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T-38 AND AT-38 OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements AFPD 11-2, *Flight Rules and Procedures* and AFI 11-202, volume 3, *General Flight Rules.* Along with its complementary **Chapter 8** (Local Operating Procedures), this instruction prescribes standard operational and weapons employment procedures to be used by all pilots operating Air Force T-38 and AT-38 (T/AT-38) aircraft. File a copy of all approved waivers with this instruction. **Attachment 1** contains a glossary of references, abbreviations and acronyms.

This AFI does not apply to the Air National Guard. Major commands (MAJCOM) are to forward proposed MAJCOM-level supplements to this volume to HQ USAF/XOOT through HQ AETC/DOFV for approval prior to publication according to AFPD 11-2, paragraph 4.2. After approved and published, copies of MAJCOM-level supplements will be sent to HQ USAF/XOOT, HQ AETC/DOFV, and user-MAJCOM OPRs. Field units below MAJCOM level will forward copies of their supplements to their parent MAJCOM OPR for post-publication review. See paragraph **1.6.** of this volume for guidance on submitting comments and suggesting improvements to this instruction. The Privacy Act of 1974 affects this instruction.

The Privacy Act of 1974 affects this instruction. The Privacy Act System Number F011 AF XO A, Air Force Operations Resource Management Systems (AFORMS), covers required information. The authority for maintenance of the system is 37 U.S.C. 301a (Incentive Pay); Public Law 92-204 (Appropriation Act for 1973, Section 715; Public Laws 93-570 (Appropriations Act for 1974), Public Act 93-294 (Aviation Career Incentive Act of 1974), DoD Directive 7730.57 (Aviation Career Incentive Act and Required Annual Report; and Executive Order (E.O.) 9397).

This instruction contains references to the following field (subordinate level) publications which, until converted to departmental level publications, may be obtained from the respective MAJCOM publication office: MCM 3-1, Volume 1; MCMAN 11-238, volume 1 and volume 2; and MCR 55-125.

(AETC) AFI 11-2T-AT-38, Volume 3, 23 August 2001, is supplemented as follows:

(AETC) This supplement applies to all AETC units. It applies to the Air Force Reserve Command, but does not apply to the Air National Guard. Maintain and dispose of records created as a result of processes prescribed in this publication in accordance with AFMAN 37-139, *Records Disposition Schedule.*

(AETC) Units may supplement this instruction, and they will forward one copy to HQ AETC/DOFV after publication. Submit suggested improvements to this instruction on AF Form 847, **Recommendation for Change of Publication,** through stan/eval channels, to HQ AETC/DOF, 1 F Street Suite 2, Randolph AFB TX 78150-4325. Unless otherwise specified in this supplement, HQ AETC/DO is the waiver authority. Send waiver requests through stan/eval channels to HQ AETC/DO. Waivers to supplemental guidance will be handled by the operations group commander (OG/CC) of the unit generating the supplement.

SUMMARY OF REVISIONS

This change incorporates interim change (IC) 2001-1 which prohibits carrying oil and/or hydraulic fluid on aircraft, except in the weapon system support pod (paragraph **3.2.5.**); clarifies low-altitude training obstacle clearance (paragraph **3.17.7.**); changes specialized undergraduate pilot training (SUPT) to joint specialized undergraduate pilot training (JSUPT) (paragraph **3.18.1.**); changes minimum takeoff spacing for instrument trail departures to 20 seconds minimum (paragraph **4.4.1.**); authorizes simulated instrument flight safety observers to occupy either cockpit (paragraph **4.8.1.**); changes "clearance" to "separation" (paragraphs **7.7.1.3.** and **7.7.1.4.**); and updates office symbols, references, and abbreviations and acronyms used in this publication. See the last attachment of the publication, IC 2001-1, for the complete IC. A H indicates revision from the previous edition.

(AETC) This revision incorporates interim change (IC) 2003-2 (**Attachment 16 (Added)**). It deletes the reference to **Table 3.1. (Added)** from paragraph **3.6.8. (Added)** and adds it to paragraph **3.6.8.3. (Added)** It changes the title of **Table 3.1. (Added)** and places the table immediately following paragraph **3.6.8.3. (Added)** (the paragraph about nonremotely controlled BAK-15 barrier operations). (***NOTE:*** In addition, it changes Item 3, Column A, of **Table 3.1. (Added)**) A bar (|) in the left margin indicates revision from the previous edition.

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Chapter 1

GENERAL INFORMATION

1.1. Scope. This instruction outlines the procedures applicable to the safe operation of the T/AT-38. With the complementary references cited, this instruction prescribes standard operational procedures to be used by all pilots operating T/AT-38 aircraft.

1.2. Pilot's Responsibility. This instruction, in conjunction with other governing directives, prescribes T/AT-38 procedures under most circumstances, but 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 these procedures require specific approval of the MAJCOM Director of Operations (DO) unless an urgent requirement or an aircraft emergency dictate otherwise, in which case the pilot in command will take the appropriate action to safely recover the aircraft.

1.4. References. The primary references for T/AT-38 operations are Technical Order (T.O.) 1T-38A-1, *USAF Series T-38A and AT-38B Flight Manual*; MCMAN 11-238, Volume 1, *(A)T-38 Flying Fundamentals* (projected to be AFMAN 11-2XX, Volume 1); MCMAN 11-238, Volume 2, *(A)T-38 Mission Employment Fundamentals* (projected to be AFMAN 11-2XX, Volume 2); 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. Phase manuals may expand these basic procedures, but in no case will they 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 (stan/eval) channels. Parent MAJCOMs will forward approved recommendations to HQ AETC/DOFV. In accordance with (IAW) AFPD 11-2, paragraph 2.4.1, HQ USAF/XO is approval authority for changes or revisions to this instruction. The MAJCOM DO is waiver authority for this instruction. Waiver requests may be submitted in message or memo format.

1.6. Distribution. Each pilot is authorized a copy of this instruction.

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, *General Flight Rules,* specifies minimum requirements.

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

2.3. Map and Chart Preparation.

2.3.1. Local Area Maps. A local area map is not required if pilot aids include jettison areas, divert information and controlled bailout areas and provide sufficient detail of the local area to remain within assigned training areas. (*Not applicable [N/A] to undergraduate flying training [UFT])*

2.3.2. Charts. Flight information publication (FLIP) en route charts may be used instead of maps on navigational flights within areas adequately covered by these charts. (*N/A UFT)*

2.3.3. Low Altitude Maps:

2.3.3.1. On low altitude flights, each pilot in the flight will carry a current map of the low altitude route or operating area. The map will be of such scale and quality that terrain features, hazards, and chart annotations are of sufficient detail to allow individual navigation and safe mission accomplishment.

2.3.3.2. Prepare maps for low level according to MCR 55-125, *Preparation of Mission Planning Materials* (to be published as AFI 10-4XX), and as directed locally. Maps will be updated from the chart update manual (CHUM), and all man-made obstacles at or above the planned flight altitude will be highlighted. Additionally, time and (or) distance tick-marks will be annotated on low-level maps to ensure positive positional awareness of obstacles along the planned route of flight plus or minus 5 nautical miles (NM).

2.3.3.3. Annotate all maps with a route abort altitude (RAA). Compute the RAA for the entire route or area at a minimum of 1,000 feet separation from the highest obstacle/terrain feature (rounded to the next highest 100 feet) within the lateral limits of the route or training area, but in no case less than 5 NM either side of planned route.

2.4. Briefing and Debriefing.

2.4.1. Flight leads are responsible for presenting a logical briefing that will promote safe, effective mission accomplishment. In addition, the following guidance applies:

2.4.1.1. All pilots, crewmembers, and passengers will attend the briefing unless previously coordinated with unit supervisors.

2.4.1.2. Begin briefings at least 1 hour before scheduled takeoff.

2.4.1.3. Structure flight briefings to accommodate the capabilities of each pilot in the flight.

2.4.1.4. Briefing guides will be used to provide the flight lead or briefer with a reference list of items which may apply to particular missions. Items listed may be briefed in any sequence. Those items understood by all participants may be briefed as "standard." Specific items not pertinent to the mission need not be covered.

2.4.1.5. During the briefing for all low-level missions, emphasis will be placed on the following items: obstacle or ground avoidance, pilot determination of low altitude comfort level, and the avoidance of complacency.

2.4.1.6. Dissimilar formations will be approved by the squadron operations officer. When dissimilar aircraft are flown in formation, proper position (to ensure adequate wingtip clearance), responsibilities, and aircraft-unique requirements will be briefed for each phase of flight.

2.4.1.7. Brief an alternate mission for each flight. The alternate mission will be less complex than the primary and should parallel the primary mission.

2.4.1.8. Mission elements and events may be modified and coordinated airborne as long as flight safety is not compromised. Unbriefed missions or events will not be flown. Flight leads will ensure changes are acknowledged by all flight members.

2.4.1.9. All missions will be debriefed.

2.4.2. *(For deployed operations, exercise, and quick-turn briefings)* If all flight members attend an initial or mass flight briefing, the flight lead on subsequent flights must brief only those items that have changed from the previous flights.

2.4.3. Required topics for flight briefing guides are contained in **Attachment 2** through **Attachment 12**. Units may augment these guides as necessary. The following is a listing of the briefing guides in this instruction:

2.4.3.1. Ground Ops/Takeoff/Departure Briefing Guide (**Attachment 2**).

2.4.3.2. Recovery/Landing Briefing Guide (**Attachment 3**).

2.4.3.3. Special Subject Briefing Guide (**Attachment 4**).

2.4.3.4. Specific Mission Briefing Guides:

2.4.3.4.1. Advanced Handling/Instrument Briefing Guide (**Attachment 5**).

2.4.3.4.2. Air Combat Training (ACBT)/Intercept Briefing Guide (**Attachment 6**).

2.4.3.4.3. Basic Fighter Maneuvers (BFM)/Air Combat Maneuvers (ACM) Briefing Guide (**Attachment 7**).

2.4.3.4.4. Escort Mission Briefing Guide (**Attachment 8**).

2.4.3.4.5. Low Level Navigation Briefing Guide (**Attachment 9**).

2.4.3.4.6. Air-to-Surface Weapons Employment Briefing Guide/Range Mission (**Attachment 10**).

2.4.3.4.7. Crew Coordination/Passenger/Ground Crew Briefing Guide (**Attachment 11**).

2.4.3.4.8. Mission Debriefing Guide (**Attachment 12**).

2.5. Unit-Developed Checklists and Local Pilot Aids.

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

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

2.5.2.1. Briefing guides.

2.5.2.2. Local ultra high frequency (UHF) channelization.

2.5.2.3. Appropriate airfield diagrams.

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

2.5.2.5. Barrier information at divert bases.

2.5.2.6. Bailout and jettison area.

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

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

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Ground Visual Signals. The pilot will ensure that no system that could pose any danger to the ground crew is activated prior to 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.

3.2. Preflight.

3.2.1. Baggage or equipment will not be carried in an unoccupied T/AT-38 rear cockpit, except in approved cargo carriers.

3.2.2. Objects will not be placed on top of the glare shield during start.

3.2.3. Publications, maps, and personal items placed in the cockpit will be secured to avoid flight control or throttle interference.

3.2.4. Place only soft-sided, pliable items under ejection seats.

3.2.5. Cans of oil and/or hydraulic fluid will not be carried in the aircraft, except in the weapon system support pod (WSSP).

3.2.6. (Added-AETC) Aircrews should use extreme caution when stowing items in the rear cockpit. If it is necessary to place items on or near the rear cockpit breaker panels, they should not exceed 8 inches in height to prevent interference with the balance weight arm. After closing the canopy with items stored near the rear cockpit circuit breaker panels, aircrew should visually confirm clearance exists between the balance weight arm and the stowed object. When the balance weight arm is fully closed, the bottom of the arm is 10 inches above the rear cockpit breaker panels.

