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SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 11-2T-37,  
VOLUME 3**

**15 MARCH 2002**

**Flying Operations**

**T-37B OPERATIONS PROCEDURES**



**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This AFI implements AFD 11-2, *Aircraft Rules and Procedures*, and AFI 11-202, Volume 3, *General Flight Rules*. This instruction prescribes standard operational and weapons employment procedures to be used by all pilots operating Air Force T-37B aircraft. File a copy of all approved waivers with this instruction. **Attachment 1** contains a glossary of references and supporting information. This publication applies to Air Force Reserve Command pilots flying T-37 aircraft; it does not apply to the Air National Guard.

According to AFD 11-2, MAJCOMs will forward proposed MAJCOM-level supplements to HQ USAF/XOOT through HQ AETC/DOFV for approval prior to publication. After approved and published, one copy of each MAJCOM-level supplement will be sent to HQ USAF/XOOT, HQ AETC/DOFV, and user-MAJCOM OPRs. Field units below MAJCOM level will supplement this instruction with local operating procedures and forward a copy of their supplement to the parent MAJCOM OPR for postpublication review. See paragraph **1.5** of this AFI for guidance on submitting comments and suggesting improvements to this instruction.

The Privacy Act of 1974 applies to certain information gathered pursuant to this instruction. The Privacy Act System Number F011 AF XO A, Aviation Resource Management System (ARMS), covers required information. The authority for maintenance of the system is 37 U.S.C. 301a, *Incentive Pay*; Public Law 92-204, Section 715, *DoD Appropriations Act for 1972, December 18, 1971*; Public Law 93-294, *Aviation Career Incentives Act of 1974, May 31, 1974*; Public Law 93-570, *Continuing Appropriations, 1975, February 25, 1975*; DoD Directive 7730.57, *Aviation Career Incentive Act and Required Annual Report, February 5, 1976*; and Executive Order 9397, *Numbering System for Federal Accounts Relating to Individual Persons, November 22, 1943*. The Paperwork Reduction Act of 1995 affects this instruction.

Maintain and dispose of records created as a result of processes prescribed in this publication in accordance with AFMAN 37-139, *Records Disposition Schedule* (will become AFMAN 33-322, Volume 4).

This instruction contains references to the following MAJCOM-level publication which, until converted to a department-level publication, may be obtained from the respective MAJCOM publication office: AETCM 3-3, Volume 2, *Mission Employment—Primary Flying, T-37* (projected to be AFMAN 11-2XX).

**SUMMARY OF REVISIONS**

**This document is substantially revised and must be completely reviewed.**

This revision incorporates interim changes and guidance issued since initial publication. **Chapter 3**, Normal Operations, was restructured by adding a preflight paragraph to include the requirement to use visual signals for communicating with ground personnel and expanding taxiing guidance. This revision expands discussion of spacing requirements when landing behind similar or dissimilar aircraft and adds a requirement to make a “gear clear” call on takeoff. A Maneuvering Parameters paragraph was added to enhance organization of information. Prohibited maneuvers were added, as well as a discussion covering loss of visual contact during formation. Functional check flight restrictions were added to **Chapter 4**, and **Chapter 5**, Local Operating Procedures, was eliminated. (Units are expected to describe local procedures as a supplement to this instruction.) The Spin Training Program was added as a new **Chapter 5**.

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## Chapter 1

### GENERAL INFORMATION

**1.1. Scope.** This instruction outlines the procedures applicable to the safe operation of the T-37B. Along with the complementary references cited, this instruction prescribes standard operational procedures to be used by all pilots operating T-37B aircraft. Units will provide local operating procedures in the supplement to this publication.

**1.2. Pilot Responsibilities.** In conjunction with other governing directives, this instruction prescribes T-37B procedures under most circumstances, but it is not to be used as a substitute for sound judgment or common sense. The pilot in command (PIC) is ultimately responsible for the safe and effective operation of the aircraft.

**1.3. Deviations.** Deviations from the procedures outlined in this publication require specific approval of the MAJCOM director of operations (DO) unless an urgent requirement or aircraft emergency dictates otherwise. In that case, the PIC will take the appropriate action to safely recover the aircraft.

**1.4. References.** The primary references for T-37B operations are technical order (T.O.) 1T-37B-1, *Flight Manual, USAF Series, T-37B Aircraft*; AETCM 3-3, Volume 2, *Primary Flying, T-37* (projected to be AFMAN 11-2XX); and this instruction. Training units may develop phase manuals from the procedures contained in these documents. Phase manuals may be used to augment initial and mission qualification training. They may expand these basic procedures, but will *not* be less restrictive.

**1.5. Recommended Changes and Waivers.** Submit suggested improvements to this instruction on AF Form 847, **Recommendation for Change of Publication**, to the parent MAJCOM through standardization/evaluation channels. Parent MAJCOMs will forward approved recommendations to HQ AETC/DOFV. In accordance with AFPD 11-2, HQ USAF/XO is approval authority for changes or revisions to this instruction; the MAJCOM DO is waiver authority. Submit waiver requests in message or memorandum format.

**1.6. Definition of Student.** The term "student" refers to any student pilot enrolled in joint specialized undergraduate pilot training (JSUPT) or Euro-NATO joint jet pilot training (ENJJPT).

## Chapter 2

### MISSION PLANNING

**2.1. Responsibilities.** The responsibility for mission planning is shared jointly by the individual pilots and the operations functions of organizations.

#### **2.2. General Procedures:**

2.2.1. Accomplish sufficient flight planning to ensure safe mission accomplishment. AFI 11-202, Volume 3, and applicable supplements, specify minimum requirements.

2.2.2. Compute takeoff and landing data (TOLD) for all flights. MAJCOM-approved tab data may be used when available.

#### **2.3. Briefings and Debriefings:**

**2.3.1. Minimum Briefing Times.** The minimum briefing time between takeoff and start of the mission briefing is 1 hour. For off-station, low-level navigation sorties, 1 hour and 45 minutes is the minimum briefing time.

##### **2.3.2. Briefing Guides:**

2.3.2.1. Copilots, students, and passengers will be briefed on their specific duties and responsibilities related to safe mission accomplishment to include in-flight discipline. Aircrews will refer to the appropriate briefing guides located in [Attachment 2](#) through [Attachment 5](#) and brief applicable items before each mission. **NOTE:** Briefing guides are reference lists of items that may apply to particular missions.

2.3.2.2. Items listed may be briefed in any sequence. Those items covered by written squadron standards and understood by all participants may be briefed as "standard." Each guide may be expanded as necessary to cover other important items of the flight. Brief only those items applicable to the particular mission and in sufficient detail to prevent any misunderstanding between crewmembers.

2.3.2.3. Prior to solo briefings, students will develop primary and alternate mission profiles. Solo students will not deviate from the briefed primary or alternate mission profile.

2.3.2.4. The flight briefing will be structured to accommodate the capabilities of each pilot in the flight.

2.3.2.5. An alternate mission will be briefed for each flight. The alternate mission will be less complex than the primary mission, but should parallel the primary mission. If not parallel, specific mission elements that are different will be briefed. Missions or events not briefed will not be flown. Mission elements or events may be briefed airborne if practical and flight safety is not compromised.

2.3.2.6. All missions will be briefed and debriefed, using the applicable briefing guide as a reference.

#### **2.4. Unit-Developed Checklists and Local Pilot Aids:**

2.4.1. Unit-developed checklists may be used instead of flight manual checklists if they contain, as a minimum, all items (verbatim and in order) listed in the applicable flight manual checklist.

2.4.2. Unit-developed pilot aids will include, as a minimum, the following items:

2.4.2.1. Briefing guides.

2.4.2.2. Local ultra high frequency (UHF) channelization.

2.4.2.3. Appropriate airfield diagrams.

2.4.2.4. Emergency information (impoundment procedures, emergency action checklists, no radio [NORDO] or divert information, etc.).

2.4.2.5. Barrier information at divert bases.

2.4.2.6. Bailout and jettison area.

2.4.2.7. Cross-country procedures to include command and control, engine documentation, Joint Oil Analysis Program (JOAP) samples, and aircraft servicing.

2.4.2.8. Other information as deemed necessary by the unit (for example, stereo flight plans, turn-around procedures, local training areas, instrument preflight, and alert setup procedures).

## Chapter 3

### NORMAL OPERATING PROCEDURES

#### 3.1. Preflight:

**3.1.1. Visual Signals.** Pilots will ensure that systems that could pose any danger to the ground crew are not activated before receiving proper acknowledgment from ground personnel. When ground intercom is not used, visual signals will be in accordance with AFI 11-218, *Aircraft Operation and Movement on the Ground*, and this instruction. The crew chief will repeat the given signal when it is safe to operate the system.

#### 3.1.2. Required Equipment:

3.1.2.1. If sufficient light exists, each crewmember will use a visor from takeoff through the 10,000-foot check and after the descent check to landing. Use the clear visor at night or when needed for restricted visibility.

3.1.2.2. On nonlocal sorties, each aircrew will carry a computer, publications, and a suitable terrain chart to cover the proposed route of flight. On sorties that will be completed on or after official sunset, each aircrew will carry an operable flashlight.

**3.1.3. Aircraft Systems.** Students will not fly solo in aircraft requiring an operational check. Operational checks may be performed during dual student training sorties if they do not interfere with the training objectives.

**3.1.4. Canopy Operation.** The canopy will be full open or down and locked during engine starts and taxi operations.

**3.1.5. Equipment Stowage.** Do not stow clothing or personal items in areas that may interfere with normal canopy operation, the ejection sequence, or equipment operation. Small articles may, however, be stowed in the right nose compartment.

