrical/Wing/Unknown Origin Fire

- When reducing the airspeed, plan on slowing between 90 and 120 knots so that you are in the optimum bailout window if the fire persists.
- After turning the battery and generator off during VMC conditions, you will have no torque indications. Use approximately 81% N1 for about 120 knots.

In-flight damage/Binding Controls

- In choosing an altitude in which to check the flight characteristics of the aircraft, consider the changes in engine performance at extremely high altitudes. Additionally, the oxygen mask is yet another thing to remove if you are in an unrecoverable OCF condition. Consider 9,500' to 10,000'. No O2 mask required and if you cannot recover the aircraft within 5,000' it is probably not going to be recoverable.
- Consider making a no-flap approach so that you do not have to change the stresses on the wing by changing its lift and drag components unnecessarily. Higher airspeeds on final will also increase control effectiveness.
- As you check the aircraft handling characteristics in the landing profile, fly a simulated box pattern to a straight-in approach. Setup a descent as if coming in for the landing to a simulated hard deck and check your wave-off capability.

Engine-driven Boost Pump Failure

- Since the internal and external oil scavenge pumps are driven by the same shaft as the engine-driven boost pump, consider using 850 ft-lbs in the PEL. However, if you are working at low altitudes, such as the South Mudflats, you may want to use 1015 ft-lbs to ensure you can make a runway and monitor closely for secondary indications of an oil system malfunction. NATOPS does not restrict your use of power in this emergency.

Generator Failure

- While on battery power, fuel quantity gauges will slowly go to zero as the voltage decreases.

Fuel Leaks or Siphoning

For a PPEL(P), you have time to secure the landing, navigation, and strobe lights along with the pitot heat.

For a PPEL in which you have time to secure all of the circuit breakers, be sure both pilot verify DOWN & LOCKED indication before pulling the landing gear position indicator circuit breakers. They will barber poll once pulled.

Malfunction Set Up for the Aircraft

Prestart Malfunctions		
Malfunction	Setup	Notes-Cautions-Warnings
No flashing master caution during annunciator test.	IP - Press the annunciator test at the same time as the student.	Scan item
LH/RH Open light does not extinguish on test.	IP - Press & <u>hold</u> the "Gear Door Test" at the same time as the student.	Scan item

Ground Malfunctions and Emergencies		
Malfunction	Setup	Notes-Cautions-Warnings
No start Hung start Hot start	IP - Announce appropriate malfunction.	CAUTION - IP must ensure the malfunction is initiated and the proper procedures executed within 20-seconds of starter engagement to avoid exceeding the starter's 40-seconds limit during the 20 seconds of motoring. CAUTION - Ensure a second start is not attempted for 60-seconds minimum (starter limit).
Fire on start	IP - Signal the lineman to give the fire signal or announce over ICS. IP - If student is to evacuate the aircraft, unstrap prior to initiating the emergency. After calling for the evacuation, position yourself next to the SNA as the procedures are completed to prevent accidental actuation of the parachute.	CAUTION - Do not allow student to pull the Canopy Emergency Open.
No rise during "Propeller Overspeed Governor Test"	IP - Press and hold the test switch. Or IP - Retard the condition lever to the "R" in "RPM" prior to starting the test.	NOTE - Retarding the condition lever will set the prop governor speed at or below the overspeed governors test speed of 1950-2150.

Ignition light remains on following auto-ignition test.	IP - Turn auto-ignition switch on along with student, but do not turn it off.	Scan item
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Ground Malfunctions and Emergencies (continued...)		
Malfunction	Setup	Notes-Cautions-Warnings
Trim tab scan	Set rudder trim to 6 (where green line is on other end.)	
Flap malfunction	IP - Position the flap switch to off prior to reaching full extension/retraction.	Scan item
Binding controls	IP - Block controls during control check.	
RMI misaligned during "Instruments" check.	IP - Take avionics command at some point during the runup. Select DG and manually slave the gyro off heading.	
ITT above 610 degrees prior to shutdown.	IP - Discuss note in CH. 4 that high ITT may be decreased by reducing accessory load and/or increasing N1 speed.	Discussion item
Abnormal ITT during shutdown	IP - announce rise in ITT following shutdown and signal the lineman prior to motoring the engine. IP - If student is to evacuate the aircraft, unstrap prior to initiating the emergency. After calling for the evacuation, position yourself next to the SNA as the procedures are completed to prevent accidental actuation of the parachute.	CAUTION - Do not allow student to pull the Canopy Emergency Open.
Fire on the ground	IP - Announce the condition over ICS. IP - If student is to evacuate the aircraft, unstrap prior to initiating the emergency. After calling for the evacuation, position yourself next to the SNA as the procedures are completed to prevent accidental actuation of the parachute.	CAUTION - Do not allow student to pull the Canopy Emergency Open.