3.2.7. (Added-AETC) For night sorties, the aircraft commander will ensure at least one operative flashlight is available in each occupied cockpit.

3.2.8. (Added-AETC) G-suits are required for all sorties except instrument or navigation.

3.3. Ground and Taxi Operations.

3.3. (AETC) Ground and Taxi Operations. Ground and taxi operations will be conducted in accordance with AFI 11-218, *Aircraft Operation and Movement on the Ground.*

3.3.1. Taxi Interval. The minimum taxi interval is 150 feet staggered or 300 feet in trail. Spacing may be reduced when holding short of or entering the runway. Use caution to avoid jet blast.

3.3.2. Ice and (or) Snow Conditions. 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 center line with a minimum of 300 feet of spacing.

3.3.3. Quick Check and Arming. Place hands in view of ground personnel while the quick check inspection and (or) arming/dearming are in progress. If the intercom system is not used during end of

runway (EOR) checks, the pilot will establish and maintain visual contact with the maintenance team chief and (or) weapons load chief to facilitate the use of visual signals. Do not taxi in front of aircraft being armed or de-armed with forward firing ordnance.

3.4. Flight Lineup. Flights will line up as appropriate based on weather conditions, runway conditions, and runway width. If formation takeoffs are planned, wingmen must maintain wingtip clearance with their element leader. If runway width permits, line up with wingtip clearance between all aircraft in the flight. Trailing elements will delay engine runup if pilots cannot ensure wingtip clearance. Place the wingman on the upwind side if the crosswind exceeds 5 knots.

3.5. Before-Takeoff Checks. After the before-takeoff checks have been completed and prior to takeoff, flight members will inspect each other for proper configuration and any abnormalities.

3.6. Takeoff.

3.6. (AETC) Takeoff. 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.

3.6.1. Do not take off when the runway condition reading (RCR) is less than 10.

3.6.2. Takeoff data will be reviewed and understood by every member of the flight. Particular emphasis should be placed on takeoff and abort factors during abnormal situations such as short or wet runway, heavy gross weights, nonstandard barrier configurations, and abort sequence in formation flights.

3.6.3. Do not take off if the computed takeoff roll exceeds 80 percent of the available runway single ship or 70 percent for a formation takeoff.

3.6.4. The wing commander or operations group commander may approve intersection takeoffs if operational requirements dictate.

3.6.5. Use afterburner (AB) on all takeoffs.

3.6.6. Single-ship rolling takeoffs are authorized when available runway exceeds critical field length by 1,000 feet or more.

3.6.7. (Added-AETC) Rolling takeoffs may be accomplished during daylight hours only.

3.6.8. (Added-AETC) The go/no-go speed for operations with or without a BAK-15 is as follows (paragraphs **3.6.8.1. (Added)** through **3.6.8.3.2.2. (Added)**): (***NOTE:*** The BAK-15 is the only barrier suitable for stopping an aircraft with a pylon, pod, or suspension unit [SUU]; the MA1A is suitable only for a clean aircraft.

3.6.8.1. (Added-AETC) **Operations With a Remotely Controlled BAK-15.** Takeoffs will be accomplished on the frequency of the agency, either tower or runway supervisory unit (RSU), that controls the runway and BAK-15. The barrier will be in the lowered position and will be raised only when the pilot calls for it. (***EXCEPTION:*** The barrier will be in the raised position for AT-38 SUU Category III takeoffs. The pilots will have the barrier raised prior to takeoff.) Requirements by category are as follows:

3.6.8.1.1. (Added-AETC) **Category I.** Use takeoff speed (TOS) as go/no-go speed.

3.6.8.1.2. (Added-AETC) **Category III:**

3.6.8.1.2.1. (Added-AETC) For decision speed (DS) less than TOS, approval of the OG/CC is required. After receiving approval to take off in Category III conditions, the squadron supervisor will brief the aircrew and the supervisor of flying (SOF) on the situation and ensure the crew has the most current data. Only a rated pilot may perform the takeoff. Use the TOS as the go/no-go speed.

3.6.8.1.2.2. (Added-AETC) For DS greater than TOS in a clean configuration, takeoffs are not authorized. With OG/CC approval, AT-38s with a jettisonable SUU may take off with a DS above TOS. The BAK-15 will be in the raised position for these takeoffs. Delay rotation until approximately 150 knots indicated air speed (KIAS) and ensure the nosewheel is off the runway no later than 174 knots groundspeed. Use the single engine takeoff speed (SETOS) as the go/no-go speed.

3.6.8.2. (Added-AETC) **Operations Without a BAK-15:** (***NOTE:*** This includes operations when the remote control equipment is not operating and the BAK-15 is lowered.)

3.6.8.2.1. (Added-AETC) **Category I.** Use adjusted refusal speed (ARS) as go/no-go speed. Operating when critical engine failure speed (CEFS) exceeds ARS requires OG/CC approval. However, if operating under these conditions, only a rated pilot will perform the takeoff and CEFS will be used as go/no-go speed. Stopping distance for aborts with both engines running will be higher than planned in the performance charts because thrust is still being produced during the 3-second delay and after the throttles are pulled to idle. ***NOTE:*** Compute ARS by calculating refusal speed (RS), using runway length minus 2,000 feet.

3.6.8.2.2. (Added-AETC) **Category III.** Category III operations are prohibited.

3.6.8.3. (Added-AETC) **Operations With a Raised, Nonremotely Controlled BAK-15.** Manually raising the BAK-15 when the remote control equipment is not operating may allow operations to continue in some circumstances, as follows: (***NOTE:*** In addition, see **Table 3.1. (Added)**.)

Table 3.1. (Added-AETC) Summary of Nonremotely Controlled BAK-15 Barrier Operations.

ITEM	A Condition	B BAK-15 Position	C Solos May Take off	D Formation Takeoffs	E Who Performs Takeoff?	F Use for Go/No-Go Speed
1	Category I CEFS<ARS	down	yes	yes	any pilot	ARS
2		up				TOS
*3	Category 1 CEFS>ARS		yes (note)	no		
4	Category III DS<TOS		no		rated pilot	SETOS with delayed rotation

NOTE: When CFL is not within 1,000 feet of runway length.

3.6.8.3.1. (Added-AETC) **Category I.** Use TOS as the go/no-go speed. When CEFS exceeds ARS, no formation takeoffs are allowed. However, single-ship interval takeoffs are allowed.

Solo students will not take off when critical field length (CFL) is within 1,000 feet of the runway length.

3.6.8.3.2. (Added-AETC) **Category III:**

3.6.8.3.2.1. (Added-AETC) When DS is less than TOS, delay rotation until approximately 150 KIAS (T-38A) or 155 KCAS (T-38C) and ensure the nosewheel is off the runway no later than 174 knots groundspeed. Only a rated pilot may perform the takeoff. Use the SETOS as the go/no-go speed.

3.6.8.3.2.2. (Added-AETC) When DS is greater than takeoff speed in a clean configuration, takeoffs are not authorized. With OG/CC approval, AT-38s with a jettisonable SUU may take off with a DS above TOS. Use the SETOS as the go/no-go speed.

3.6.9. (Added-AETC) The minimum runway available for operations is 8,000 feet. The OG/CC may waive minimum runway available to 7,000 feet. Clearance to operate on runways less than 7,000 feet requires the 19 AF/DO's approval.

3.6.10. (Added-AETC) Aircraft must have a full fuel load for all takeoffs. This requirement may be waived by OG/CC.

3.6.11. (Added-AETC) The instrument hood must be in the retracted position for all takeoffs and landings.

3.7. Formation Takeoff.

3.7. (AETC) Formation Takeoff. Use at least 50 feet of wingtip clearance for engine runup with a solo in any position.

3.7.1. Formation takeoffs are restricted to elements of two aircraft.

3.7.1. (AETC) Single-ship takeoff and landing data will be used when calculating formation takeoff data.

3.7.2. Elements will be led by a qualified flight lead unless an instructor pilot (IP) or flight lead qualified squadron supervisor is in the element.

3.7.3. Do not make formation takeoffs when:

3.7.3.1. Runway width is less than 125 feet.

3.7.3.1. (AETC) Do not make formation takeoffs when runway width is less than 150 feet.

3.7.3.2. Standing water, ice, slush, or snow is on the runway.

3.7.3.3. Crosswind or gust component exceeds 15 knots.

3.7.3.4. Critical field length is within 1,000 feet of actual runway length.

3.7.3.5. Aircraft is being ferried from contractor or Air Force Logistics Center (AFLC) facilities.

3.7.4. Takeoff interval between aircraft or elements will be a minimum of 10 seconds. When join-up is to be accomplished on top, takeoff interval will be increased to a minimum of 20 seconds.

3.7.4.1. After releasing brakes, single ship aircraft will steer toward the center of the runway.

3.8. Join-up and Rejoin.

3.8.1. Day weather criteria for a visual flight rules (VFR) join-up underneath a ceiling is 1,500 feet and 3 miles visibility.

3.8.2. Flight leads will maintain 300 knots indicated airspeed (KIAS) until join-up is accomplished unless mission requirements necessitate a different airspeed. Pilots may delay coming out of AB to help establish a rate of closure on the leader or lead element.

3.8.3. If a turning join-up is to be accomplished, the flight lead will not normally exceed 30 degrees of bank.

3.8.4. Flight members will join in sequence. For a straight-ahead rejoin, the number 2 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 2 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.

3.8.5. When circumstances permit, flight leads will direct a battle damage or bomb check after each mission prior to or during return to base (RTB). This check is mandatory following the expenditure of bombing dummy unit (BDU)-33s. Established deconfliction responsibilities and position change procedures will be observed. Fly no closer than normal fingertip spacing.

3.9. Formations (General).

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

3.9.2. In instrument meteorological conditions (IMC), the maximum flight size is four aircraft.

3.9.3. Do not use rolling maneuvers to maintain or regain formation position below 5,000 feet above ground level (AGL) or in airspace where aerobatics are prohibited.

3.9.4. Use airborne visual signals in accordance with AFI 11-205*, Aircraft Cockpit and Formation Flight Signals*. A radio call is mandatory when directing position changes at night or under instrument conditions.

3.9.5. Flight leads will not break up formations until each pilot has a positive fix from which to navigate (visual or tactical air navigation [TACAN]).

3.9.6. When changing leads:

3.9.6.1. During flight in limited visibility conditions (for example haze, night, or IMC), initiate lead changes from a stabilized, wings-level attitude.

3.9.6.2. The minimum altitude for changing leads within a formation is 500 feet AGL over land or 1,000 feet AGL over water. (For night formation procedures, see **3.20.4.** ; for IMC formation approach, see paragraph **4.7.**)

3.9.6.3. Do not initiate lead changes with the wingman further back than a normal fingertip or route position or greater than 30 degrees back from line abreast.

3.9.6.4. Flight or element 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.

3.9.6.5. The lead change will be initiated by either visual signal or radio call (night or IMC).

3.9.6.6. Acknowledge receipt of the lead by a head nod or radio call, as appropriate.

3.9.6.7. The lead change is effective on acknowledgment.

3.9.6.8. The former lead then moves to the briefed wing position.

3.9.7. (Added-AETC) Maximum flight size is four aircraft unless waived by 19 AF/DO.

3.9.8. (Added-AETC) Over-the-top maneuvers will not be flown in close trail formation.

3.10. Tactical Formations.

3.10.1. General. The following rules apply for flightpath deconfliction during tactical maneuvering:

3.10.1.1. Wingmen must maneuver relative to the flight lead and maintain sight. Trailing aircraft or elements are responsible for deconflicting with lead aircraft or elements.

3.10.1.2. At low altitude, wingman or elements will deconflict by going high relative to the flight lead's or element's plane of motion.