**3.1.6. Foreign Object Damage (FOD).** To reduce the risk of FOD during ground operations:

3.1.6.1. Do not place objects on the cockpit glare shield.

3.1.6.2. Do not allow personnel to approach the intake area of an operating engine.

3.1.6.3. Do not place arms on open canopy rails.

3.1.6.4. Avoid using excessive power during ground operations.

3.1.6.5. Avoid prop or jet blast from other aircraft.

3.1.6.6. Ensure loose items are secure in the cockpit before opening the canopy with an engine running.

3.1.6.7. Do not pass objects over the canopy rail unless the engine on that side has stopped rotating.

#### 3.2. Taxiing:

3.2.1. Do not taxi with less than 25 feet of wingtip obstacle clearance unless using a marshaller in conjunction with a wing walker at each affected wingtip. When obstacles affect only one wingtip, the

marshaller may also act as the wing walker and direct the aircraft while monitoring the affected wingtip. This requirement does not apply at the home station when fixed taxi routes are marked and provide a minimum of 10 feet of wingtip clearance from obstacles and other aircraft. The 10-foot restriction is waived for support equipment at the home station provided the equipment is no closer than 4 feet and in a designated and marked location and a marshaller is being used.

3.2.2. During times of darkness or reduced visibility, obstacles must be lighted during taxi operations.

3.2.3. Avoid taxiing too close behind other aircraft. Maintain a minimum of 75 feet when staggered and 150 feet when in trail. Use caution when approaching or holding for the active runway.

3.2.4. Do not taxi during ice and/or snow conditions until all portions of the taxi route and runway have been checked for safe conditions. When ice and/or snow are present on the taxiway, taxi on the centerline with a minimum of 300 feet of spacing.

**3.3. Takeoff and Landing.** During engine runup, the crewmember not in control of the aircraft will guard and be ready to assume control of the brakes in case of rudder pedal rod end failure.

**3.3.1. Fuel.** Aircraft must have a full fuel load for all takeoffs. This requirement may be waived by the operations group commander. (*NOTE:* This restriction does not apply to the solo portion of a student's initial solo sortie.) The different categories of fuel include:

**3.3.1.1. Joker Fuel.** A prebriefed fuel state needed to terminate an event and transition to the next phase of flight.

**3.3.1.2. Bingo Fuel.** A prebriefed fuel state that allows the aircraft to return to the base of intended landing or alternate, if required, using preplanned recovery parameters and arriving with normal recovery fuel.

**3.3.1.3. Minimum and Emergency Fuel.** Declare minimum fuel or emergency fuel to the controlling agency any time it becomes apparent the fuel remaining at final touchdown will be less than the requirements indicated in paragraphs **3.3.1.3.1.** and **3.3.1.3.2.** State your position and fuel remaining in pounds and add the minimum or emergency fuel call to all subsequent traffic pattern calls.

3.3.1.3.1. Minimum fuel--250 pounds (350 pounds for all solo student sorties).

3.3.1.3.2. Emergency fuel--200 pounds or less.

**3.3.2. Oxygen.** Minimum oxygen for takeoff on all local sorties is 300 pounds per square inch (psi).

**3.3.3. Runway:**

3.3.3.1. Minimum runway length for T-37 operations is 5,000 feet and minimum runway width is 75 feet. An intersection takeoff must provide 5,000 feet of usable runway. T-37 operations require 5,000 feet between arresting cables located on or above the runway surface. This restriction does not apply to alternate or emergency airfields.

3.3.3.2. Category III operations are prohibited.

3.3.3.3. Zero flap touch-and-go landings will not be accomplished when standing water is reported on the runway in the takeoff or landing zone.

*NOTE:* Operations group commanders may waive Category III or minimum runway length restrictions in unusual circumstances.

### 3.3.4. Spacing:

3.3.4.1. Do not begin the takeoff or cross the runway threshold to land until preceding aircraft are airborne, clear of the runway, or a minimum separation of 3,000 feet exists when using alternate sides of the runway. Minimum separation is 6,000 feet when not using alternate sides.

3.3.4.2. Do not begin the final turn after a straight-in has reported 2 miles unless you have the straight-in in sight, can make a normal final turn, and can maintain spacing behind the straight-in.

3.3.4.3. When landing on alternate sides of the runway or when the preceding aircraft has cleared to the cold side of the runway, minimum pattern and touchdown spacing between landing aircraft is 3,000 feet for similar aircraft (for example, T-37 versus T-37), 6,000 feet for dissimilar aircraft (for example, T-37 versus F-15), or as directed by the MAJCOM or the landing base, whichever is higher. Increase the spacing when wake turbulence is expected due to calm winds or when landing with a light tail wind.

**3.3.5. Rolling Takeoffs.** Only perform rolling takeoffs single ship during daylight or extended daylight hours with a rated pilot on board.

**3.3.6. Crosswind Limitations.** Solo students and solo fixed-wing qualification trainees are restricted to a crosswind component of 13 knots (a 70-knot nosewheel liftoff/touchdown [NWLO/TD]). Students will not perform touch-and-go landings when the NWLO/TD speed exceeds 90 knots. This restriction does not apply to pilot instructor training (PIT) courses or pilot qualification training.

**3.3.7. Raising the Landing Gear.** When airborne, before moving the gear handle, the pilot flying the aircraft will make an intercockpit "gear clear" call and pause momentarily before moving the gear handle. On presolo contact sorties, the instructor pilot (IP) will acknowledge "clear" before the student moves the gear handle. On all other sorties, "gear clear" is an advisory call only.

**3.3.8. Landing Light.** Due to landing light limiting airspeed, aircrews will only display landing lights on night sorties, visual straight-ins, and instrument approaches.

**3.3.9. Low Approach.** During low approaches, do not allow the aircraft to touch down. When a restricted low approach is directed, do not descend below 500 feet above ground level (AGL) or below the altitude specified by the controller.

**3.3.10. Landing Touchdown Point.** The desired touchdown point is 500 feet from the threshold for a visual flight rules (VFR) approach or the glidepath interception point for a precision approach. Adjust the touchdown point when local procedures or unique runway surface conditions require landing beyond a given point on the runway.

**3.4. Maneuvering Parameters.** Before performing any maneuver, ensure loose equipment is stowed and the boost pump is operating. If maneuvers are flown in a series, it is not necessary to check these items between individual maneuvers.

**3.4.1. Throttle Movements.** To reduce the risk of engine flameout, avoid rapid throttle movements to the idle position except in circumstances requiring significant reduction in thrust such as, but not limited to, actual formation overshoots or dive recoveries.

**3.4.2. Transfer of Aircraft Control.** Both pilots of the T-37 must know at all times who has control of the aircraft. The pilot transferring aircraft control will state, "You have the aircraft." The pilot receiving control of the aircraft will acknowledge by stating, "I have the aircraft." Each subsequent

transfer of aircraft control will follow this same procedure. If the intercom fails, the pilot assuming aircraft control will shake the stick, unless prebriefed otherwise.

**3.4.3. Anti-G Straining Maneuver (AGSM).** Perform a G-awareness demonstration or exercise as described in AETCM 3-3, Volume 2 (projected to be AFMAN 11-2XX), during any sortie where increased Gs (above 3) are anticipated. Perform the G-awareness demonstration or exercise before flying any maneuver that may result in increased Gs.

**3.4.4. Aerobatics.** Only perform aerobatic flight in special use airspace.

**3.4.5. Spins:**

3.4.5.1. Do not perform spins without a spin-current IP aboard.

3.4.5.2. Only certified spin IPs will conduct spin demonstration training.

3.4.5.3. Intentional configured or inverted spins are prohibited.

3.4.5.4. To avoid entering instrument meteorological conditions (IMC) during spin training, a minimum of 8,000 feet of airspace, clear of clouds, must exist below entry altitude. Before spin entries, verify this cloud clearance criteria exists.

3.4.5.5. When spinning over clouds, plan to complete all spin training (to include dive recoveries) no lower than 5,000 feet below spin entry.

3.4.5.6. Spin demonstration weather restrictions are as follows:

3.4.5.6.1. Plan all spin demonstrations, including the dive recoveries, for completion at no lower than 10,000 feet AGL.

3.4.5.6.2. Do not perform spin demonstrations unless the spin flightpath is visual meteorological conditions (VMC) from spin entry to the surface. **EXCEPTION:** The operations group commander may waive this on a case-by-case basis. When waived, fly spin demonstrations above clouds under the following conditions:

3.4.5.6.2.1. The spin flightpath is VMC from spin entry to 9,000 feet mean sea level (MSL).

3.4.5.6.2.2. The pilot enters above 21,000 feet MSL and recovers to level flight by 13,000 feet MSL.

3.4.5.6.2.3. The pilot physically checks to ensure compliance with paragraph **3.4.5.6.2.1.** when entering the area and before the rudder reversal demonstration.

3.4.5.7. Before any intentional spin entry, ensure:

3.4.5.7.1. Loose equipment is stowed.

3.4.5.7.2. Seatbelts and shoulder harnesses are tight.

3.4.5.7.3. Total fuel is not in excess of 1,400 pounds.

3.4.5.7.4. Fuel imbalance is not in excess of 70 pounds.

3.4.5.7.5. Elevator trim is neutral (in the green).

3.4.5.7.6. Fuel boost pump is operating.

3.4.5.7.7. Area is clear.

3.4.5.8. When performing spins in succession, it is not necessary to check all items in paragraph 3.4.5.7. Recheck only the last four items (paragraphs 3.4.5.7.4 through 3.4.5.7.7) before each additional spin.

