

TW-1 Out-of-Control Flight (OCF) Stage Supplement

1. Purpose

This TW-1 document is provided as a local supplement only where procedures differ or are not included to sufficient depth in the Flight Training Instruction (FTI). This document does not countermand any procedures published in the current NATOPS or OCF FTI, but sets forth standard practices in the OCF syllabus to ensure IUTs and SNAs get the most out of these flights prior to the FAM solo, and later in the dynamic environment of ACM.

2. Intro

a. Flight at high AOA and slow airspeeds is an inherent part tactical maneuvering. We, as aviators, strive to maximize the performance of our aircraft while still maintaining the boundaries of the envelope. As such, potential exists at times to find ourselves outside the envelope. This is where knowledge, recognition, and solid procedures can come together.

b. Standardization in the OCF syllabus begins with basic knowledge of aerodynamics, lessons learned through experience, and solid application of NATOPS. Chapter 11 (Flight Characteristics) provides valuable information on the flight characteristics of the T-45 in many regimes based on actual flight test information, as well as information on engine stall and flameout characteristics, and airstart operations. Chapter 4 (Operating Limitations) addresses engine and GTS limitations (to include start/airstart) and prohibited maneuvers.

c. Solid execution of procedures is *the* most important thing to master in the OCF environment. Knowing NATOPS procedures cold and applying them correctly will allow you to return you and your aircraft to the line undamaged to fly another day. Accuracy is more important than speed, but combining the two is best. Time distortion can create a feeling that time is passing faster than it really is, causing you to rush procedures and lead to a reluctance to hold the proper inputs long enough. This is why it is imperative to recite procedures out loud - deliberately and accurately. For foreign students, it should be stressed that English is not the primary concern. The bottom line is accuracy. Learning an exact translation of the procedures in the native language can help. When in the aircraft, it's more important to get it correct than to be passing 10k while stumbling over the English. The OCF environment is an unforgiving arena if you can not apply knowledge, limitations, and procedures *cold*.

3. Brief

a. Refer to the Master Curriculum Guide for the exact items to be conducted during the flight. The 1v0 maneuvers will be flown after the curriculum departures are completed. The flight is DEMO / DO, and only headwork and procedures will be graded.

b. Most of the demonstrations of timed turns, accelerations, etc., have real world applications and provide students with a better understanding of why and how those maneuvers apply to the ACM environment.

4. Clearance/Working Area

There are several areas in which to do spin training, but it is recommended to use Area 1 or 4. Either is easy to get into via a CARP/SHAD call sign, but remember: you are limited to FL 230. This means that departure entries have to be started **at 14k'** to remain within the vertical area limits while providing adequate altitude for recovery. With multiple OCF flights, the only option will be to use all areas available. Generally VT-7 uses Area 1 and VT-9 uses Area 4. Follow standard FAM course rules and procedures for the respective area. Ground reference is required.

5. Configuration

Make sure that the jet you are using ***does not*** have pylons on it. This is particularly relevant in the case of an event change (i.e. write-ins). If the ODO generates a pop-up OCF hop, confirm with maintenance that the aircraft does not have pylons.

6. Instruments

The most important instruments during an OCF hop are the standby turn and slip indicator and the AOA gauge. During taxi, ensure that both cockpit instruments float freely and ensure there are no off flags in the AOA gauges. It is up to the instructor's best judgment to continue a hop with a student's turn needle stuck, as long as the IP's needle is good. It must be stressed that these same instruments be checked prior to ***all*** ACM flights.

7. Communication

OCF flights require an operable ICS and the entire Spin portion will be conducted in "hot mic."

8. Syllabus Maneuvers (only Part a. will be conducted on the OCF-2X)

a. Departure/OCF:

1. **Deep Stall Investigation:** Start the maneuver at 20K / IDLE to investigate 20-21, 24-26, and 28-30 AOA. Ensure recovery by 10K (11K if target is hot).

2. **70 / 110 deg Departures:** Begin maneuvers at 300 KIAS / 350 KIAS respectively, and 14K.

3. Lateral Stick Adverse Departure: Begin at 275 KIAS and 20K. **Rudder will be neutral throughout the set-up and recovery.**

b. **ACM DEMO Items (1v0)**: Once departures are complete, the IP will demo/introduce 1v0 maneuvers. Reposition the CAUG switch to ALL. At a minimum the following should be accomplished:

- **GWARM**: Per TACFORM FTI.

- **Break Turn**: Enter at 15K and 300 KIAS. Stress 10 percent rule to the deck (ie, 30deg nose low for 3K' above deck, 20deg for 2K', 10deg for 1K').

- **Extension / Pitchback**: Enter at 15K, unloading aircraft to a minimum of 350 KIAS. Execute Break Turn to simulate defeating notional bandit's valid FOX-2.

- **Sustained Turns**: Complete one at 400 KIAS, one at 330 KIAS. Incorporate a deck transition using the 10 percent rule to teach deck awareness.

- **Flat Scissors demo**: Enter at 13K / 250KIAS using ACM PADSS. Strive to fly aircraft at 18-20 degrees nose high pitch attitude, 130 \pm 5 KIAS, and 22 units AOA once established. Turns should be attempted with coordinated aileron and rudder, but mostly with rudder.

- **Rolling Scissors demo**: Enter at 16K / 250KIAS using ACM PADS. The student is striving to fly good numbers over the top and on the bottom. IP's emphasize when to go to idle and lift vector placement.

- **Acceleration Demo**: Timed from 300 to 350 level 16K, then 300 to 350 during unload.

- **Slow loops (optional)**: At 300, and 250. Stress the importance of wings level pull, and airspeed at the top (85 KIAS throttle to idle)

- **Split S (optional)**: At 180 KIAS from 16K, to recover above 10K.

9. **RTB**

- a. If gas allows, setup for a PA to a full stop, or a PA to tower downwind.