3.10.2. Loss of Visual Contact. Use the following procedures when one or more flight members or elements lose visual contact within the formation:

3.10.2.1. If any flight member or element calls “blind,” the other flight member or element will immediately confirm a “visual” with an informative call.

3.10.2.2. If the other flight member or element is also “blind,” the flight lead will take action to ensure altitude separation between flight members or elements. The flight lead will specify either AGL or mean sea level (MSL) when directing the formation to deconflict. When directed to deconflict, a minimum of 500 feet of altitude separation will be used. Climbs and descents through the deconfliction altitude should be avoided if possible.

3.10.2.3. If there is no timely acknowledgment of the original “blind” call, the flight member or element initiating the call will maneuver away from the last known position of the other flight member or element and alter his or her altitude.

3.10.2.4. 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. Scenario restrictions, such as sanctuary altitudes and (or) adversary blocks must be considered.

3.10.2.5. Aircraft will maintain altitude separation until a visual is regained and, if necessary, will navigate with altitude separation until mutual support is regained.

3.10.3. Two-Ship Formations. The following rules apply for flightpath deconfliction during tactical maneuvering of two-ship formations:

3.10.3.1. Normally, the wingman is responsible for flightpath deconfliction.

3.10.3.2. The flight lead becomes primarily responsible for deconfliction when:

3.10.3.2.1. Tactical maneuvering places the leader in the wingman's “blind cone” or forces the wingman's primary attention away from the lead (for example, the wingman becomes the engaged fighter).

3.10.3.2.2. The wingman calls “blind” and receives an acknowledgment from the flight lead.

Primary deconfliction responsibility transfers back to the wingman once the wingman acknowledges a visual on his or her lead.

3.10.4. Three- and Four-Ship Formations. When flights of more than two aircraft are in tactical formation:

3.10.4.1. Formation visual signals performed by a flight or element lead pertain only to the associated element unless specified briefed otherwise by the flight lead.

3.10.4.2. Trailing aircraft or elements will maintain sufficient spacing so primary emphasis during formation maneuvering or turns is on altitude awareness and deconfliction *within* elements, not on deconfliction *between* elements.

3.11. Chase Formation.

3.11.1. Any qualified pilot may fly safety chase for aircraft under emergency or impending emergency conditions. Qualified stan/eval flight examiners (SEFE) may fly chase during flight evaluations.

3.11.2. On transition sorties, the chase aircraft will perform a single-ship takeoff. In-flight, the chase aircraft will maneuver as necessary, but is primarily responsible for aircraft separation. The chase will not stack lower than lead aircraft below 1,000 feet AGL. In the traffic pattern, the chase aircraft may maneuver as necessary to observe performance. (***NOTE:*** Not applicable for 49 FW T-38/F-117 chase.)

3.11.3. A safety observer in a chase aircraft will maneuver in a 30- to 60-degree cone out to 1,000 feet from which the pilot can effectively clear and (or) provide assistance.

3.12. Show Formation. These formations will be specifically briefed and flown according to applicable directives. Refer to AFI 11-209, *Air Force Participation in Aerial Events*, and applicable MAJCOM directives for specific rules and appropriate approval levels to participate in static displays and aerial events.

3.13. Maneuvering Parameters.

3.13.1. Except as specified for range procedures in AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations,* the minimum altitude is 500 feet AGL for low altitude maneuvering.

3.13.2. Aircraft will not descend below 5,000 feet AGL during any portion of aerobatic maneuvering. Aerobatic flight must be performed in special use airspace.

3.13.3. Flight through wingtip vortices or jetwash should be avoided. If this is unavoidable, the aircraft should be unloaded immediately to approximately 1G. Use asymmetric G limits if evaluating a jetwash-induced over-G.

3.13.4. Do not extend the flaps in an attempt to improve aircraft performance.

3.13.4. (AETC) Unless specifically stated in the exercise or maneuver description, perform all maneuvers with gear and flaps in the retracted position.

3.13.5. Do not attempt to shift centers of gravity by crossfeeding or differential throttles to improve performance.

3.13.6. The minimum airspeed for all maneuvering is 150 KIAS unless conducting training under a formal syllabus that specifies or allows a slower airspeed for the training being conducted.

3.13.7. (Added-AETC) The following additional maneuver parameters apply (paragraphs **3.13.7.1. (Added)** through **3.13.7.5.7. (Added)**):

3.13.7.1. (Added-AETC) Supersonic flight will be performed in accordance with AFI 13-201, *USAF Airspace Management,* and local supplements thereto.

3.13.7.2. (Added-AETC) Minimum altitudes are as follows:

3.13.7.2.1. (Added-AETC) For stalls or slow flight, 8,000 feet above ground level (AGL). Maximum altitude is flight level (FL) 200; minimum revolutions per minute are 80 percent.

3.13.7.2.2. (Added-AETC) For unlimited air combat maneuvering (ACBT), 5,000 feet AGL. For all other aerobatic maneuvers, 8,000 feet AGL.

3.13.7.3. (Added-AETC) Accomplish practice nose high recoveries or instrument unusual attitudes below FL 240 and in visual meteorological conditions (VMC).

3.13.7.4. (Added-AETC) Do not plan a mission above FL 390.

3.13.7.5. (Added-AETC) Prohibited maneuvers are as follows:

3.13.7.5.1. (Added-AETC) Practice no-flap patterns and landings with more than 2,500 pounds of fuel.

3.13.7.5.2. (Added-AETC) Practice single-engine circling approaches or overhead patterns.

3.13.7.5.3. (Added-AETC) Practice no-flap full-stop landings.

3.13.7.5.4. (Added-AETC) Practice minimum roll landings.

3.13.7.5.5. (Added-AETC) Practice in-flight engine shutdown.

3.13.7.5.6. (Added-AETC) Formation touch-and-go landings.

3.13.7.5.7. (Added-AETC) Closed and low-closed traffic patterns immediately after initial takeoff.

3.14. Ops Checks.

3.14.1. Accomplish sufficient ops checks to ensure safe mission accomplishment. Additionally, each pilot should monitor the fuel system carefully throughout the flight to identify low fuel, trapped fuel or an out of balance situation as soon as possible. Frequency should be increased during tactical maneuvering at high power settings. Ops checks are required during climb or at level-off after takeoff, before each engagement or intercept, before entering an air-to-surface range, once while on the range if multiple passes are made, and after departing the range.

3.14.2. Minimum items to check are engine instruments, fuel quantities, fuel balance, G-suit connection, oxygen system, and cabin altitude.

3.14.3. For formation flights, the flight lead will initiate ops checks by radio call or visual signal. Response will be made by radio call or visual signal. The query and response for ops checks will be based on the amount of fuel and Gs. Normally, reset the G-meter between ops checks.

3.14.4. G-awareness Exercise. The G-awareness exercise will be accomplished when directed by AFI 11-214. G-awareness turns will be accomplished on UFT sorties where maneuvers in excess of +4 Gs are anticipated.

3.15. Radio Procedures.

3.15.1. Preface all communications with the complete flight call sign (except for wingman acknowledgment). Transmit only information essential for mission accomplishment or safety of flight. Do not use the radio as a flight "intercom." Use visual signals whenever practical.

3.15.2. Use a KIO radio call to cease tactical maneuvering when safety of flight is a factor, especially for an inflight emergency. Any flight member may make this call. When a dangerous situation is developing, be directive first. A KIO applies to any phase of flight and all types of missions. All participants will acknowledge a KIO by repeating the call.

3.15.3. All radio checks and channel changes will be initiated by the flight lead and will be acknowledged in turn by individual flight members prior to any flight member switching channels. *EXCEPTION:* During radio silent or limited comm operations, channel changes will be as briefed.

3.15.4. Acknowledge radio checks that do not require the transmission of specific data by individual flight members in turn (for example, "2, 3, 4"). Acknowledgment indicates the appropriate action is complete, in the process of being completed, or understood by the flight member.

3.15.5. In addition to the standard radio procedures outlined in AFI 11-202, volume 3, specific mission guides, and FLIP publications, all flight members will acknowledge understanding the initial air traffic control (ATC) clearance. They will acknowledge subsequent ATC instructions when directed by the flight lead or anytime during trail departures.

3.15.6. Brevity code and other terminology will be according to MCM 3-1,volume 1*, General Planning and Employment Consideration* (projected to be AFTTP 3-1).

3.16. Change of Aircraft Control. Both pilots of the T/AT-38 must know at all times who has control of the aircraft. Transfer of aircraft control will be made with the statement "You have the aircraft." The pilot receiving control of the aircraft will acknowledge "I have the aircraft." Once assuming control of the aircraft, maintain control until relinquishing it as stated above. If the intercom fails, transfer of aircraft control will be accomplished by the pilot assuming control shaking the stick, unless prebriefed otherwise.

3.17. Low Altitude Procedures (General).

3.17.1. Low-level formation positions and tactics will be flown, using MCM 3-1, Volume 1 (projected to be AFTTP 3-1); MCMAN 11-238, Volume 1 (projected to be AFMAN 11-2XX, volume 1); and MCMAN 11-238, Volume 2 (projected to be AFMAN 11-2XX, Volume 2); as guides.

3.17.2. During briefings, emphasis will be placed on low altitude flight maneuvering and observation of terrain feature or obstacles along the route of flight. For low altitude training over water or featureless terrain, include specific emphasis on minimum altitudes and spatial disorientation.

3.17.3. If flight leads are unable to visually acquire or ensure lateral separation from known vertical obstructions that are a factor to the route of flight, they will direct a climb no later than 3 NM prior to the obstacle to ensure vertical separation by 2 NM from the obstacle.

3.17.4. At altitudes below 1,000 feet AGL, wingmen will not fly at a lower AGL altitude than lead.

3.17.5. When crossing high or hilly terrain, maintain a positive G on the aircraft and do not exceed approximately 120 degrees of bank. Maneuvering at less than 1G is limited to upright bunting maneuvers.

3.17.6. The minimum airspeed for low level navigation is 300 KIAS.

3.17.7. During low-altitude training, maintain a minimum of 500 feet above the highest terrain or obstacle within 1/2 NM of the aircraft.

3.17.8. (Added-AETC) The following additional low altitude procedures apply (paragraphs **3.17.8.1. (Added)** through **3.17.8.3. (Added)**):

3.17.8.1. (Added-AETC) Conduct low altitude training no earlier than 30 minutes after sunrise (1 hour mountainous terrain) and exit the low altitude structure no later than 30 minutes prior to sunset (1 hour mountainous terrain).

3.17.8.2. (Added-AETC) Single ship low altitude training will be dual.

3.17.8.3. (Added-AETC) The maximum airspeed for undergraduate flying training (UFT) low-level operations is 420 knots. The maximum airspeed for Introduction to Fighter Fundamentals low-level operations is 450 knots.

3.18. Minimum Altitudes. A pilot's minimum altitude will be determined and certified by the unit commander according to AFI 11-2T/AT-38, Volume 1, *T-38 and AT-38 Aircrew Training*. Pilots participating in approved step-down training programs will comply with the requirements and restrictions of that program. The following minimum altitudes apply to low-level training unless higher altitudes are specified by route restrictions or a training syllabus:

3.18.1. For pilots who have not completed step-down training and who are not designated for flights at lower altitudes, the minimum altitude is 1,000 feet AGL. Completion of a Joint Specialized Undergraduate Pilot Training (JSUPT) or Introduction to Fighter Fundamentals (IFF) Instructor Pilot (IP) course clears JSUPT or IFF IPs to fly or instruct low-level navigation or formation missions (without offensive air-to-air employment or threat reaction) down to 500 feet AGL.

3.18.2. For night or IMC operation, the minimum altitude is 1,000 feet above the highest obstacle within 5 NM of the course.