3.4.5.9. To avoid inadvertent engine shutdown while performing a spin recovery or spin prevention from an intentional or unintentional spin, remove hands from the throttles after the power has been checked in idle. Resume control of the throttles after the spinning stops and dive recovery has been initiated.

**3.4.6. Wingtip Vortices.** Avoid flight through wingtip vortices or jetwash, if possible. If this is unavoidable, immediately unload the aircraft to approximately 1G. Use asymmetric G limits if evaluating a jetwash-induced over-G.

**3.4.7. Aircraft Configuration.** Unless specifically stated in the exercise or maneuver description, perform all maneuvers with gear and flaps in the retracted position. Do not extend the flaps in an attempt to improve aircraft performance.

**3.4.8. Minimum Altitudes:**

3.4.8.1. Perform all parts of aerobatic maneuvers, unusual attitudes, abnormal flight recoveries, runaway trim training, and extended trail exercises above 5,000 feet AGL or higher, if directed locally.

3.4.8.2. Complete stalls and slow flight at a minimum of 8,000 feet AGL.

3.4.8.3. Except while in the traffic pattern or during departure and recovery, the minimum en route and area altitude for a solo student syllabus mission is 5,000 feet AGL.

3.4.8.4. Only practice formation lost wingman procedures above 5,000 feet AGL.

3.4.8.5. The minimum altitude for spin entry is 18,000 feet AGL or higher as directed locally.

3.4.8.6. The minimum altitude for VFR point-to-point navigation missions dictated by operational or training requirements is 3,000 feet AGL.

**3.4.9. Prohibited Maneuvers.** The following maneuvers are prohibited:

3.4.9.1. Vertical (whip) stalls.

3.4.9.2. Snap rolls.

3.4.9.3. Spins with a fuel imbalance in excess of 70 pounds indicated and/or a total fuel load of more than 1,400 pounds.

3.4.9.4. Intentional fishtail-type maneuvers by repeated rudder reversals.

3.4.9.5. Maneuvers performed by trim alone.

3.4.9.6. Trimming in a dive at a speed within 20 knots of the limiting structural airspeed, unless essential to relieve excessive stick forces.

3.4.9.7. Practice maneuvers with one engine inoperative.

3.4.9.8. Negative G flight for more than 30 seconds.

**3.4.10. Dual-Only Maneuvers.** Solo students will not practice the following:

3.4.10.1. Stall maneuvers.

- 3.4.10.2. Stability demonstrations.
- 3.4.10.3. Nose-high recoveries.
- 3.4.10.4. Nose-low recoveries.
- 3.4.10.5. Spins.
- 3.4.10.6. Simulated single-engine maneuvers.
- 3.4.10.7. No-flap patterns or landings.
- 3.4.10.8. Straight-in approaches.
- 3.4.10.9. Slow-flight maneuvers.
- 3.4.10.10. Rolling takeoffs.
- 3.4.10.11. Low-closed patterns.
- 3.4.10.12. Simulated runaway trim.
- 3.4.10.13. Lost wingman procedures while on the wing.

### 3.5. Extended Daylight:

3.5.1. Extended daylight is defined as the period 15 minutes before official sunrise to 15 minutes past official sunset. For local training only, daylight traffic operations and daylight area operations are in effect during the extended daylight period.

3.5.2. All maneuvers normally accomplished during normal daylight hours may be performed within the extended daylight window, including solo syllabus sorties. Under certain weather conditions, such as low ceiling and visibility, the supervisor of flying (SOF) should decide if maneuvers are appropriate or safe during extended daylight times. The local operations group commander may impose further restrictions.

### 3.6. Night Flying. The following night procedures apply:

3.6.1. Student pilots will not fly solo at night.

3.6.2. Taxi spacing will be a minimum of 300 feet and on the taxiway centerline. The taxi light will normally be used during all night taxiing. **EXCEPTION:** When the light might interfere with the vision of the pilot of an aircraft landing or taking off, the taxiing aircraft will come to a stop if the area cannot be visually cleared without the taxi light.

3.6.3. Do not practice the visual circling maneuver portion of an instrument approach or perform a low closed at night. You may fly the instrument portion of a designated circling approach; for example, a very high frequency omnirange approach (VOR-A), but you must execute climbout instructions or go missed approach by the missed approach point (MAP). If you have not been issued climbout instructions, do not initiate the missed approach before the MAP.

3.6.4. Fly night overhead patterns and visual straight-ins only at the home base. **NOTE:** Kelly/Lackland AFB is included for the 12th Flying Training Wing (FTW).

3.6.5. Night aerobatics, stalls, and spins are prohibited.

3.6.6. For all night operations, do not file to a destination (other than the home station) unless there is an operable straight-in approach with glidepath guidance. Aircrews may perform en route descents at facilities with no glidepath guidance if they descend no lower than the published minimum descent altitude (MDA). Night landings at other than the home field require operational glidepath guidance. Visual descent path indicator or precision guidance systems constitute an acceptable glidepath guidance. Do not file to a destination at night if a circling approach is the only available approach. For night IFR operations, alternates must have an operational instrument straight-in approach.

3.6.7. At airfields other than the home field, descents below an MDA on a nonprecision approach require an operational visual approach system. When landing from a nonprecision approach, transition to visual references no later than the visual descent point (VDP) or visual approach system glidepath intercept. In unusual circumstances, such as an aircraft precautionary or emergency or a facility outage, the PIC will determine the best method of recovery.

3.6.8. If requested by the runway supervisory unit (RSU) controller, aircrews may turn off strobe lights during the hours of darkness while in the home base traffic pattern.

3.6.9. Turn the taxi light off prior to night pattern entry unless otherwise directed by the controlling agency (per AFFSA/AETC Waiver 99001 to AFI 11-202, Volume 3).

3.6.10. Night formation requires the operations group commander's approval and is limited to two aircraft.

**3.7. Pilot Weather Categories (PWC).** PWCs are designed to reduce the exposure of pilots with limited experience to the inherent risks during periods of low ceiling and visibility. **Table 3.1.** specifies the PWC minimums. Before assigning a lower PWC, a PWC 1 pilot must evaluate the pilot's instrument proficiency. When calculating total time for the purpose of PWC, do not include student, undergraduate flight training (UFT), or "other" flight time. Hours in an assigned aircraft may include all series or mission types of that aircraft.

**Table 3.1. PWC Minimums for T-37 Aircrews. (See notes 1 through 7.)**

I T E M	A	B	C
	PWC	Minimum Flying Hour Criteria	Takeoff and Approach Ceiling/ Visibility Minimums
1	1	150 rated hours primary flight time in assigned aircraft and 600 hours total rated time or 250 rated hours in the assigned aircraft and 450 hours total rated time.	Suitable published minimums or 300 feet/1 mile (runway visual range 5,000 feet), whichever is greater.
2	2	A graduate of follow-on training (PIT or FTU) who does not qualify for PWC 1.	Suitable published minimums or 500 feet/1 1/2 miles, whichever is greater.

I T E M	A	B	C
	PWC	Minimum Flying Hour Criteria	Takeoff and Approach Ceiling/ Visibility Minimums
3	3	A student enrolled in a formal follow-on training course (PIT or FTU) after successful completion of a formal instrument evaluation in the assigned aircraft.	Suitable published minimums or 700 feet/2 miles, whichever is greater.

**NOTES:**

1. For the purposes of this table, the terms "pilot" and "aircraft commander" are synonymous. Document PWCs in Air Force Operations Resource Management System (AFORMS) and the Letter of Xs.
2. Assignment of PWC 1 status is dependent on the pilot's demonstrated knowledge and performance in flight under PWC 2 operations and in aircrew training devices with low-visibility capability. The commander of the flying squadron to which the pilot is assigned or attached will certify assignment to PWC 1 by signing the Letter of Xs. File the letter in the pilot's flight training folder.
3. PWC 1 is the minimum for normal training or support missions. When overriding mission requirements dictate, operations group commanders may individually authorize highly experienced pilots to use published approach minimums. PWC 1 minimums apply to all PWC 2 pilots for approaches at the home field.
4. If an IP is on board, aircrews may use the IP's PWC.
5. If a pilot is noncurrent in instrument approaches, increase the PWC minimums by one category. The pilot may regain currency with an IP at a dual set of controls or in a chase aircraft.
6. For formation approaches, the pilot with the most restrictive PWC minimums determines the flight's category.
7. Use the approach-end runway visual range (RVR) to determine takeoff and landing criteria.

**3.8. Weather and Instrument Flight Rules (IFR):**

3.8.1. For local flying operations, aircrews do not have to designate an alternate airfield if *all* of the following conditions exist (per Federal Aviation Administration (FAA) Exemption 7389 and AFFSA/AETC Waiver 99002 to AFI 11-202, Volume 3).

3.8.1.1. Departure and destination airfields are the same.

3.8.1.2. An instructor or flight examiner pilot is a crewmember.

3.8.1.3. Ceiling and visibility are reported and forecasted to remain above 1,500 feet and 3 miles, respectively, for the estimated time en route plus 2 hours.

3.8.2. Takeoff minimums are specified in **Table 3.1**. Base the decision to launch a local sortie on the existing weather and forecast for planned landing plus 1 hour. Base the decision to launch nonlocal sorties on the existing weather at takeoff time.

3.8.3. Do not file to a destination unless the ceiling and visibility for the estimated time of arrival (ETA) (plus or minus 1 hour) is at or above the appropriate PWC or suitable published minimums, whichever is greater (**Table 3.1**).

3.8.4. Weather requirements for an alternate requiring radar on the only suitable approach are the same as for an alternate without a published approach procedure.