Ground Malfunctions and Emergencies (continued...)		
Malfunction	Setup	Notes-Cautions-Warnings
Fire prior to shutdown	IP - Signal the lineman to give the hand signal for fire. IP - If student is to evacuate the aircraft, unstrap prior to initiating the emergency. After calling for the evacuation, position yourself next to the SNA as the procedures are completed to prevent accidental actuation of the parachute.	CAUTION - Do not allow student to pull the Emergency Shutdown Handle or to pull the Canopy Emergency Open.
Brake failure during taxi	IP - Announce brake failure on L/R side.	CAUTION - IP shall plan the malfunction with the greatest open area on the "good" brake side of the aircraft to avoid collision with ground object due overuse of the good brake.
Hot brakes	IP - Announce hot brakes or simulate call from Ground/Tower.	NOTE - Discuss techniques for brake cooling.
Strike of a ground object during taxi.	IP - Announce simulated strike.	

Takeoff Malfunctions and Emergencies		
Malfunction	Setup	Notes-Cautions-Warnings
Aborted takeoff for any emergency accompanied by a Master Caution	IP - Take electrical command prior to takeoff. IP - On takeoff roll switch the generator to off (the battery will assume the electrical load). Once the student successfully aborts the IP should call out the annunciator light for the procedures he is testing.	CAUTION - IAW FTI the IP shall ensure initiation of the abort prior 1500' and/or 60 knots. CAUTION - IP shall ensure a minimum of 4,000' remain for a midfield takeoff. CAUTION - IP shall ensure the generator is reset and the annunciator light is out prior to takeoff.

<p>Aborted takeoff for other malfunctions.</p>	<p>IP - Announce "Simulated...streaming fuel, fire light, chip light, fluctuation oil pressure, rapidly rising ITT or bird strike as appropriate."</p>	<p>CAUTION - IAW FTI the IP shall ensure initiation of the abort prior 1500' and/or 60 knots.</p> <p>CAUTION - IP shall ensure a minimum of 4,000' remain for a midfield takeoff.</p> <p>CAUTION - Aborted takeoffs for simulated blown tires SHALL NOT be practiced due to severe controllability problems caused by students who stomp the "good" tire brake while aborting.</p>
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(Continue adding scenarios – Setup various ways to get into HAPL/LAPLs. Reinforce MOVEOFF scenarios. These setups should be used by NATOPS IPs and regular SNA flights so including complex scenarios for IUTs to handle is appropriate.)

OPNAVINST 4790.2: The Maintenance Manual

Chapter 12

"A" Sheet. The pilot-in-command shall review the ADB for aircraft discrepancies and corrective actions for at least the 10 previous flights and shall sign block 11 of the Aircraft Inspection and Acceptance Record (OPNAV 4790/141), assuming full responsibility for the safe operation of the aircraft and the safety of the other individuals aboard. The Aircraft Inspection and Acceptance Record (OPNAV 4790/141) provides for:

- The pilot's acceptance of the aircraft in its present condition.
- Identification of aircraft by BUNO, T/M/S, and reporting custodian.
- Certification of an aircraft's readiness for flight by maintenance personnel, and a record of fuel, oil, oxygen, expendable ordnance aboard, special equipment, and limitations.

The "A" sheet shall remain at the place of first takeoff. If the aircraft is away from home, the record will be maintained by the transient host activity until safe completion of the flight.

Daily Inspection. This inspection is conducted to inspect for defects to a greater depth than the turnaround inspection. The daily inspection is valid for a period of 72 hours commencing from the date and time the inspection is **completed**, provided no flight occurs during this period and no maintenance other than servicing has been performed. Aircraft may be flown for 24 hours without another daily. This 24 hour period begins with the first launch following accomplishment of the daily inspection. The 24 hours cannot exceed the 72 hour expiration of the daily unless the expiration occurs during a mission. In this case the aircraft will require a daily before the next flight. Turnaround requirements are not included in the daily inspection and must be accomplished separately. Accomplishment of a turnaround does not affect the 72 hour validity of the daily inspections. COs may authorize pilots-in-command to conduct applicable

inspection, ensuring servicing requirements are accomplished, and sign the Aircraft Inspection and Acceptance Record (OPNAV 4790/141) in the certification block while operating away from home without qualified maintenance personnel for periods not exceeding 72 hours. Accomplishing these requirements, rather than completing all daily, turnaround, and fuel sampling requirements, is sufficient for safe for flight certification.

Turnaround Inspection. This inspection is conducted between flights to ensure the integrity of the aircraft for flight, verify proper servicing, and to detect degradation that may have occurred during the previous flight. The turnaround inspection may be considered valid for a period of 24 hours commencing from the date and time the inspection is completed, provided that no flight and no maintenance other than servicing occurs during this period. The accomplishment of the daily inspection does not satisfy the turnaround inspection requirements (except for the T-34C). Accomplishment of a turnaround inspection is not required if cold refueling T-34C/T-44A Training Command aircraft between flight evolutions when the pilot in command remains the same (Quick Turn). All applicable **NATOPS** checklists shall be complied with during ground periods. When servicing or other minor maintenance is performed between Quick Turn flights, only those portions of the turnaround inspection applicable to that servicing or maintenance need to be performed, as directed by Maintenance Control. This is not intended to limit commands from exercising their prerogative of performing inspections they deem necessary.