3.18.3. During all low altitude operations, the immediate reaction to task saturation, diverted attention, KIO, or emergencies is to climb to route abort altitude (RAA) or a prebriefed safe altitude (minimum 1,000 feet AGL).

3.18.4. Weather minimums for visual low level training will be 1,500 feet and 3 miles for any route or area, as specified in FLIP (for military training routes), or as specified in unit publications, whichever is higher.

3.18.5. (Added-AETC) The minimum altitude for flying visual flight rules (VFR) point-to-point navigation missions dictated by operational or training requirements is 3,000 feet AGL.

3.19. Low Level Route and Area Abort Procedures.

3.19.1. Visual meteorological conditions (VMC) route and area abort procedures are as follows:

3.19.1.1. Maintain safe separation from the terrain.

3.19.1.2. Comply with VFR altitude restrictions and squawk applicable identification friend or foe (IFF) modes and codes.

3.19.1.3. Maintain VMC at all times.

3.19.1.4. Attempt contact with controlling agency, if required.

3.19.2. IMC route and area abort procedures are as follows:

3.19.2.1. Immediately climb to or above the computed RAA (Reference paragraph **2.3.3.3.** for computing RAA).

3.19.2.2. Maintain preplanned ground track. Execute appropriate lost wingman procedures if necessary.

3.19.2.3. If deviations from normal route or area procedures are required or if the RAA or minimum safe altitude (MSA) is higher than the vertical limits of the route or area, squawk (IFF) emergency.

3.19.2.4. Attempt contact with the appropriate ATC agency for an instrument flight rules (IFR) clearance. If required to fly in IMC without an IFR clearance, cruise at appropriate VFR altitudes until IFR clearance is received.

3.20. Night Operational Procedures.

3.20.1. Night Ground Operations. The anticollision (beacon) light may be turned to OFF and the position lights turned to DIM if they prove to be a distraction. Taxi spacing will be a minimum of 300 feet and on the taxiway center line. 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.) For formation takeoffs, flight or element lead will turn the anticollision light to OFF and position lights to DIM when reaching the runup position on the runway. Wingmen will maintain the anticollision light to ON and position lights to BRIGHT for takeoffs, unless IMC will be encountered shortly after takeoff.

3.20.2. Night Takeoff. During a night formation takeoff, brake release and gear retraction will be called on the radio. Following takeoff, each aircraft or element will climb on runway heading to 1,000 feet AGL before initiating turns, except where departure instructions specifically prohibit compliance or executing a night overhead traffic pattern.

3.20.3. Night Join-up. Not Authorized.

3.20.4. Night Formation Procedures**.**

3.20.4. (AETC) The maximum aircraft in a night formation is two. If a three- or four-ship formation takes off prior to darkness, the formation may remain together until the flight lead directs a splitup.

3.20.4.1. When in positions other than fingertip or route, aircraft spacing will be maintained primarily by instruments, and (or) timing, with visual reference secondary. If aircraft spacing cannot be ensured, an altitude separation (minimum of 1,000 feet) will be established. At all times, aircrews will cross-check instruments to ensure ground clearance.

3.20.4.2. Do not change lead or wing positions below 1,500 feet AGL unless on RADAR downwind. Lead and position changes will be called over the radio, and they should be initiated from a stabilized, wings-level attitude.

3.20.5. Night Fingertip Position. Night fingertip formation is flown in approximately the same position as during the day. If illumination is insufficient to use day references, exterior lighting relationships may be used.

3.20.6. Night Breakup. Prior to a night formation breakup, the flight lead will transmit attitude, altitude, airspeed, and altimeter setting, which will be acknowledged by wingmen. Wingmen will also confirm good navigational aids. This procedure is not required for a formation breakup that occurs in the overhead traffic pattern.

3.20.7. (Added-AETC) **Night Operations.** The following additional night operations procedures apply (paragraphs **3.20.7.1. (Added)** through **3.20.7.5. (Added)**):

3.20.7.1. (Added-AETC) Fly night overhead patterns only at the home base. (Lackland AFB is included for the 12th Flying Training Wing.)

3.20.7.2. (Added-AETC) All night landings require operational glidepath guidance (precision approach or visual glidepath guidance) as follows:

3.20.7.2.1. (Added-AETC) Unless required by a formal course syllabus or training associated with instructing that syllabus, the preferred night approach procedures (in descending order) are as follows: precision approach, nonprecision approach with an associated visual descent path indicator, VFR straight-in, and VFR rectangular pattern.

3.20.7.2.2. (Added-AETC) When available, use a visual descent path indicator to monitor glide slope position during visual approaches. Also use the instrument landing system (ILS) glide slope if available.

3.20.7.3. (Added-AETC) All descents below a minimum descent altitude on a nonprecision approach require an operational visual approach system.

3.20.7.4. (Added-AETC) The instrument straight-in portion of a circling approach (tactical air navigation [TACAN] A) is allowed. However, the straight-in approach must terminate in either a missed approach or a transition to visual approach guidance for landing; for example, visual approach slope indicator (VASI) or precision approach path indicator (PAPI).

3.20.7.5. (Added-AETC) Formation landings will not be accomplished at night.

3.21. Fuel Requirements.

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

3.21.2. Bingo Fuel. A prebriefed fuel state which 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 (see paragraph **3.21.3.**).

3.21.3. Normal Recovery Fuel. The fuel on initial or at the final approach fix (FAF) at the base of intended landing or alternate, if required. Fuel quantity will be as established locally or 800 pounds, whichever is higher.

3.21.4. Minimum and Emergency Fuel. When it becomes apparent an aircraft will enter initial or start an instrument final approach at the base of intended landing or alternate (if required), declare the following (as applicable):

3.21.4.1. Minimum fuel--600 pounds or less.

3.21.4.2. Emergency fuel--400 pounds or less.

3.22. Approaches and Landings.

3.22. (AETC) Approaches and Landings. *(UFT only)* 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.

3.22.1. The desired touchdown point is 500 feet from the threshold for a VFR approach or the glidepath interception point for a precision approach. When local procedures or unique runway surface conditions require landing beyond a given point on the runway, the desired touchdown point will be adjusted accordingly.

3.22.2. 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/AT-38 versus T/AT-38), 6,000 feet for dissimilar aircraft (for example, T/AT-38 versus F-15), or as directed by MAJCOM or the landing base, whichever is higher. When wake turbulence is expected due to calm winds or when landing with a light tail wind, spacing should be increased.

3.23. Landing Restrictions.

3.23.1. When the computed landing roll exceeds 80 percent of the available runway, land at an alternate runway, if possible.

3.23.2. When the RCR at the base of intended landing is less than 10, land at an alternate runway, if possible.

3.23.3. Do not land over any raised web barrier (for example, MA-1A, BAK-15).

3.23.4. *(Solo student pilots)* If the crosswind component, including gusts, exceeds 15 knots (dry runway) or 10 knots (wet runway), land at an alternate runway, if possible.

3.24. Overhead Traffic Patterns.

3.24. (AETC) Overhead Traffic Pattern. Rated pilots may use 60-percent flaps on any instrument, visual, or overhead pattern; touch-and-go landing; or full-stop landing.

3.24.1. Overhead patterns can be made with unexpended practice ordnance.

3.24.2. Initiate the break over the touchdown point or as directed.

3.24.3. The break will be executed individually in a level 180 degree turn to the downwind leg at minimum intervals of 5 seconds (except IP or SEFE chase or when in tactical formation).

3.25. Tactical Overhead Traffic Patterns. Tactical entry to the overhead traffic pattern is permitted, using the following parameters:

3.25.1. A maximum of four aircraft authorized in the formation.

3.25.2. Lateral spacing of 4,000 to 6,000 feet.

3.25.3. No more than 6,000 feet of element spacing.

3.25.4. If using an offset box formation, offset away from the direction of the break.

3.25.5. The lead element will break to downwind initiated abeam or over the touchdown point.

3.25.6. The second element (or aircraft if 3-ship formation) will delay a break to downwind until number 2 is clear of the intended flightpath.

3.25.7. Use normal overhead altitude and airspeed.

3.25.8. Normal downwind, base turn positions, and spacing will be flown.

3.25.9. The ATC agency must be familiar with procedure to be flown.

3.26. Touch-and-Go Landings. A touch-and-go landing will not be flown with hung ordnance.

3.26. (AETC) Touch-and-Go Landings. The maximum crosswind for single-ship touch-and-go landings is 25 knots for a dry runway.

3.27. Low Approaches.

3.27.1. Observe the following minimum altitudes:

3.27.1.1. For IPs or SEFEs flying chase position, 50 feet AGL.

3.27.1.2. For formation low approaches, 100 feet AGL.

3.27.1.3. For chase aircraft during an emergency, 300 feet AGL unless safety or circumstances dictate otherwise.

3.27.2. During go-around, remain 500 feet below a VFR overhead traffic pattern altitude until crossing the departure end of the runway (unless local procedures, missed approach or climbout procedures, or controller instructions dictate otherwise).

3.28. Closed Traffic Patterns. Initiate the pattern at the departure end of the runway unless directed or cleared otherwise by local procedures or the controlling agency. When in formation, a sequential closed may be flown with ATC concurrence at an interval to ensure proper spacing. Plan to arrive on downwind between 200 to 240 KIAS.

3.29. Back Seat Approaches and Landings.

3.29.1. An upgrading IP may only accomplish back seat landings when an IP is in the front cockpit.

3.29.2. During back seat approaches and landings, the front seat pilot will visually clear the area, monitor aircraft parameters and configurations, and be prepared to direct a go-around or take control of the aircraft (as briefed by the rear cockpit IP) if necessary.

3.30. Formation Approaches and Landings.

3.30.1. Formation landings will normally be accomplished from an instrument approach or a VFR straight-in approach, using precision approach path indicator (PAPI) or visual approach slope indicator (VASI) lights, if available. In all cases, use a rate of descent similar to that of a normal precision approach.

3.30.2. A qualified flight lead must lead formation landings unless an IP or flight lead qualified squadron supervisor is in the element.

3.30.3. Aircraft must be similarly configured.

3.30.4. Position the wingman on the upwind side if the crosswind exceeds 5 knots.

3.30.5. The wingman will maintain a minimum of 10 feet lateral wingtip spacing.

3.30.6. If the wingman overruns the lead after landing, accept the overrun and maintain the appropriate side of the runway and aircraft control. Do not attempt to reposition behind the lead. The most important consideration is wingtip clearance.

3.30.7. Formation landings are prohibited when:

3.30.7.1. The crosswind or gust component exceeds 15 knots.

3.30.7.2. The runway is reported wet; or ice, slush, or snow is on the runway.

3.30.7.3. The runway width is less than 125 feet.

3.30.7.3. (AETC) Formation landings are prohibited when the runway width is less than 150 feet.

3.30.7.4. Arresting gear tape connectors extend onto the runway surface at the approach end of 125-feet-wide runways.

3.30.7.5. Landing with hung ordnance.

3.30.7.6. The weather is less than 500 feet and 1 1/2 miles or a flight member's weather category, whichever is higher.

3.31. (Added-AETC) Extended Daylight:

3.31.1. (Added-AETC) Extended daylight is defined as the period 15 minutes prior to 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.

3.31.2. (Added-AETC) 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 SOF will decide if maneuvers are appropriate or safe during the times defined in paragraph **3.31.1. (Added)**.

3.32. (Added-AETC) Bat Procedures at Randolph AFB. Approval from the home OG/CC is required to arrive or depart during periods of increased bat activity as defined in Area Planning 1.

3.33. (Added-AETC) 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. In training or operating areas, overwater training flights will not be permitted when forecast or actual wave heights exceed 10 feet or surface winds exceed 25 knots.