3.8.5. Do not commence a penetration, en route descent, or approach unless the existing ceiling and visibility meet the requirements in **Table 3.1**. During an actual IMC, a precision approach monitored by surveillance radar is the preferred approach. (This does not prevent instrument practice for other types of approaches if the ceiling and visibility are at or above minimums for the approach being flown.)

3.8.6. After commencing a penetration or approach, if weather is reported below the required PWC or published minimums (ceiling or visibility), the pilot may continue the approach to the PWC or published minimums, whichever is higher. Determine the PWC decision height or minimum descent altitude by reference to the touchdown zone elevation (TDZE). When the TDZE is not depicted or is unavailable, use the runway threshold elevation or airport elevation, in that order. The pilot may land if the runway environment is in sight and the aircraft is in a position to make a safe landing. In all cases, the pilot will comply with the last clearance received until obtaining a revised clearance. **CAUTION:** The use of PWC minimums on a precision approach (precision approach radar [PAR] or instrument landing system [ILS]) may require a pilot to execute a missed approach before the published decision height. In these instances, upon reaching PWC minimums and making the decision not to continue the approach, the pilot should start a climb immediately while proceeding to the nonprecision MAP. On reaching the nonprecision MAP, the pilot should continue with the published missed approach procedure.

3.8.7. When flying instrument approaches in visual meteorological conditions (VMC), pilots may fly down to approach minimums if the runway environment is in sight when reaching applicable PWC minimums. Pilots must acknowledge reaching PWC minimums and state their intentions to crewmembers if they are continuing to published minimums.

3.8.8. Practice unusual attitudes in VMC only.

3.8.9. Cruising or holding in forecast icing conditions more severe than trace is prohibited. Climbing and/or descending through forecast or reported icing conditions more severe than light rime is prohibited. Any time icing is actually encountered or reported, change the aircraft course and/or altitude immediately to avoid prolonged flying in icing conditions. If icing is encountered that was not forecast, or icing type or intensity was forecast incorrectly, ensure the appropriate weather agency is debriefed. Likewise, provide a weather debriefing if no icing was encountered that was originally forecast.

3.8.10. Solo syllabus sorties must remain in VMC at all times, with sufficient ground references to visually navigate to, from, and within assigned areas.

3.8.11. When on an IFR flight plan under radar control in a designated air traffic control (ATC) military operations area (MOA), the weather requirements for aerobatics or confidence maneuvers are clear of clouds and 3 miles of flight visibility.

3.8.12. Normally, do not exceed 30 degrees of bank in IMC. Pay strict attention to the instruments and flight parameters (altitude in particular) if the need arises to exceed 30 degrees of bank.

3.8.13. Four-ship and night two-ship formations will not cruise in IMC, but may climb or descend through IMC.

### **3.9. Formation:**

3.9.1. Maximum flight size is four aircraft unless waived by 19 AF/DO.

3.9.2. Use visual signals in accordance with AFI 11-205, *Aircraft Cockpit and Formation Flight Signals*.

3.9.3. Flight leads will always consider wingman position and ability to safely perform a maneuver before directing it.

3.9.4. The following guidance applies when changing leads:

3.9.4.1. A lead change will be initiated by either visual signal or radio call. A radio call is mandatory when directing position changes in limited visibility conditions. Initiate lead changes from a stabilized, wings-level attitude.

3.9.4.2. The minimum altitude for changing leads within a formation is 500 feet AGL.

3.9.4.3. Do not initiate lead changes with the wingman further back than a normal fingertip or route position.

3.9.4.4. Flight leads will not initiate a lead change unless the aircraft assuming the lead is in a position from which the lead change can be safely initiated and visual contact maintained.

3.9.4.5. Acknowledge receipt of the lead by a head nod or radio call, as appropriate. The lead change is effective on acknowledgment. The former lead then moves to the briefed wing position.

3.9.5. Do not fly formation departures when existing weather is reported below circling minimums. Do not fly formation approaches or landings if the ceiling and visibility are less than 500 feet and 1 1/2 miles, respectively. Operations group commanders may waive this restriction for recoveries during deteriorating weather conditions.

3.9.6. Do not perform interval takeoffs when the ceiling and visibility are reported less than 1,500 feet and 3 miles, respectively.

3.9.7. The maximum crosswind component for formation takeoffs and formation landings is 13 knots (a 70-knot NWLO/TD).

3.9.8. Do not perform formation takeoffs and landings when standing water, ice, or snow is on the runway.

3.9.9. During formation takeoffs, the wingman lines up on the fingertip line with a minimum of 10 feet lateral wingtip clearance.

3.9.10. Formation takeoffs and landings require a minimum of 150 feet of runway width.

3.9.11. With a four-ship formation, use a minimum of 35 feet of wingtip clearance between lead and number two when positioning number four in the slot. Do not use the four-ship echelon lineup on runways less than 300 feet wide. Do not use the four-ship slot lineup on runways less than 200 feet wide.

3.9.12. When leading a fingertip formation, limit maneuvering to approximately 90 degrees of bank, 2 to 3 Gs, and 120 knots minimum.

- 3.9.13. When leading an echelon or route formation, limit bank angle to approximately 60 degrees.
- 3.9.14. During extended trail, maintain a minimum of 300 feet from lead and do not go forward of lead's 3/9 line. Limit extended trail maneuvers to turns, lazy eights (bank angles not to exceed approximately 120 degrees), modified cuban eights, barrel rolls, cloverleaves, and loops. Solo students will not fly barrel rolls or over-the-top maneuvers as wingmen. Do not perform abrupt turn reversals; that is, turns in one direction followed by a rapid, unanticipated roll into a turn in the opposite direction. Extended trail is limited to two-ship formations. Perform a G-awareness exercise before flying maneuvers in extended trail.
- 3.9.15. When leading a close trail, limit maneuvering to turns and modified lazy eights, using approximately 90 degrees of bank, 2 to 3 Gs, and 120 knots minimum. Do not fly over-the-top maneuvers in close trail formation.
- 3.9.16. Use the following procedures when one or more flight members lose visual contact within the formation:
- 3.9.16.1. If any flight member calls "blind," the other flight member will immediately confirm a "visual" with an informative call.
  - 3.9.16.2. If the other flight member is also "blind," the flight lead will take action to ensure altitude separation between flight members. When directed to deconflict, use a minimum of 500 feet of altitude separation. Avoid climbs and descents through the deconfliction altitude if possible.
  - 3.9.16.3. If there is no timely acknowledgment of the original "blind" call, the flight member initiating the call will maneuver away from the last known position of the other flight member or element and alter his or her altitude.
  - 3.9.16.4. If visual contact is still not regained, the flight lead will take additional positive action to ensure flightpath deconfliction within the flight to include a "terminate" or "knock it off" (KIO) if necessary.
  - 3.9.16.5. Aircraft will maintain altitude separation until a visual is regained.
- 3.9.17. Practice lost wingman procedures during daylight hours and in VMC.
- 3.9.18. In order to reduce the possibility of an inadvertent touchdown, initiate planned formation low approaches no lower than 100 feet AGL.
- 3.9.19. Solo students will not fly:
- 3.9.19.1. Left turning rejoins as wing. This restriction does not apply when an IP occupies the left seat of the lead aircraft. In any case, IPs will plan and execute maneuvers that allow them to keep solo students in sight to the maximum extent practical.
  - 3.9.19.2. Actual or simulated instrument approaches and landings.
  - 3.9.19.3. Close trail as wingman.
  - 3.9.19.4. Over-the-top maneuvers as the wingman in extended trail.
  - 3.9.19.5. Barrel rolls in extended trail.
  - 3.9.19.6. The fingertip position when accomplishing in-flight checks or radio channel changes.

3.9.20. For three or four-ship formations, all members will be qualified pilots or navigators and a formation-qualified IP will be aboard each aircraft.

3.9.21. For four-ship rejoins, flight members will join in sequence. For a straight-ahead rejoin, the number two aircraft will join on the left wing and the element will join on the right wing unless otherwise briefed. For a turning rejoin, the number two aircraft will rejoin on the inside of the turn and the element to the outside. If mission or flight requirements dictate, the flight lead will specifically direct the desired formation positions. Additionally:

3.9.21.1. Number three will maintain at least a 100-foot clearance on the lead element until number two has stabilized in route position.

3.9.21.2. Number four will establish a cutoff angle no greater than number three or number two and will maintain at least a 100-foot clearance on number three until number three has stabilized in the route position on the outside of lead's wing.

3.9.22. When training, terminate maneuvering and call "knock it off" when any of the following occur:

3.9.22.1. Area boundaries are breached.

3.9.22.2. Any unbriefed or unscheduled aircraft enters the area.

3.9.22.3. Minimum altitude or cloud clearances are a factor.

3.9.22.4. Situation awareness is lost.

3.9.22.5. Radio failure is recognized.

3.9.22.6. Any aircraft rocks its wings.

3.9.22.7. A dangerous situation is developing.

3.9.22.8. Minimum fuel state or bingo fuel is reached.

3.9.22.9. An over-G situation occurs.

3.9.23. Aircrews may use the term "terminate" if safety of flight is not a factor.

### **3.10. Single-Ship, Low-Level Routes:**

3.10.1. For military training routes (MTR) or slow-speed, low-altitude training routes (SR), maintain a minimum of 500 feet above the highest terrain within 2,000 feet of the course or as specified in the *DoD Flight Information Publication (FLIP)*, whichever is higher. For locally published routes, the minimum altitude is 500 feet AGL and aircrews will ensure a ceiling and visibility of at least 1,500 feet and 3 miles, respectively.