3.34. (Added-AETC) Functional Check Flight (FCF) Restrictions:

3.34.1. (Added-AETC) FCFs will not be conducted with other type missions except FCF continuation training (CT), FCF upgrade training, or FCF standardization check flights. All FCF requirements will be accomplished by an FCF pilot or a pilot in training status with an FCF IP on board. Non-FCF-qualified pilots are not authorized to fly during an FCF mission.

3.34.2. (Added-AETC) FCFs may recover at home station when originating from AETC auxiliary fields or from bases within the local flying area.

3.34.3. (Added-AETC) Instrument approaches or other AETC syllabus maneuvers not in accordance with the acceptance and functional check flight TO will not be practiced on FCF missions unless required to check the aircraft. Instrument hoods or vision-restricting devices will not be installed in FCF aircraft.

3.34.4. (Added-AETC) Rearseat publications and seat packs must be removed before solo FCFs.

3.34.5. (Added-AETC) Touch-and-go landings are not authorized on an FCF sortie unless required to complete the FCF according to the acceptance and functional check flight TO.

3.34.6. (Added-AETC) 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. 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.

Chapter 4

INSTRUMENT PROCEDURES

4.1. Approach Category.

4.1.1. The T/AT-38 is approach category E. A missed approach will be accomplished in accordance with flight manual procedures.

4.1.2. Approach category D minimums may be used where no category E minimums are published if:

4.1.2.1. A straight-in approach is flown.

4.1.2.2. The aircraft is flown at a final approach airspeed of 165 KIAS or less.

4.1.2.3. The aircraft is flown at 260 knots true airspeed (KTAS) or less for the missed approach segment of the approach. *(**NOTE:*** At high pressure altitudes and temperatures, 260 KTAS may not be compatible with published missed approach airspeeds and category D approaches should not be flown.)

4.2. Takeoff and Join-up.

4.2.1. The flight lead must notify the appropriate ATC agency when a VMC join-up is not possible because of weather conditions or operational requirements. Coordinate for an appropriate altitude block or trail formation. Formation in-trail departures will comply with instructions for a nonstandard formation flight as defined in FLIP. The flight lead should request IFF squawks for wingmen in trail.

4.2.2. If weather is below 1500 feet and 3 miles, each aircraft or element will climb on takeoff heading to 1,000 feet AGL before initiating any turns, except when departure instructions specifically prohibit compliance.

4.3. Trail Procedures. During trail formations, basic instrument flying is the first priority, and it will not be sacrificed when performing secondary trail tasks. Strictly adhere to the briefed airspeeds, power settings, altitudes, headings, and turn points. If task saturation occurs, cease attempts to maintain contact, immediately concentrate on flying the instrument departure, and notify the flight lead. The flight lead will then notify ATC.

4.4. Trail Departures.

4.4.1. Use a minimum of 20-second takeoff spacing.

4.4.2. Each aircraft or element will accelerate in AB power until reaching 250 KIAS. Accelerate to 300 KIAS in mil. Climb at 300 KIAS using 600 degrees exhaust gas temperature (EGT) until reaching cruise Mach or true airspeed (TAS), unless otherwise briefed. All turns will be made using 30 degrees of bank.

4.4.3. On reaching 300 KIAS, the flight lead will set a prebriefed power setting.

4.4.4. The flight lead will call initiating all turns.

4.4.5. During climbs and descents, each aircraft or element will call passing each 5,000 foot altitude increment with altitude and heading (or heading passing) until join-up or level-off or until the following aircraft or element calls "visual." In addition, each aircraft or element will call initiating any altitude or heading change. Acknowledgments are not required, but it is imperative that preceding aircraft or elements monitor the radio transmissions and progress of the succeeding aircraft or elements and immediately correct deviations from the departure route or planned course.

4.4.6. Each aircraft or element will use all available aircraft systems and navigational aids to monitor position.

4.4.7. Each aircraft or element will maintain at least 1,000 feet vertical separation from the preceding aircraft or element during the climb or descent and at level-off until visual contact is established, except instances where departure instructions specifically prohibit compliance.

4.4.8. In the event a visual join-up cannot be accomplished on top or at level-off, the flight lead will request 1,000 feet of altitude separation for each succeeding aircraft or element if all aircraft can comply with MSA restrictions. If the MSA cannot be complied with, the 1,000 foot vertical separation may be reduced to 500 feet.

4.5. Formation Breakup. Formation breakup should not be accomplished in IMC. However, if it is unavoidable, breakup will be accomplished in straight-and-level flight. Prior to a weather breakup, the flight lead will transmit attitude, airspeed, altitude, and altimeter setting, which will be acknowledged by wingmen. Wingmen will also confirm good navigational aids.

4.6. Formation Penetration.

4.6.1. Formation penetrations are restricted to two aircraft when the weather at the base of intended landing is less than overhead traffic pattern minimums.

4.6.2. If a formation landing is intended, the wingman should be positioned on the appropriate wing prior to weather penetration.

4.7. Formation Approach. During IMC, formation flights will not change lead or wing positions below 1,500 feet AGL unless on radar downwind.

4.8. Simulated Instrument Flight. Simulated instrument flight must be conducted IAW AFI 11-202, volume 3, and requires a qualified safety observer in the aircraft or in a chase aircraft as follows:

4.8.1. Safety observers may occupy either the front or rear cockpit of the T/AT-38 during simulated instrument flight. Under these conditions, an operable intercom is required.

4.8.2. Flying multiple approaches in VMC without a chase is authorized. However, in this case the primary emphasis will be on the “see and avoid” concept. Chase aircraft may move into close formation on final if a formation landing is intended and the simulated instrument flight is terminated.

4.9. Icing Restrictions. Climbs or descents through forecast icing conditions more severe than light rime are prohibited.

4.9. (AETC) Icing Restrictions. Do not fly in known or reported icing conditions. Do not cruise in forecast icing conditions.

4.10. (Added-AETC) Pilot Weather Categories (PWC). PWCs are designed to reduce the exposure of pilots with limited experience to the risks inherent during periods of low ceiling and visibility. **Table 4.1. (Added)**, this supplement, specifies the PWC minimums. Before assigning a lower weather category, a PWC 1 pilot must evaluate the pilot's instrument proficiency. When calculating total time for the purpose of PWC, do not include student, UFT, or "other" flight time. Hours in an assigned aircraft may include all series or mission types of that aircraft. (See notes 1 through 8 in **Table 4.1. (Added)** for further PWC information.)

Table 4.1. (Added-AETC) Pilot Weather Categories (PWC). (See notes 1 through 8.)

ITEM	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 who does not qualify for PWC 1.	Suitable published minimums or 500 feet/1 1/2 miles, whichever is greater.
3	3	A student enrolled in a formal follow-on training course 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 on 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 that the pilot is assigned or attached to will certify assignment to PWC 1 by signing the Letter of Xs. The letter will be filed in the pilot's flight training folder.
3. PWC 1 is the minimum for normal training or support missions. When overriding mission requirements dictate, OG/CCs 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 to determine takeoff and landing criteria.
8. T-38A/B and AT-38 pilots converting to the T-38C will be assigned PWC 2 until achieving a minimum of 50 hours in the T-38C and meet the criteria listed above for PWC 1.

4.11. (Added-AETC) Instrument Flight Rules (IFR). In AETC, the following requirements apply to IFRs (paragraphs **4.11.1. (Added)** through **4.11.7. (Added)**):

4.11.1. (Added-AETC) For local flying operations, aircrews do not have to designate an alternate airfield if all of the following conditions exist (per FAA Exemption No. 7389 and AFFSA AETC Waiver Vol 3/20002):

4.11.1.1. (Added-AETC) Departure and destination airfields are the same.

4.11.1.2. (Added-AETC) An IP or examiner pilot is a crewmember.

4.11.1.3. (Added-AETC) Ceiling and visibility are reported and forecasted to remain above 1,500 feet and 3 miles, respectively, for estimated time en route plus 2 hours.

4.11.2. (Added-AETC) Takeoff minimums are specified in **Table 4.1. (Added)**, this supplement. 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.

4.11.3. (Added-AETC) Do not file to a destination unless the ceiling and visibility for the estimated time of arrival, plus or minus 1 hour, is at or above the appropriate PWC or suitable published minimums, whichever is greater. See **Table 4.1. (Added)**, this supplement.

4.11.4. (Added-AETC) Weather requirements for an alternate requiring radar on the only suitable approach are the same as for an alternate without a published approach procedure.

4.11.5. (Added-AETC) Do not commence a penetration, en route descent, or approach unless existing ceiling and visibility meet the requirements of **Table 4.1. (Added)**, this supplement. During actual instrument meteorological conditions (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.)

4.11.6. (Added-AETC) After commencing a penetration or approach and 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. The PWC decision height or minimum descent altitude will be determined by reference to the touch-down-zone elevation (TDZE) for straight-in approaches and field elevation for circling approaches. Use field elevation if TDZE is unavailable. The pilot may descend below the decision height or minimum descent altitude if (1) the aircraft is in a position to make a normal approach to the runway of intended landing and (2) the pilot can clearly see the approach threshold of the runway, approach lights, or other markings identifiable with the approach end of the runway. 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 may require a pilot to execute a missed approach prior to 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 missed approach point (MAP). On reaching the nonprecision MAP, the pilot should continue with the published missed approach procedure.

4.11.7. (Added-AETC) When flying instrument approaches in VMC conditions, 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 their crewmembers if continuing to published minimums.

Chapter 5

AIR-TO-AIR WEAPONS EMPLOYMENT

5.1. References. AFI 11-214 contains air-to-air procedures applicable to all aircraft. This chapter specifies additional procedures or restrictions which are applicable to T/AT-38 operations.

5.2. Maneuvering Limitations.

5.2.1. Negative "G" guns jink-out maneuvers are prohibited.

5.2.2. Minimum airspeed during low altitude offensive or defensive maneuvering (low altitude training [LOWAT]) is 350 KIAS.

5.2.3. Minimum maneuvering airspeed during ACBT is 150 KIAS.

5.2.4. (Added-AETC) Ground control intercept or air combat maneuvering instrumentation is required to employ more than two aircraft during unlimited maneuvering.

5.2.5. (Added-AETC) Only two aircraft will be in a dissimilar air combat tactics visual engagement.

Chapter 6

AIR-TO-SURFACE WEAPONS EMPLOYMENT

6.1. References. AFI 11-214 contains air-to-surface procedures applicable to all aircraft. This chapter specifies procedures or restrictions applicable to T/AT-38 operations. Qualification and scoring criteria are contained in AFI 11-2T/AT-38, volume 1.

6.2. Off-Range Attacks. With expendable ordnance loaded on the aircraft, simulated weapons employment off range is permitted. However, the master arm must remain safe, and the pickle button or trigger will not be used.

6.3. Weather Minimums. Basic weather minimums established in AFI 11-214 apply. In no case will the ceiling be lower than 2,000 feet AGL for climbing or diving deliveries or 1,500 feet AGL for level deliveries.

6.4. Popup Attacks. Abort popup attacks if airspeed decreases below 300 KIAS.

6.5. Night Weapons Delivery and Range Operations. Night weapons delivery and range operations are prohibited.

6.6. (Added-AETC) Loft or Toss Attacks. Loft or toss attacks with live ordinance are prohibited.

6.7. (Added-AETC) Unexpended Ordnance. Aircraft with unexpended ordnance may not perform touch-and-go landings.

Chapter 7

ABNORMAL OPERATING PROCEDURES

7.1. General. Follow the procedures in this chapter when other than normal circumstances occur. These procedures do not supersede procedures contained in the flight manual.

7.1.1. Do not accept an aircraft for flight with a malfunction addressed in the emergency or abnormal procedures section of the flight manual until appropriate corrective actions have been accomplished.

7.1.1. (AETC) No aircraft will be accepted for flight with the low oxygen quantity light illuminated. (The OG/CC may authorize a one-time flight below 10,000 feet MSL.) If oxygen quantity decreases to 1 liter or less when airborne, descend to at or below 10,000 feet MSL and land as soon as practical.

7.1.2. Do not taxi an aircraft with nosewheel steering, brake system, or generator malfunctions or failures.

7.1.3. Once a malfunctioning system is isolated and (or) the fault corrected, the system will not be used again unless it is used in a degraded mode and is essential for recovery. Do not conduct ground or inflight troubleshooting after flight manual emergency procedures are completed.

7.2. Ground Aborts.

7.2.1. If a flight member aborts prior to takeoff, and the flight lead renumbers the flight to maintain a numerical call sign sequence, flight lead will advise the appropriate agencies of such changes.

7.2.2. If the flight lead aborts, a flight of two or more aircraft with only one designated flight lead in the formation must either sympathetically abort or proceed on a prebriefed single-ship mission.

7.2.3. Pilots who do not take off with the flight may join the flight at a briefed rendezvous point prior to a tactical event or may fly a briefed alternate single-ship mission. If a join-up is to be accomplished on an air-to-ground range, all events will be terminated until the joining aircraft has achieved proper spacing.

7.2.4. The pilot in command is primarily responsible for handling inflight emergencies. The additional pilot (if applicable) will confirm all critical action procedures have been accomplished and provide checklist assistance at the request of the pilot in command.

7.3. Takeoff Aborts.

7.3.1. If an abort occurs during takeoff roll, give the call sign and state intentions when practical. Following aircraft will alter their takeoff roll to ensure clearance or abort the takeoff if adequate clearance cannot be maintained. The phrase “barrier, barrier, barrier” will be used to direct the tower to raise the departure end barrier.

7.3.2. When aborting, if hot brakes are suspected, declare a ground emergency. Taxi the aircraft to the designated hot brake area and follow hot brake procedures.

7.4. Air Aborts.

7.4.1. If an abort occurs after takeoff, all aircraft will maintain their original numerical call sign.

7.4.2. Aborting aircraft with an emergency condition will be escorted to the field of intended landing. When other than an emergency condition exists, the flight lead will determine if an escort for the aborting aircraft is required.

7.4.3. Regardless of apparent damage or subsequent normal operation, the mission will be aborted for any of the following:

7.4.3.1. Bird strike or foreign object damage.

7.4.3.2. Over-G. The aircraft will land as soon as practical out of a straight-in approach.

7.4.3.3. Flight control system anomalies.

7.4.3.4. Engine flameout, stagnation, or shutdown.

7.4.4. Report all engine anomalies during maintenance debriefing.

7.5. Radio Failure.

7.5.1. Formation:

7.5.1.1. A pilot who experiences total radio failure while in close or route formation will maneuver within close or route parameters to attract the attention of another flight member and give the appropriate visual signals. The mission should be terminated as soon as practical and the NORDO aircraft led to the base of intended landing or a divert base. A formation approach to a drop-off on final should be performed unless safety considerations dictate otherwise.

7.5.1.2. If flying other than close or route formation when radio failure occurs, the NORDO aircraft should attempt to rejoin to a route position at approximately 500 feet on another flight member. The NORDO aircraft is responsible for maintaining clearances from other flight members until its presence is acknowledged by a wing rock, signifying clearance to join. Once joined, the NORDO aircraft will give the appropriate visual signals. If prebriefed, the NORDO aircraft may proceed to a rendezvous point and hold. If no one has rejoined prior to reaching bingo fuel, the NORDO aircraft should proceed to the base of intended landing or a divert base. Aircraft experiencing any difficulty or emergency in addition to NORDO will proceed as required by the situation.

7.5.2. Surface Attack NORDO Procedures:

7.5.2.1. For class A and manned class B ranges:

7.5.2.1.1. Attempt contact with the range control officer (RCO) on the appropriate backup frequency.

7.5.2.1.2. If contact cannot be reestablished, make a pass by the range control tower on the attack heading while rocking wings and turn in the direction of traffic. The flight lead will either rejoin the flight and RTB or direct another flight member to escort the NORDO to a recovery base.

7.5.2.1.3. If the NORDO aircraft has an emergency, make a pass by the range control tower (if practical) on the attack heading while rocking wings, turn opposite the direction of traffic, and proceed to a recovery base. The flight lead will direct a flight member to join up and escort the emergency aircraft.

7.5.2.2. For unmanned class B and class C ranges, make a pass on the target, if possible, while rocking wings. The leader will either rejoin the flight in sequence and recover or direct another flight member to escort the NORDO aircraft to a recovery base. If the NORDO has an emergency, it will (if practical) make a pass on the target, rock its wings, turn the opposite direction of traffic, and proceed to a recovery base. The flight lead will direct a flight member to join up and escort the emergency aircraft.

7.5.2.3. If radio failure occurs and circumstances prevent landing with unexpended ordnance, safe jettison of ordnance may be accomplished if the following conditions are met:

7.5.2.3.1. The NORDO aircraft joins on another flight member who has radio contact with the RCO.

7.5.2.3.2. Jettison visual signals specified in AFI 11-205 are relayed to the NORDO aircraft to initiate jettison.

7.5.3. NORDO Recovery. For a NORDO recovery, the procedures in AFI 11-205 and FLIP apply. If a formation straight-in approach is flown and a go-around becomes necessary, the chase will go around, pass the NORDO aircraft, and rock its wings. The NORDO aircraft will go around if the situation allows. If the NORDO aircraft is in formation as a wingman, the lead will initiate a gentle turn into the wingman and begin the go-around.

7.6. Severe Weather Penetration. Do not attempt to fly through severe weather. However, if severe weather is unavoidable, prior to severe weather penetration, flights should split up and obtain separate clearances.

7.7. Lost Wingman Procedures. In any lost wingman situation, immediate separation of aircraft is essential. On losing sight of the lead or if unable to maintain formation due to spatial disorientation (SD), the wingman will simultaneously execute applicable lost wingman procedures while transitioning to instruments. Smooth application of control inputs is imperative to minimize SD effects. Once lost wingman procedures have been executed, permission to rejoin the flight must be obtained from the flight lead.

7.7.1. For two- or three-ship flights, in wings-level flight (climb, descent, or straight and level) simultaneously inform the lead and turn away, using 15 degrees of bank for 15 seconds. Then resume the heading and obtain a separate clearance.

7.7.1.1. When outside the turn, reverse the direction of turn, using 15 degrees of bank for 15 seconds and inform the lead. Continue straight ahead to ensure separation prior to resuming the turn. Obtain a separate clearance.

7.7.1.2. When inside the turn, momentarily reduce power to ensure nose-tail separation and inform the flight lead to roll out of the turn. Maintain angle of bank to ensure lateral separation and obtain separate clearance. The lead may resume the turn only when separation is ensured.

NOTE: If in three-ship echelon, refer to four-ship lost wingman procedures (paragraph **7.7.2.**).

7.7.1.3. For a precision or nonprecision final, the wingman will momentarily turn away to ensure separation, commence a climb, inform lead, proceed to the missed approach point, and carry out the published missed approach procedure while obtaining a separate clearance from approach control.

7.7.1.4. For a missed approach, the wingman will momentarily turn away to ensure separation, inform lead, and continue the published or assigned missed approach procedure while climbing to 500 feet above missed approach altitude. He or she will obtain a separate clearance from approach control.

7.7.2. For four-ship flights, if only one aircraft in the flight becomes separated, the previous procedures will provide safe separation. However, because it is impossible for number 4 to immediately ascertain that number 3 still has visual contact with the lead, it is imperative that number 4's initial action be based on the assumption that number 3 has also become separated. Numbers 2 and 3 will follow the procedures outlined above. Number 4 will follow the appropriate procedure as follows:

7.7.2.1. For wings-level flight, simultaneously inform the lead and turn away, using 30 degrees of bank for 30 seconds. Then resume heading and obtain a separate clearance.

7.7.2.2. When outside the turn, reverse direction of the turn, using 30 degrees of bank for 30 seconds to ensure separation from lead and number 3. Then obtain a separate clearance.

7.7.2.3. When inside the turn, momentarily reduce power to ensure nose-tail separation and increase bank angle by 15 degrees. Inform the lead to roll out. Obtain a separate clearance. The lead will resume the turn only when separation is ensured.

7.7.3. The flight lead should acknowledge the lost wingman's radio call and transmit attitude, heading, altitude, airspeed, and other parameters as appropriate. Care must be taken to observe published terrain clearance limits.

7.7.4. If a wingman becomes separated and any aircraft experiences radio failure, the aircraft with the operational radio will obtain a separate clearance. The NORDO aircraft will turn the IFF to normal code 7600 while proceeding with the previous clearance. If an emergency situation arises along with radio failure, turn the IFF to Emergency for the remainder of the flight.

7.7.5. Lost wingman procedures will be practiced only in VMC.

7.7.6. With the flight lead's permission, wingmen may rejoin if weather conditions permit and a visual join-up can be accomplished.

7.8. Spatial Disorientation (SD). Conditions that prevent a clear visual horizon or increase pilot tasking are conducive to SD. To prevent SD, the pilot will make a conscious attempt to increase his or her instrument cross-check rate. When SD symptoms are detected, the following steps will be taken until symptoms abate:

7.8.1. Single-Ship:

7.8.1.1. Concentrate on flying basic instruments with frequent reference to the attitude indicator. Use heads-down instruments. Defer nonessential cockpit tasks. If flying dual, transfer control to the other pilot.

7.8.1.2. If symptoms persist, bring aircraft to a straight-and-level flight with reference to the attitude indicator conditions permitting. If the terrain permits, maintain a straight-and-level flight until symptoms abate, usually in 30 to 60 seconds.

7.8.1.3. If necessary, declare an emergency and advise ATC.

NOTE: It is possible for SD to proceed to the point where the pilot is unable to see, interpret, or process information from the flight instruments. Aircraft control in such a situation is impossible. A pilot must recognize when physiological or psychological limits have been exceeded and be prepared to abandon the aircraft.

7.8.2. Formation Lead:

7.8.2.1. A flight lead experiencing SD will notify the wingmen. The flight lead will then comply with procedures in paragraph **7.8.1.**

7.8.2.2. If possible, wingmen should confirm attitude and provide verbal feedback to lead.

7.8.2.3. If symptoms persist, the lead should terminate the mission and recover the flight by the simplest and safest means possible.

7.8.3. Formation Wingman:

7.8.3.1. The wingman will advise the lead when disorientation makes it difficult for the wingman to maintain his or her position.

7.8.3.2. The lead will advise the wingman of aircraft attitude, altitude, heading, and airspeed.

7.8.3.3. If symptoms persist, the lead will establish a straight-and-level flight for 30 to 60 seconds, conditions permitting.

7.8.3.4. If the above procedures are not effective, the lead should consider passing the lead to the wingman, provided the leader will be able to maintain situational awareness from a chase position. Transfer lead while in straight and level flight. Once assuming the lead, the wingman will maintain straight-and-level flight for 60 seconds. If necessary, terminate the tactical mission and recover by the simplest and safest means possible.

7.8.4. Three/Four-Ship Formation. The lead should separate the flight into elements to more effectively handle a wingman with persistent SD symptoms. Establish a straight-and-level flight according to paragraph **4.5.** (Formation Breakup). The element with the SD pilot will remain straight and level while the other element separates from the flight.

7.9. Armament System Malfunctions.

7.9.1. Inadvertent Release:

7.9.1.1. Record switch positions at the time of inadvertent release and provide to armament and safety personnel. Record the impact point, if known.

7.9.1.2. Check armament switches safe and do not attempt further release in any mode. Treat remaining stores as hung ordnance and obtain a chase aircraft during RTB, if practical.