3.10.2. For towers on or near a low-level route, plan to fly a minimum of 500 feet above the highest obstacle within 2 nautical miles (NM) of the aircraft. Once the obstacle is visually acquired, the 2,000-foot clearance applies.

3.10.3. Plan to enter the low-level route no earlier than 30 minutes after sunrise (1 hour for mountainous terrain) and exit the route no later than 30 minutes before sunset (1 hour for mountainous terrain).

3.10.4. Do not fly low levels solo.

3.10.5. Low-level VMC route abort procedures are as follows:

- 3.10.5.1. Maintain safe separation from the terrain.
- 3.10.5.2. Comply with VFR altitude restrictions and squawk applicable identification, friend or foe (IFF) modes and codes.
- 3.10.5.3. Maintain VMC at all times.
- 3.10.5.4. Attempt contact with controlling agency, if required.
- 3.10.6. Low-level IMC route and area abort procedures are as follows:
  - 3.10.6.1. Immediately climb to or above the computed route abort altitude (RAA).
  - 3.10.6.2. Maintain preplanned ground track.
  - 3.10.6.3. If deviations from normal route procedures are required or if the RAA or minimum safe altitude (MSA) is higher than the vertical limits of the route, squawk IFF emergency.
  - 3.10.6.4. Attempt contact with the appropriate ATC agency for an IFR clearance. If required to fly in IMC without an IFR clearance, cruise at appropriate VFR altitudes until IFR clearance is received.

### **3.11. Simulated Emergency Procedures:**

- 3.11.1. Brief airborne simulated emergencies, but only conduct them during day VFR weather conditions. Discontinue simulated emergency practice if intercockpit communications cannot be maintained. Compound or multiple simulated emergencies are prohibited.
- 3.11.2. ENJJPT PIT students are authorized to practice simulated single engine and no flap approaches and landings on syllabus-directed team sorties.

**3.12. Operating in High Wind or Sea States.** Units will restrict their flying operations when high winds or sea states would be hazardous to aircrew members in ejection situations. Local training flights are not permitted over land when steady-state surface winds (forecast or actual) in training or operating areas exceed 35 knots. Overwater training flights will not be permitted when forecast or actual wave heights exceed 10 feet or surface winds exceed 25 knots in training or operating areas.

## Chapter 4

## OPERATING RESTRICTIONS

**4.1. General.** Table 4.1. helps the pilot determine the minimum systems required during flight or for takeoff at locations other than the home station. Missions originating from the home base will not normally launch with a known malfunction. Aircraft status is determined according to AFI 21-103, Equipment Inventory, Status, and Utilization Reporting, and its applicable supplements.

**Table 4.1. Operating Restrictions (Excluding Functional Check Flights [FCF]).**

I T E M	A	B	C	D
	System Affected	Day VMC Local (Dual)	Day VMC Local (Solo)	IMC, Night, or Cross-Country/O&B (Dual or Solo)
1	Position lights	No	No	No
2	Landing lights inoperative	Yes (note 1)	Yes (note 1)	No
3	IFF (including Mode C)	Yes (note 2)	Yes (note 2)	No
4	ILS	Yes	Yes	No
5	Distance measuring equipment (DME)	Yes	Yes (note 3)	No
6	VOR	No	No	No
7	Strobes or anticollision beacons	Yes (note 4)	Yes (note 4)	Yes (note 4)
8	Passing light	No	No	No

**LEGEND:**

Solo--One (student or rated) pilot on board.

Dual--Two (student or rated) pilots on board.

Yes--The aircraft is acceptable for flight.

No--The aircraft is not acceptable for flight.

**NOTES:**

1. Acceptable for flight if no instrument or straight-in approaches are planned.
2. Acceptable for flight on pattern-only missions at the home field with ATC approval.
3. Acceptable when solo is a rated pilot.
4. At least one anticollision beacon must fully operate if either strobe is not functional. **EXCEPTIONS:** Both anticollision beacons or both strobes must operate for night flying outside the local area. Both anticollision beacons must operate for night flying in the local area.

**4.2. Factors To Consider for Aircraft Malfunctions.** Once airborne, aircraft commanders must weigh all pertinent factors when deciding whether to continue or abort a sortie for an aircraft malfunction. Factors include student mission requirements and weather conditions at home base and divert base, etc. Solo students will contact the RSU controller (if in the pattern) or SOF (if outside the pattern) for instructions.

**4.3. Waiver of Restrictions.** Operations group commanders may waive the restrictions listed in [Table 4.1](#) on a flight-by-flight basis if there is no compromise of flight safety or Air Force directives. This authority may not be delegated below the operations group deputy commander.

**4.4. Solo Flying:**

4.4.1. Rated pilots may fly solo in aircraft with instrument or system malfunctions in the right cockpit that do not affect safety of flight.

4.4.2. Student pilots will not fly solo in an aircraft with a known malfunction unless approved by the squadron supervisor. In addition, the aircraft must be cleared by a maintenance supervisor.

**4.5. Functional Check Flight (FCF) Restrictions:**

4.5.1. Do not conduct FCFs with other type missions except FCF continuation training (CT), FCF upgrade training, or FCF certification check flights. All FCF requirements will be accomplished by an FCF pilot or a pilot in training status with an FCF IP on board.

**NOTE:** FCFs may recover at home station when originating from AETC auxiliary fields or from bases within the local flying area.

4.5.2. Do not practice instrument approaches or other AETC syllabus maneuvers not in accordance with T.O. 1T-37B-6CF-1, *Functional Check Flight Procedures*, on FCF missions unless required to check the aircraft. Do not install instrument hoods or vision-restricting devices in FCF aircraft.

4.5.3. Do not perform touch-and-go landings on an FCF sortie unless required to complete the FCF according to T.O. 1T-37B-6CF-1.

4.5.4. AETC FCF pilots or crews will not normally perform FCFs on transient aircraft from other services or commands without specific approval from the commander having operational control over the aircraft. Local FCF pilots or crews are authorized to perform required FCFs on transient AETC aircraft if approved by the owning commander. All FCFs on AETC aircraft will be flown by AETC FCF pilots or crews.

## Chapter 5

### SPIN TRAINING PROGRAM

**5.1. Purpose.** The spin training program focuses on increasing the IP's understanding of the T-37B spin characteristics and the aircraft's reaction to changes in the position of the rudder and elevator.

**5.2. Spin Demonstration Sortie.** The spin demonstration sortie is flown by the wing spin pilot with qualified pilots only. This sortie allows the pilot to practice the demonstrated maneuvers during flight as necessary to ensure complete understanding of aircraft reaction in each maneuver performed. The pilot may be allowed to fly selected spin demonstration maneuvers during the sortie. However, only a spin demonstration pilot may perform the attempted slow spin prevention, rudder reversal demonstration, and rudder effectiveness (attempted rudder-only recovery). (*EXCEPTION:* Spin pilot upgrade training.) Time and fuel permitting, the pilot should perform and instruct a spin prevent and a spin recovery.

5.2.1. Prior to the sortie, the pilot should review the following:

5.2.1.1. Spin entry procedures and spin restrictions.

5.2.1.2. Spin prevent procedures and spin recovery procedures.

5.2.1.3. T-37B spin characteristics.

5.2.1.4. Aircraft reaction to changes in the position of the rudder and elevator.

5.2.1.5. Conditions encountered through improper application and handling of the controls during entry, in the spin, and during recovery.

5.2.1.6. Weather conditions that affect spin training.

5.2.2. The ground briefing prior to the sortie should include the following:

5.2.2.1. Objectives of the flight.

5.2.2.2. Details of each maneuver to be accomplished and the sequence in which each maneuver will be performed.

5.2.2.3. An explanation of the expected reaction in each of the demonstrations.

5.2.2.4. Emphasis on the fact that although some of the demonstrations will result in recovery, they will not always be successful and should not be used as normal methods of recovery.

5.2.3. Fly the demonstration in the following sequence:

**5.2.3.1. Stability Demonstration.** This maneuver demonstrates that the aircraft will not enter a spin unless it is in an aggravated stall. Fly the aircraft out of airspeed in a nose-high pitch attitude.

**5.2.3.2. Attempted Neutral Control Recovery.** This maneuver demonstrates that after the aircraft has entered the spin, neutralizing the controls may not effect a recovery. Enter a spin and place the controls in the neutral position after rotation begins, but before the aircraft has progressed into a fully developed spin. In most cases, a neutral control position will not overcome the momentum built up during entry and the aircraft will not recover. When neutral controls fail to effect recovery, the nose of the aircraft remains below the horizon and rotation stabilizes at an increased rate due to insufficient control application. These characteristics are similar to those that occur during a missed spin prevention. When this occurs, perform a spin recovery.

**5.2.3.3. Attempted Slow Spin Prevention.** This demonstration shows the amount of control deflection necessary for recovery and the high rotation rate encountered when the spin prevention procedure is incorrectly employed after the spin has developed. Enter a spin. As soon as it develops, apply spin prevention controls very slowly. The stick should reach the full forward stop in no more than 20 seconds. Notice the amount of control deflection, time required, high rotation rate, and large altitude loss before the recovery. If full antispin controls have been applied and the rotation stabilizes at an increased rate, perform a spin recovery.

**5.2.3.4. Attempted Stick-Only Recovery.** This demonstration shows the effect of the elevator on pitch attitude and illustrates how the stick should be applied during a spin recovery; that is, abruptly and full forward until the nose pitches down. This maneuver also demonstrates that neutral rudder is partially effective against the spin. Enter a spin and hold the pro-spin rudder until stabilization occurs; then neutralize the rudder. Immediately after the rudder has been neutralized, abruptly apply full forward stick and hold until the nose pitches down near the vertical. The increased time required to reach the recovery attitude is due to the flatter pitch attitude and decreased control effectiveness when forward stick is first applied. The rotation rate increases as the nose pitches down. Then it decreases and stops as the stall is broken. Neutralize the controls and fly out of the ensuing dive. If the spin continues, perform a spin recovery.