7.9.1.3. If remaining stores present a recovery hazard, jettison them in a suitable area on a single pass, if practical.

7.9.1.4. Impound the aircraft upon landing.

7.9.2. Failure to Release (or Hung Ordnance). If ordnance fails to release when all appropriate switches are set, proceed as follows:

7.9.2.1. Verify the proper switch position.

7.9.2.2. Recheck switch positions and make an additional attempt to expend.

7.9.2.3. If remaining stores present a recovery hazard, jettison them in a suitable area on a single pass, if practical.

7.9.2.4. If ordnance remains on the aircraft, follow the hung ordnance recovery procedures.

7.10. Inflight Practice of Emergency Procedures.

7.10. (AETC) Inflight Practice of Emergency Procedures. Simulated emergency practice requires daylight and a ceiling/visibility of 1,500 feet/3 miles and VFR cloud clearance according to Table 7.1 of AFI 11-202, Volume 3, *General Flight Rules.*

7.10.1. A simulated emergency procedure is a procedure that produces an effect that would closely parallel the actual emergency, such as retarding the throttle to a degree that produces a drag equivalent to a flamed out or idle engine.

7.10.1. (AETC) Pilots current or upgrading in the aircraft may practice simulated emergency procedures according to aircraft-specific guidance. Pilots will not practice simulated emergency takeoff, approach, or landing procedures unless an IP or flight examiner has immediate access to aircraft controls except as follows:

7.10.1.1. (Added-AETC) Staff proficiency pilots flying dual may practice simulated emergency takeoff, approach, and landing procedures without an IP or flight examiner in the aircraft.

7.10.1.2. (Added-AETC) Students in Euro-NATO joint jet pilot training (ENJJPT) pilot instructor training (PIT) are authorized to practice simulated single-engine and no-flap approaches and landings on syllabus-directed team sorties.

7.10.2. All practice and (or) training related to aborted takeoffs will be accomplished in the flight simulator, cockpit familiarization trainer (CFT), or static aircraft.

7.10.2. (AETC) Pilots will not practice takeoff emergency procedures below 500 feet AGL.

7.10.3. Practice inflight engine shutdown is prohibited.

7.10.3. (AETC) Practice in-flight engine shutdown is prohibited except for FCF missions and formal-course syllabus requirements.

7.10.4. Refer to AFI 11-202, Volume 3 and applicable MAJCOM supplement for emergency landing patterns.

7.10.5. (Added-AETC) Initiate a simulated single-engine go-around by 100 feet AGL (300 feet AGL if full flaps are used).

7.11. Search and Rescue (SAR) Procedures. If an aircraft is lost in flight, actions must immediately begin to locate possible survivors and initiate rescue efforts. All flight members must aggressively pursue location and rescue of downed personnel even if they seem uninjured. Many downed aircrews initially suffer from shock or have delayed reactions to ejection injuries. The following procedures are by no means complete and should be adjusted to meet each unique search and rescue situation: (*NOTE*: Specific procedures will be detailed in **Chapter 8** under Section F, Abnormal Procedures--see paragraph **8.5.6.** of this instruction.)

7.11.1. SQUAWK. Immediately terminate maneuvering, using appropriate KIO procedures. Establish a SAR commander. Place the IFF to Emergency to alert ATC or ground control intercept (GCI) of the emergency situation.

7.11.2. TALK. Communicate the emergency situation and aircraft or flight intentions immediately to applicable control agencies. Use GUARD frequency if necessary.

7.11.3. MARK. Mark the last known position of survivors or crash site, using any means available. The TACAN or INS position, ATC or GCI positioning, or ground references should be used to identify the immediate area for subsequent rescue efforts.

7.11.4. SEPARATE. Remain above the last observed parachute altitudes until the position of all possible survivors is determined. Deconflict other aircraft assisting in the SAR by altitude to prevent a midair collision. Establish high or low combat air patrol (CAP) as necessary to facilitate communications with other agencies.

7.11.5. BINGO. Revise bingo fuels or recovery bases as required to maintain maximum SAR coverage over survivors or crash site. Do not overfly bingo fuel. Relinquish SAR operation to designated rescue forces on their arrival.

7.12. Solo Student Restrictions. *(UFT only)*

7.12.1. Do not perform the following:

7.12.1.1. Traffic pattern stalls or approach to stalls or slow flight.

7.12.1.2. Advanced handling characteristics maneuvers.

7.12.1.3. Practice nose high and low recoveries.

7.12.1.4. Practice lost wingman as wing.

7.12.1.5. Rolling takeoffs.

7.12.1.6. Practice emergency patterns and landings.

7.12.1.7. Low closed or circling approaches.

7.12.1.8. Formation landings.

7.12.1.9. Sixty-percent flap patterns or landings.

7.12.1.10. Takeoffs or landings with crosswinds greater than 15 knots.

7.12.1.11. Patterns and landings with more than 2500 pounds of fuel.

7.12.1.12. An aircraft with any known malfunction or requiring an operational check (*EXCEPTION:* Inoperative instrumentation in the rear cockpit).

7.12.1.13. Any unbriefed maneuver.

7.12.1.14. On the wing of another solo student.

7.12.1.15. Formation low approaches below 300 feet AGL.

7.12.1.16. (Added-AETC) Split S or sliceback aerobatic maneuver entries below 18,000 feet AGL.

7.12.1.17. (Added-AETC) Lead or number three position in a four-ship formation (except the 80th Flying Training Wing).

7.12.2. Solo student minimum fuel is 800 pounds.

7.12.3. Post-contact checkride solo students may climb and descend through IMC if the ceiling is at or above 5,000 feet AGL and not more than 2,000 feet thick. Minimum inflight visibility is 5 NM. Solo students will not level off or cruise in any IMC conditions.

7.12.4. (Added-AETC) When lead directs a radio change while in fingertip, each wingman will acknowledge and assume the route position unless in IMC or briefed otherwise. Return to the fingertip position after the last wingman checks in.

7.13. (Added-AETC) T-38 Minimum Equipment (Excluding FCFs). In AETC, the T-38 minimum equipment (excluding FCFs) is as follows (paragraphs **7.13.1. (Added)** through **7.13.5. (Added)**):

7.13.1. (Added-AETC) The following equipment must be fully operational for all sorties:

7.13.1.1. (Added-AETC) TACAN (T-38A/B, AT-38); VOR/DME (T-38C).

7.13.1.2. (Added-AETC) Landing or taxi light. (Except when detrimental to safety, pilots will display landing lights during all pattern operations.)

7.13.1.3. (Added-AETC) Primary and standby attitude director indicator.

7.13.1.4. (Added-AETC) Anticollision beacons.

7.13.1.5. (Added-AETC) Angle of attack indicator or indexer.

7.13.2. (Added-AETC) Position lights are required for night sorties.

7.13.3. (Added-AETC) A flight with an inoperable identification, friend or foe (IFF) or selective identification feature (SIF) is authorized for formation sorties with a minimum of one operable IFF or SIF per element.

7.13.4. (Added-AETC) Inoperable equipment in the rear cockpit is not restrictive for solo flight.

7.13.5. (Added-AETC) The ILS must be fully operational if a planned departure or arrival is conducted in IMC and an ILS or localizer is the only compatible instrument approach procedure. ***NOTE:*** Primary flight instruments must be operative in both cockpits for night or IMC flights when aviators performing aircrew duties occupy both cockpits. If an aircraft has a major maintenance discrepancy, only the OG/CC exercising operational control over that aircraft may approve a one-time flight.

Chapter 8

LOCAL OPERATING PROCEDURES

8.1. Use of This Chapter. This chapter is reserved for unit local operating procedures. If this chapter is incorporated in another base publication (instruction, supplement, etc.), a single page insert will be used referencing its location or the entire publication will be inserted, as appropriate.

8.2. Guidance. Procedures herein will not be less restrictive than those contained elsewhere in this instruction, nor is this chapter intended to be a single source document for procedures contained in other directives or instructions. Unnecessary repetition of guidance provided in other established directives should be avoided. However, reference to those directives is acceptable when it serves to facilitate location of information necessary for local operating procedures.

8.3. Publications Approval Channels and Format. This chapter is authorized to be issued to each T/AT-38 pilot. MAJCOMs or other subordinate agencies (numbered Air Forces [NAF], wings, etc.) may direct publications approval channels and a specific format for **Chapter 8** based on unique flying areas, missions, and (or) procedures. Unless changed by MAJCOM or subordinate agency, the procedures in paragraph **8.4.** apply.

8.4. Procedures for Publishing. When publishing **Chapter 8**, units will forward copies to the MAJCOM and appropriate subordinate agencies who will review it and return their comments or required changes back to the units, as appropriate. The process need not delay distribution unless specified otherwise by the MAJCOM or subordinate agency. If a procedure is determined to be applicable to all T/AT-38 units, it will be incorporated into the basic instruction.

8.5. Organization of Chapter 8. The local **Chapter 8** will be organized in the following format and will include, but not be limited to, the following information:

8.5.1. Section A. Introduction.

8.5.2. Section B. General Policy.

8.5.3. Section C. Ground Operations.

8.5.4. Section D. Flying Operations.

8.5.5. Section E. Weapons Employment.

8.5.6. Section F. Abnormal Procedures.

8.5.7. Attachments. Illustrations.

8.6. Procedures for Inclusion. This chapter will include procedures for the following, as applicable:

8.6.1. Command and control.

8.6.2. Fuel Requirements and bingo fuels.

8.6.3. Diversion instructions.

8.6.4. Jettison areas, procedures, and parameters (IFR and (or) VFR).

8.6.5. Controlled bailout areas.

8.6.6. Local weather procedures.

8.6.7. Unit standards (optional).

8.6.8. Approved alternate missions.

8.6.9. Cross-country procedures (if applicable).

8.6.10. SAR procedures.

8.7. (Added-AETC) Form Adopted. AF Form 847.

PATRICK K. GAMBLE, Lt General, USAF
DCS/Air and Space Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 11-2, *Flight Rules and Procedures*

AFI 11-2T/AT-38, Volume 1, *T-38 and AT-38 Aircrew Training*

AFI 11-202, Volume 3, *General Flight Rules*

AFI 11-205, *Aircraft Cockpit and Formation Flight Signals*

AFI 11-209, *Air Force Participation in Aerial Events*

AFI 11-214, *Aircrew and Weapons Director Procedures for Air Operations*

AFI 11-218, *Aircraft Operation and Movement on the Ground*

Joint Publication 1-02*, DOD Dictionary of Military and Associated Terms*

MCM 3-1, Volume 1, *General Planning and Employment Considerations* (projected to be AFTTP 3-1)

MCMAN 11-238, Volume 1, *(A)T-38 Flying Fundamentals* (projected to be AFMAN 11-2XX, Volume 1)

MCMAN 11-238, Volume 2, *(A)T-38 Mission Employment Fundamentals* (projected to be AFMAN 11-2XX, Volume 2)

MCR 55-125, *Preparation of Mission Planning Materials* (projected to be AFI 10-4XX)

T.O. 1T-38A-1, *USAF Series T-38A and AT-38B Flight Manual*

Abbreviations and Acronyms

AB—airbase (Joint Publication 1-02)

—{afterburner [Air Force only]}

ACBT—air combat training

ACC—Air Combat Command

ACM—air combat maneuvering

AFLC—Air Force Logistics Center

AGL—above ground level

AGSM—anti-G straining maneuver

ATC—air traffic control

BDA—battle damage assessment

BDU—bomb dummy unit

BFM—basic fighter maneuvers

BVR—beyond visual range

CAP—combat air patrol

CFT—cockpit familiarization trainer

CHUM—chart update manual

CG—center of gravity

DLO—desired learning objectives

EGT—exhaust gas temperature

EOR—end of runway

EP—electronic protection; execution planning (Joint Publication 1-02)