**5.2.3.5. Rudder Reversal.** This demonstration shows the reaction of the aircraft to rudder application during the spin. Do not reverse rotation during the demonstration. Enter a spin and hold the pro-spin rudder until stabilization occurs. Apply full rudder opposite the direction of spin while holding the stick full aft. Notice that this results in a lowering of the nose and a momentary increase in the rate of rotation, followed by a marked decrease as the rudder becomes effective. At this time, apply full pro-spin rudder. Due to the sudden change from antispin rudder and corresponding reduction in effective surface area of the rudder, the nose rises and the rate of rotation rapidly returns to a stabilized rate. To recover from the demonstration, perform a spin recovery.

**5.2.3.6. Attempted Wrong-Rudder Recovery.** This maneuver demonstrates control effect and stick pressures resulting if the wrong rudder is used to attempt recovery. Enter a developed spin and initiate a spin recovery, but use the pro-spin rudder. Note that the nose rises slightly after rudder is applied. One turn later, move the stick briskly forward as for normal recovery, and hold. As the stick is moved, note the nose pitch (down), increased rotation rate, and heavy pressure on the stick. With the controls in this position, the spin stabilizes in a slight nose-low accelerated mode and, under most conditions, recovery will not occur. To recover, perform a spin recovery.

**5.2.3.7. Rudder Effectiveness (Attempted Rudder-Only Recovery).** This maneuver demonstrates the effect rudder has on pitch attitude and rate of rotation when the stick is released in the spin. Enter a spin and hold the pro-spin rudder until stabilization occurs, then release the stick. Note that the stick stays full back. Neutralize the rudder and note that the nose lowers, the stick moves forward slightly, and the rate of rotation increases. Apply the pro-spin rudder briskly. Note that the nose rises slightly as the stick moves to the full aft position and the rotation decreases. Briskly apply the full antispin rudder. The nose will lower, the stick will move forward, and the rate of rotation will increase, decrease, and then stop as the stall is broken. If the rotation continues, perform a spin recovery.

**5.3. Spin Checkout Program.** Spin pilots will complete the spin checkout program before conducting any spin demonstration sorties. The chief wing spin pilot will:

5.3.1. Maintain a folder for each spin pilot to include the following:

5.3.1.1. AF Form 4294, **Spin/Stall Pilot Qualification and Evaluation Certification**, to log ground training, flight training, and spin pilot evaluation.

5.3.1.2. AF Form 4293, **Student Activity Record**, to record comments on the student's progress after each spin pilot qualification sortie.

5.3.2. Conduct spin IP qualification on a proficiency advancement basis.

5.3.2.1. During ground training, students will review spin information contained in this publication and in the following material:

5.3.2.1.1. TO 1T-37B-1.

5.3.2.1.2. F-V5A-A-PIT-SG, *T-37B PIT Student Guide* (specifically the spins/aerodynamics chapter).

5.3.2.1.3. Other information as determined locally.

5.3.2.2. To optimize flight training, conduct qualification rides with a minimum of two qualified spin IPs as follows:

5.3.2.2.1. A spin IP briefs and files an introductory spin demonstration sortie.

5.3.2.2.2. The student briefs the proper method for performing each demonstration and flies all demonstrations. Instruction may be practiced.

5.3.2.2.3. The student conducts a spin demonstration sortie brief. The student flies demonstrations and practices instruction.

5.3.2.2.4. (Spin Pilot Certificational Sortie) The student briefs and flies the sortie; a spin IP evaluates the student for demonstrated effectiveness and instruction accuracy.

5.3.2.2.5. Student conducts a spin demonstration sortie while occupying the right seat (left seat for SUNT qualified).

5.3.3. Notify 19 AF/DOU by memorandum after the new spin IP is certified.

#### **5.4. Spin Education Program:**

5.4.1. Spin pilots conduct an annual spin seminar during the first quarter of the calendar year. Attendance is mandatory for all assigned T-37B pilots. Document attendance at the annual seminar and maintain records for at least 1 year. (Wings determine the most suitable method for documenting.)

5.4.2. Wings may supplement this program by using:

5.4.2.1. Inadvertent spin surveys.

5.4.2.2. Spin rides in addition to those already required by this publication.

5.4.2.3. Increased emphasis on spins during IP continuation training meetings.

#### **5.5. Inadvertent Departure/Spin Survey Report (RCS: HAF-DOF(Q)0127):**

5.5.1. The operations group stan/eval division chief will send a quarterly T-37B inadvertent departure/spin survey report to 19 AF/DOU by memorandum or fax within 15 days following the end of

each quarter. Negative replies are required. All inadvertent departures, spin entries, and spins should be reported. This report is designated emergency status code D. Immediately discontinue reporting during emergency conditions and MINIMIZE. Compile the inadvertent spin data and report to include:

5.5.1.1. Type of mission (dual or solo).

5.5.1.2. Category of pilot flying the aircraft; that is, student, instructor, or proficiency pilot.

5.5.1.3. The maneuver being flown at the time of the inadvertent departure or spin entry.

5.5.1.4. Method (spin recovery or spin prevent) used to recover the aircraft from the departure or spin.

5.5.1.5. Whether the departure developed into an actual spin. If prevent or recovery controls are applied prior to a spin actually occurring (while still in the incipient stage of development), it should be reported as an inadvertent departure regardless of the type of recovery performed. When reporting an actual spin entry, use the following guidelines to determine whether an actual inadvertent spin should be reported:

5.5.1.5.1. The nose stays below the horizon.

5.5.1.5.2. The aircraft has definite rotation of at least one turn.

5.5.1.6. Pilot category that flew the recovery (student, IP, first pilot [FP], trainee).

5.5.1.7. Spin entries that became inverted spins.

5.5.1.8. Any unusual occurrences during entry or recovery and other information you consider pertinent to the situation.

5.5.2. The method of survey is determined locally. However, the survey should include all rated and student pilots flying the T-37B. The program should be structured so survey respondents remain anonymous.

5.5.3. For reporting purposes, submit the report any time antispin controls must be applied to recover the aircraft. This does not include preplanned entries applicable to normal student training except those recovery attempts that result in inverted spin entries or missed recovery attempts performed by the IP.

5.5.4. On receipt of all quarterly reports, 19 AF/DOU summarizes and forwards comments to each operations group commander for dissemination to aircrews.

**5.6. Forms Prescribed.** AF Forms 4293 (previously AETC Form 803A) and 4294 (previously AETC Form 875).

**5.7. Forms Adopted.** AF Form 847 and AFTO Form 781.

CHARLES F. WALD, Lt General, USAF  
DCS/Air & Space Operations

## Attachment 1

### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

#### *References*

Executive Order 9397, *Numbering System for Federal Accounts Relating to Individual Persons*, November 22, 1943

Title 37, United States Code, Section 301a

Public Law 92-204, Section 715, *Appropriations Act for 1972*, December 18, 1971

Public Law 93-294, *Aviation Career Incentives Act of 1974*, May 31, 1974

Public Law 93-570, *Continuing Appropriations*, 1975, February 25, 1975

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#### *Abbreviations and Acronyms*

**AFFSA**—Air Force Flight Standards Agency

**AGL**—above ground level

**AGSM**—anti-G straining maneuver

**ARMS**—Aviation Resource Management System

**ATC**—air traffic control

**ATIS**—automated terminal information service

**CT**—continuation training

**DME**—distance measuring equipment

**DO**—director of operations

**DR**—dead reckoning  
**ENJJPT**—Euro-NATO joint jet pilot training  
**ETA**—estimated time of arrival  
**FAA**—Federal Aviation Administration  
**FCF**—functional check flight  
**FCIF**—flight crew information file  
**FLIP**—(DoD) Flight Information Publication  
**FOD**—foreign object damage  
**FP**—first pilot  
**FTU**—formal training unit  
**GND**—ground  
**HEFOE**—hydraulic, electrical, fuel, oxygen, engine  
**IFF**—identification, friend or foe  
**IFR**—instrument flight rule  
**ILS**—instrument landing system  
**IMC**—instrument meteorological condition  
**IP**—instructor pilot  
**JOAP**—joint oil analysis program  
**JSUPT**—joint specialized undergraduate pilot training  
**KIO**—knock it off  
**LPU**—life preserver unit  
**MAJCOM**—major command  
**MAP**—missed approach point  
**MDA**—minimum descent altitude  
**MOA**—military operations area  
**MSA**—minimum safe altitude  
**MSL**—mean sea level  
**MTR**—military training route  
**NAVAID**—navigational aid  
**NM**—nautical mile  
**NORDO**—no radio  
**NOTAM**—notice to airmen

**NWLO/TD**—nosewheel liftoff/touchdown

**O&B**—out and back

**OPR**—office of primary responsibility

**PAR**—precision approach radar

**PIC**—pilot in command

**PIT**—pilot instructor training

**psi**—pounds per square inch

**PWC**—pilot weather category

**RAA**—route abort altitude

**RPM**—revolutions per minute

**RSU**—runway supervisory unit

**RVR**—runway visual range

**SIF**—selective identification feature

**SOF**—supervisor of flying

**SR**—slow route

**TDZE**—touchdown zone evaluation

**TOLD**—takeoff and landing data

**TWR**—tower

**UFT**—undergraduate flying training

**UHF**—ultra high frequency

**UPT**—undergraduate pilot training

**VDP**—visual descent point

**VFR**—visual flight rule

**VMC**—visual meteorological condition

**VOR**—very high frequency omnirange

**VOR-A**—very high frequency omnirange approach

## Attachment 2

### T-37 MISSION BRIEFING GUIDE

**NOTE:** Brief items applicable to your mission in sufficient detail to prevent any misunderstandings between crewmembers.

#### A2.1. General:

- A2.1.1. Time hack.
- A2.1.2. Mission objectives and requirements.
- A2.1.3. Mission overview.
- A2.1.4. Mission data card and call sign.
- A2.1.5. Flight crew information file (FCIF), ops notes, notices to airmen (NOTAM), and TOLD.
- A2.1.6. Weather, airfield status, navigational aid (NAVAID) status, and alternate airfield.
- A2.1.7. In-flight discipline.
- A2.1.8. Sign-out, engine-start, and takeoff times.

#### A2.2. Mission Profile:

- A2.2.1. Ground operations:
  - A2.2.1.1. AFTO Form 781, **AFORMS Aircrew/Mission Flight Data Document** (review and stowage).
  - A2.2.1.2. Gear pin stowage.
  - A2.2.1.3. Exterior inspection responsibilities.
  - A2.2.1.4. Instrument cockpit check responsibilities.
  - A2.2.1.5. Spare aircraft procedures.
- A2.2.2. Takeoff (static, rolling, and crosswind procedures).
- A2.2.3. Departure (routing, altitudes, and airspeeds).
- A2.2.4. G-awareness exercise.
- A2.2.5. Specific area work and parameters.
- A2.2.6. Engine and G envelope.
- A2.2.7. Joker and bingo fuels.
- A2.2.8. Recovery (routing, altitudes, and airspeeds).
- A2.2.9. Simulated emergency procedures.

**A2.3. Alternate Mission Profile.** Brief appropriate items from the applicable briefing guide ([Attachment 2](#) through [Attachment 5](#)).

**A2.4. IMC Procedures:**

- A2.4.1. Unusual attitudes.
- A2.4.2. Spatial disorientation.
- A2.4.3. Icing restrictions.

**A2.5. Night Procedures:**

- A2.5.1. Personal equipment (flashlight and clear visor).
- A2.5.2. Aircraft and cockpit lighting.
- A2.5.3. Taxi procedures.
- A2.5.4. Spatial disorientation.
- A2.5.5. Visual illusions.
- A2.5.6. Pattern procedures (entry, reference, spacing, and breakout).
- A2.5.7. Night restrictions.

**A2.6. Crew Coordination:**

- A2.6.1. Aircraft commander.
- A2.6.2. Transfer of aircraft control, with and without intercom.
- A2.6.3. Clearing.
- A2.6.4. In-flight checks.
- A2.6.5. Radio procedures.

**A2.7. Emergency Procedures:**

- A2.7.1. General aircrew responsibilities during emergencies.
- A2.7.2. Emergency ground egress.
- A2.7.3. Takeoff emergencies.
- A2.7.4. Physiological incident.
- A2.7.5. Bird strikes.
- A2.7.6. Electrical fire.
- A2.7.7. Ejection (with and without intercom, controlled and uncontrolled).
- A2.7.8. Visual signals with intercom failure (alternate gear extension and engine shutdown).
- A2.7.9. Emergency divert airfields.

**A2.8. Questions.**

### Attachment 3

#### T-37 FORMATION BRIEFING GUIDE

**NOTE:** Brief items applicable to your mission in sufficient detail to prevent any misunderstandings between crewmembers.

##### **A3.1. General:**

- A3.1.1. Time hack.
- A3.1.2. Mission objectives and requirements.
- A3.1.3. Mission overview.
- A3.1.4. Mission data card and call sign.
- A3.1.5. FCIF, ops notes, NOTAMs, and TOLD.
- A3.1.6. Weather, airfield status, and alternate airfield.
- A3.1.7. Formation positions.
- A3.1.8. In-flight discipline.
- A3.1.9. Sign-out, check-in, and takeoff times.

##### **A3.2. Ground Operations:**

- A3.2.1. Automated terminal information service (ATIS) and clearance.
- A3.2.2. Flight check-in.
- A3.2.3. Engine start and taxi procedures.
- A3.2.4. Maintenance delays.
- A3.2.5. Spare aircraft procedures.

##### **A3.3. Takeoff and Departure:**

- A3.3.1. Runway lineup.
- A3.3.2. Takeoff (wing, interval, and combination with four ship).
- A3.3.3. Rejoin.
- A3.3.4. Departure (routing, altitudes, and airspeeds).

##### **A3.4. Area Work:**

- A3.4.1. G-awareness exercise.
- A3.4.2. Specific exercises (entry and parameters).
- A3.4.3. Rejoins (bank angle, airspeed, and position).
- A3.4.4. Joker and bingo fuels.

**A3.5. Instrument and Navigation Mission.** Include routing, altitude, and airspeed.

**A3.6. Recovery and Landing:**

A3.6.1. Splitup.

A3.6.2. Recovery (routing, altitudes, and airspeeds).

A3.6.3. Overhead pattern and landing (pattern entry and spacing).

A3.6.4. Wing approach and landing:

A3.6.4.1. Configuration and airspeed.

A3.6.4.2. Instrument procedures.

A3.6.4.3. Circling procedures.

A3.6.5. Afterlanding checks and taxi back (single ship and formation).

**A3.7. Alternate Formation Mission.** Brief appropriate items from the applicable briefing guide (**Attachment 2** through **Attachment 5**).

**A3.8. Night Procedures:**

A3.8.1. Personal equipment (flashlight and clear visor).

A3.8.2. Aircraft and cockpit lighting.

A3.8.3. Taxi procedures.

A3.8.4. Takeoff procedures (aircraft lighting and radio calls).

A3.8.5. Formation references.

A3.8.6. Spatial disorientation.

A3.8.7. Visual illusions.

A3.8.8. Pattern procedures (entry, references, spacing, and breakout procedures).

A3.8.9. Night restrictions.

**A3.9. IMC Procedures:**

A3.9.1. Aircraft lighting.

A3.9.2. Icing restrictions.

A3.9.3. Unusual attitudes.

A3.9.4. Spatial disorientation.

A3.9.5. Lost wingman procedures.

**A3.10. Formation Procedures:**

A3.10.1. Radio procedures.

A3.10.2. In-flight checks.

- A3.10.3. Route position and spacing.
- A3.10.4. Position change.
- A3.10.5. Wake turbulence.
- A3.10.6. Engine and G envelope.
- A3.10.7. Breakout.
- A3.10.8. Overshoot and collision avoidance.
- A3.10.9. KIO call.
- A3.10.10. Lost sight.
- A3.10.11. Visual signals.

**A3.11. Three-Ship Procedures:**

- A3.11.1. Runway lineup.
- A3.11.2. Takeoff (wing, interval, and combination).
- A3.11.3. Rejoin.
- A3.11.4. Radio procedures.
- A3.11.5. Phantom wingman position.
- A3.11.6. Rejoins.
- A3.11.7. Position change.
- A3.11.8. Splitup.
- A3.11.9. Recovery.

**A3.12. Formation Emergencies:**

- A3.12.1. Takeoff.
- A3.12.2. In-flight malfunctions.
- A3.12.3. Element integrity.
- A3.12.4. Midair collision.
- A3.12.5. Radio failure.
- A3.12.6. Hydraulic, electrical, fuel, oxygen, engine (HEFOE).
- A3.12.7. Physiological incident.
- A3.12.8. Bird strike.
- A3.12.9. Ejection.
- A3.12.10. Recovery procedures.
- A3.12.11. Emergency divert airfields.

**A3.13. Questions.****A3.14. Crew Coordination:**

A3.14.1. Aircraft commander.

A3.14.2. Ground operations as follows:

A3.14.2.1. AFTO Form 781 (review and stowage).

A3.14.2.2. Exterior inspection responsibilities.

A3.14.2.3. Instrument cockpit check responsibilities.

A3.14.2.4. Gear pin stowage.

A3.14.3. Transfer of aircraft control, with and without intercom.

A3.14.4. Clearing.

A3.14.5. In-flight checks.

A3.14.6. Radio procedures.

A3.14.7. Emergency procedures as follows:

A3.14.7.1. General aircrew responsibilities during emergencies.

A3.14.7.2. Emergency ground egress.

A3.14.7.3. Takeoff emergencies.

A3.14.7.4. In-flight malfunctions.

A3.14.7.5. Physiological incident.

A3.14.7.6. Bird strikes.

A3.14.7.7. Electrical fire.

A3.14.7.8. Ejection (with and without intercom, controlled and uncontrolled).

A3.14.7.9. Visual signals with intercom failure (alternate gear extension and engine shutdown).

A3.14.7.10. Emergency divert airfields.

**A3.15. Alternate Single-Ship Mission.** Brief appropriate items from the applicable briefing guide ([Attachment 2](#) through [Attachment 5](#)).

**A3.16. Questions.**

## Attachment 4

### T-37 INSTRUMENT AND NAVIGATION BRIEFING GUIDE

**NOTE:** Brief items applicable to your mission in sufficient detail to prevent any misunderstandings between crewmembers.

#### A4.1. General:

- A4.1.1. Time hack.
- A4.1.2. Mission objectives and requirements.
- A4.1.3. Mission overview.
- A4.1.4. Mission data card or call sign.
- A4.1.5. FCIF, ops notes, NOTAMs, and TOLD.
- A4.1.6. Weather, airfield status, NAVAID status, and alternate airfield.
- A4.1.7. In-flight discipline.
- A4.1.8. Sign-out, engine-start, and takeoff times.
- A4.1.9. Required personal equipment (life preserver unit [LPU], flashlight, clear visor, survival kit, etc.).

#### A4.2. Mission Profile:

- A4.2.1. Ground operations.
  - A4.2.1.1. AFTO Form 781 (review and stowage).
  - A4.2.1.2. Gear pin and personal equipment stowage.
  - A4.2.1.3. Exterior inspection responsibilities.
  - A4.2.1.4. Instrument cockpit check responsibilities.
  - A4.2.1.5. Spare aircraft procedures.
- A4.2.2. Takeoff (static, rolling, and crosswind procedures).
  - A4.2.2.1. Transition to vision-restricting device.
- A4.2.3. Departure (routing, altitudes, and airspeeds).
- A4.2.4. En route and cruise (route of flight, altitudes, airspeeds, and groundspeed check).
- A4.2.5. Instrument area work and parameters.
- A4.2.6. Engine and G envelope.
- A4.2.7. Joker and bingo fuels.
- A4.2.8. Recovery (routing, altitudes, and airspeeds).
- A4.2.9. ATIS and metro.
- A4.2.10. Instrument approach review.

A4.2.11. Transition to land.

A4.2.11.1. Removal of vision-restricting device and transition from simulated instruments to visual references.

A4.2.12. Simulated emergency procedures.

**A4.3. Alternate Mission Profile.** Brief appropriate items from the applicable briefing guide ([Attachment 2](#) through [Attachment 5](#)).

**A4.4. IMC Procedures:**

A4.4.1. Unusual attitudes.

A4.4.2. Spatial disorientation.

A4.4.3. Icing restrictions.

**A4.5. VFR Procedures:**

A4.5.1. Turn points.

A4.5.2. Headings.

A4.5.3. Times.

A4.5.4. Altitudes.

A4.5.5. Prominent land and manmade features.

A4.5.6. Obstacles.

A4.5.7. Flight following.

A4.5.8. VFR arrival.

**A4.6. Night Procedures:**

A4.6.1. Personal equipment (flashlight and clear visor).

A4.6.2. Aircraft and cockpit lighting.

A4.6.3. Taxi procedures.

A4.6.4. Spatial disorientation.

A4.6.5. Visual illusions.

A4.6.6. Pattern procedures (entry, references, spacing, and breakout).

A4.6.7. Night restrictions.

**A4.7. Crew Coordination:**

A4.7.1. Aircraft commander.

A4.7.2. Transfer of aircraft control, with and without intercom.

A4.7.3. Clearing.

A4.7.4. In-flight checks.

A4.7.5. Radio procedures.

**A4.8. Emergency Procedures:**

A4.8.1. General aircrew responsibilities during emergencies.

A4.8.2. Emergency ground egress.

A4.8.3. Takeoff emergencies.

A4.8.4. Physiological incident.

A4.8.5. Bird strikes.

A4.8.6. Electrical fire.

A4.8.7. Ejection (with and without intercom, controlled and uncontrolled).

A4.8.8. Visual signals with intercom failure (alternate gear extension and engine shutdown).

A4.8.9. Lost-communications procedures.

A4.8.10. Lost procedures.

A4.8.11. Emergency divert airfields.

A4.8.12. Divert procedures.

**A4.9. Questions.**

## Attachment 5

### T-37 LOW-LEVEL BRIEFING GUIDE

**NOTE:** Brief items applicable to your mission in sufficient detail to prevent any misunderstandings between crewmembers.

#### **A5.1. General:**

- A5.1.1. Time hack.
- A5.1.2. Mission objectives and requirements.
- A5.1.3. Mission overview.
  - A5.1.3.1. Route number.
- A5.1.4. Mission data card or call sign.
- A5.1.5. FCIF, ops notes, NOTAMs, and TOLD.
- A5.1.6. Airfield status, NAVAID status.
- A5.1.7. Weather as follows:
  - A5.1.7.1. Takeoff.
  - A5.1.7.2. Low-level route.
  - A5.1.7.3. Minimum altimeter setting along the route.
  - A5.1.7.4. Recovery.
  - A5.1.7.5. Alternate airfield.
- A5.1.8. In-flight discipline.
- A5.1.9. Sign-out, engine-start, takeoff, and route-entry times.

#### **A5.2. Ground Operations:**

- A5.2.1. AFTO Form 781 (review and stowage).
- A5.2.2. Exterior inspection responsibilities.
- A5.2.3. Instrument cockpit check responsibilities.
- A5.2.4. Gear pin stowage.
- A5.2.5. Compass check.
- A5.2.6. Clock check.

**A5.3. Takeoff.** (Static or rolling, and crosswind procedures.)

**A5.4. Departure.** (Routing, altitudes, and airspeeds.)

**A5.5. Route Entry:**

- A5.5.1. Prominent features.
- A5.5.2. Radial and DME.
- A5.5.3. Maneuvering to enter route.
- A5.5.4. IFF and selective identification feature (SIF).
- A5.5.5. Flight service station.

**A5.6. Flying the Route:**

- A5.6.1. Dead reckoning (DR) procedures and map-reading techniques.
- A5.6.2. Corridor width, minimum and maximum altitudes.
- A5.6.3. Altitude control and height assessment techniques.
- A5.6.4. Ground track references and correction techniques.
- A5.6.5. Planned groundspeed and timing corrections.
- A5.6.6. Key obstructions and avoidance procedures.
- A5.6.7. Mandatory reporting points.
- A5.6.8. Frequencies.
- A5.6.9. Continuation and bingo fuels.
- A5.6.10. Target area and acquisition.

**A5.7. Conflicts Along the Route:**

- A5.7.1. Parallel and crossing low levels.
- A5.7.2. Airfields (airport traffic areas, airport radar service areas, and instrument approach corridors).
- A5.7.3. Civilian VFR routes (major highways, rivers, and local practice areas).
- A5.7.4. Cities.
- A5.7.5. Noise-sensitive areas.

**A5.8. Route Abort.** (Altitude, IMC procedures, and VMC procedures.)**A5.9. Route Exit and Recovery:**

- A5.9.1. Altitude.
- A5.9.2. Controlling agency.
- A5.9.3. Radio frequency.
- A5.9.4. IFF and SIF.
- A5.9.5. Route of flight.
- A5.9.6. VFR arrival.

**A5.10. IMC Procedures:**

- A5.10.1. Pitot heat.
- A5.10.2. Unusual attitudes.
- A5.10.3. Spatial disorientation.

**A5.11. Instrument Approach Procedures:**

- A5.11.1. Holding.
- A5.11.2. Penetration and en route descent.
- A5.11.3. Precision and nonprecision approach review.
- A5.11.4. Circling.
- A5.11.5. Transition to landing.

**A5.12. Simulated Emergency Procedures:**

**A5.13. Alternate Mission.** Brief appropriate items from the applicable briefing guide ([Attachment 2](#) through [Attachment 5](#)).

**A5.14. Crew Coordination:**

- A5.14.1. Aircraft commander.
- A5.14.2. Transfer of aircraft control, with and without intercom.
- A5.14.3. Clearing.
- A5.14.4. In-flight checks.
- A5.14.5. Radio procedures.

**A5.15. Emergency Procedures:**

- A5.15.1. General aircrew responsibilities during emergencies.
- A5.15.2. Emergency ground egress.
- A5.15.3. Takeoff emergencies.
- A5.15.4. Low-level emergencies.
- A5.15.5. Physiological incident.
- A5.15.6. Bird strikes.
- A5.15.7. Electrical fire.
- A5.15.8. Ejection (with and without intercom, controlled and uncontrolled).
- A5.15.9. Visual signals with intercom failure (alternate gear extension and engine shutdown).
- A5.15.10. Lost-communications procedures.
- A5.15.11. Low-level divers.

A5.15.12. Lost procedures.

A5.15.13. Emergency divert airfields.

**A5.16. Questions.**

## Attachment 6

### SUPERVISED SOLO TURNAROUND CHECKLIST

**NOTE:** As a minimum, complete the following items before the solo portion of the student initial solo sortie. Local guidance to include these items will be found in the in-flight guide.

#### **A6.1. Perform Afterlanding Checklist.**

#### **A6.2. Before IP Deplanes:**

- A6.2.1. Canopy downlock handle--FORWARD.
- A6.2.2. Fuel system switch--EMERGENCY.
- A6.2.3. Right throttle--CUT OFF.
- A6.2.4. IP seat safety pin--INSTALL.
- A6.2.5. Elevator and aileron trim--NEUTRAL.
- A6.2.6. IP speed brake switch--SOLO.
- A6.2.7. Cockpit air lever--VENT.
- A6.2.8. UHF radio--ground (GND), tower (TWR), or RSU, as appropriate.
- A6.2.9. AFTO Form 781--DUAL PORTION COMPLETE.
- A6.2.10. Fire extinguisher available--CHECK.
- A6.2.11. Fuel--1,000 pounds minimum (maximum allowable imbalance--160 pounds).
- A6.2.12. All systems--CHECK.
- A6.2.13. Student briefing--ENSURE COMPLETE.
- A6.2.14. IP oxygen diluter lever--100 percent.

#### **A6.3. After IP Deplanes:**

- A6.3.1. Right seat equipment--SECURE (IP).
- A6.3.2. Canopy downlock handle--AFT.
- A6.3.3. Student begins with STARTING ENGINES checklist (item 9, page N-10, in-flight crew checklist).
- A6.3.4. IP monitors startup to taxi. Confirm canopy and seat pins removed.