—{emergency procedure [Air Force only]}

FAF—final approach fix

FCIF—flight crew information file

FEBA—forward edge of the battle area

FLIP—flight information publication

G—gravitational load factor

GCI—ground control intercept

HUD—heads up display

IAW—in accordance with

IFF—identification friend or foe

IFR—instrument flight rules

ILS—instrument landing system

IMC—instrument meteorological conditions

IP—instructor pilot

IQT—initial qualification training

JOAP—Joint Oil Analysis Program

JSUPT—joint specialized undergraduate pilot training

KIAS—knots indicated airspeed

KIO—knock it off

KTAS—knots true airspeed

LOWAT—low altitude training

MAJCOM—major command (USAF)

MSA—minimum safe altitude

MSL—mean sea level

N/A—not applicable

NAF—nonappropriated fund; naval air facility (Joint Publication 1-02)

—{numbered Air Force [Air Force only]}

NM—nautical mile

NORDO—no radio

NOTAM—notice to airman

PAPI—precision approach path indicator

PIC—person identification code; parent indicator code (Joint Publication 1-02)

—{pilot in command [Air Force only]}

RAA—route abort altitude

RCO—Regional Coordinating Office (DOE) (Joint Publication 1-02)

—{range control officer [Air Force only]}

RCR—runway conditions reading

RTB—return to base

SAR—search and rescue

SD—spatial disorientation

SEFE—stan/eval flight examiner

SII—seriously ill or injured (Joint Publication 1-02)

—{special interest item [Air Force only]}

stan/eval—standardization/evaluation

TACAN—tactical air navigation

TAS—true airspeed

TGT—target

T.O.—technical order

TOT—time on target

UFT—undergraduate flying training

UIP—upgrading instructor pilot

UHF—ultra high frequency

VASI—visual approach slope indicator

VFR—visual flight rules

VID—visual identification

VMC—visual meteorological conditions

WSSP—weapon system support pod

Attachment 1 (AETC)

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 13-201, *USAF Airspace Management*

Abbreviations and Acronyms

ARS—adjusted refusal speed

CEFS—critical engine failure speed

CFL—critical field length

DS—decision speed

FCF—functional check flight

FL—flight level

MAP—missed approach point

OG/CC—operations group commander

PWC—pilot weather category

SETOS—single engine takeoff speed

SOF—supervisor of flying

SUU—suspension unit

TDZE—touch-down-zone elevation

TOS—takeoff speed

UFT—undergraduate flying training

Attachment 2

GROUND OPS/TAKEOFF/DEPARTURE BRIEFING GUIDE

MISSION DATA

1. Time Hack
2. EP/Threat of the Day
3. Mission Objective(s)
4. Mission Overview
5. Mission Data Card
   a. Mission Commander/Deputy Lead
   b. Joker/Bingo Fuel
   c. Takeoff and Landing Data
   d. Working Area
6. Weather/Sunrise/Sunset/Moon Illumination
7. NOTAMs/Bird Strike Potential
8. Personal Equipment
9. FCIF/Pubs/Maps

GROUND PROCEDURES

1. Preflight
   a. Aircraft
   b. Armament
2. Check In
3. Taxi/Marshaling/Arming
4. Spare Procedures

TAKEOFF

1. Runway Lineup
2. Formation Takeoff
3. Takeoff Interval
4. Abort
5. Jettison Procedures
6. Low Altitude Ejection
7. Landing Immediately After Takeoff

DEPARTURE/EN ROUTE

1. Routing
2. Trail Departure
3. Join-up/Formation
4. Systems/Ops Checks

Attachment 3

RECOVERY/LANDING BRIEFING GUIDE

RECOVERY

1. Rejoin
2. Battle Damage/Bomb Check
3. Type Recovery
4. Flight Breakup
5. Pattern and Landing
6. After Landing/De-arm
7. Emergency/Alternate Airfields

Attachment 4

SPECIAL SUBJECT BRIEFING GUIDE (AS APPLICABLE)

1. Instructor Responsibilities
2. Chase Procedures
3. IFF Procedures
4. Visual Search Responsibilities/Midair Collision Avoidance
5. Dissimilar Formations
6. Terrain Avoidance
   a. Departure/En Route/Recovery
   b. MSL Floor Settings
7. Bird Strike Procedures/Use of Visor(s)
8. Hazards Associated With Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)
9. G-Awareness
   a. Turn/G-Suit Connection/G-tolerance
   b. Use of L-1 Anti-G Straining Maneuver (AGSM)
10. Visual Illusions/Perceptions
11. Spatial Disorientation/Unusual Attitudes/G-excess illusion
12. Lost Wingman
13. Radio Inoperative
14. SAR
15. Recall Procedures
16. SIIs

Attachment 5

ADVANCED HANDLING/INSTRUMENT BRIEFING GUIDE

AIRWORK

1. Airspace Restrictions
2. Area Orientation
3. Instructor Responsibilities
4. Maneuvers

APPROACHES

1. Frequencies
2. Holding
3. Penetration
4. Missed Approach /Climbout

SPECIAL SUBJECTS

1. "G" Awareness
2. Fuel Awareness/AB Use/Consumption Rates
3. Maneuvering Limitations
   a. Airspeed and "G"
   b. Recognition/Prevention/Recovery From Out of Control
   c. Maneuvering at Heavyweight/High Angles of Attack
   d. Effects of CG Throughout the Flight
   e. Time to Ground Impact
      (1) Wings Level
      (2) Overbank/Under G
4. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/Prioritization, and Complacency)

Attachment 6

AIR COMBAT TRAINING (ACBT)/INTERCEPT BRIEFING GUIDE

GENERAL/ADVERSARY COORDINATION/GCI COORDINATION

1. Call Signs
2. Number and Type Aircraft
3. Scenario
   a. Objective(s)
   b. Type Threat Simulated/Tactics Limitations (if any)
   c. CAP Points/Target Locations
   d. Safe Areas/FEBA/Ground Threats
   e. VID/BVR Criteria
4. Mission Contingencies
   a. No GCI
   b. Single Frequency
   c. Area Weather/Alternate Mission
   d. Aircraft Fallout Plan (Primary/Alternate Missions)
   e. Rejoin in Area for Late Takeoffs
5. Area Information
   a. Controlling Agency
      (1) GCI/Flight
      (2) Comm Requirements
      (3) Type/Level of Control
   b. Airspace Restrictions
   c. CAP Points/Target Locations
   d. Frequencies
   e. Squawks
   f. Block Altitudes/Min Altitudes/Flight Parameters
   g. Transmissions
      (1) KIO
      (2) Shots/Kills
      (3) Fuel/Altitude Awareness

6. Rendezvous/Recovery Procedures/Dissimilar Formation
7. Weapons Employment
   a. Simulated Ordnance (Type/Quantity)
   b. Shot Criteria
   c. Kill Criteria/Removal
   d. Shot/Kill Passage
8. Training Rules
9. Emergency Procedures
   a. Recovery
   b. Escort Procedures
10. Debriefing (Time/Place)

FLIGHT/ELEMENT TACTICS

1. Avionics Setup
   a. IFF
   b. Air-to-air TACAN
2. CAP/Patrol Phase
   a. Type Pattern
   b. Formation/Altitude/Airspeed
   c. Search Responsibilities
   d. Commit
      (1) Criteria/Range
      (2) Procedures
3. Ingress/Intercept Phase
   a. Formation/Altitude/Airspeed
   b. Detection
      (1) Search Responsibilities (Visual)
   c. Targeting Plan
   d. Intercept Type/Planned Tactics
      (1) Plan (Direct Attack/Deception)
      (2) Mutual Support Requirements
      (3) Identification Requirements/Procedures
      (4) Minimum Altitudes/Airspeeds

(5) Vertical/Horizontal Conversions/Turning Room

4. Engagement Phase

a. Plan

(1) Turn and Fight

(2) Hit and Run

(3) Abort

b. Clearance for Wingman To Engage

(1) Offensive

(2) Defensive

c. Alternate Plan (Degraded Situation)

5. Egress/Separation Phase

a. Disengagement Plan (Why/When/How)

(1) Loss of Mutual Support

(2) Fuel

(3) Ordnance

b. Egress Formation/Responsibilities

6. Contingencies

a. Single Contact

b. Short Range Commit

c. Single Ship (Loss of Mutual Support)

d. Safe Escape/Rendezvous Point

7. Additional Considerations

a. Threat Reaction

b. Degraded Systems

c. Tactical Lead Changes

d. Bandit Options

e. Film/VTR

f. Codewords

8. Alternate Mission

a. Type Mission (Refer to Appropriate Mission Briefing Guide)

b. Mission Objectives

SPECIAL SUBJECTS

1. “G” Awareness
2. Fuel Awareness/AB Use/Consumption Rates
3. Flightpath Deconfliction
4. Maneuvering Limitations
   a. Airspeed and “G”
   b. Recognition/Prevention/Recovery From Out of Control
   c. Time to Ground Impact
      (1) Wings Level
      (2) Overbank/Under “G”
5. Hazards Associated with Human Factors (Channelized Attention, Task Saturation, and Complacency)

Attachment 7

BASIC FIGHTER MANEUVERS (BFM)/AIR COMBAT MANEUVERING (ACM) BRIEFING GUIDE

AREA WORK

1. Area Description/Restrictions
2. G Warm-up
3. Belly/Guns
4. Roll-Slides
5. Other Exercises

SETUPS

1. Objectives
2. Type Threat Simulated/Tactics Limitations
3. Floor
4. BVR
   a. Geometry
   b. Heading/Altitude/Airspeeds
   c. Points/Blocks
5. Perch Setups
   a. Position
   b. Altitude
   c. Airspeeds
   d. Visual/Camera On
6. Butterfly - Line Abreast/Action/“Fights On”

WEAPONS

1. Type Used/Engagement
2. Shot/Kill Criteria
3. Parameters/Restrictions/Simulations

KIO/TERMINATE/BETWEEN ENGAGEMENTS

1. Maintain Tally/Visual
2. Airspeed
3. Formation

4. Camera Off/Fuel Check

DESIRED LEARNING OBJECTIVES (DLO)

SPECIAL SUBJECTS

1. "G" Awareness
2. Fuel Awareness/AB Use/Consumption Rates
3. Flightpath Deconfliction
4. Maneuvering Limitations
   a. Airspeed and "G"
   b. Recognition/Prevention/Recovery from Out of Control
   c. Time to Ground Impact
      (1) Wings Level
      (2) Overbank/Under "G"
5. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)

Attachment 8

ESCORT MISSION BRIEFING GUIDE

EN ROUTE TO RENDEZVOUS/POST-MISSION NAVIGATION

1. Formation
2. Route of Flight
3. Control Agency Call Sign/Frequency

RENDEZVOUS

1. Protected Force Call Sign
2. Altitude
3. Airspeed

ESCORT PROCEDURES

1. Type Formation
2. Tactics
3. Escort Route

TRAINING RULES

ALTERNATE MISSION

1. Type Mission (Refer to Appropriate Mission Briefing Guide)
2. Mission Objectives

SPECIAL SUBJECTS

1. Airspace Restrictions
2. “G” Awareness
3. Fuel Awareness/AB Use/Consumption Rate
4. Flightpath Deconfliction
5. Maneuvering Limitations
   a. Airspeed and “G”
   b. Recognition/Prevention/Recovery from Out of Control
6. Time to Ground Impact
   a. Wings Level
   b. Overbank/Under “G”
7. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)

Attachment 9

LOW LEVEL NAVIGATION BRIEFING GUIDE

GENERAL

1. Route/Clearance/Restrictions
2. Flight Responsibilities
   a. Navigation
   b. Visual Search
3. Entry/Spacing/Holding/Initial Altitude (MSA)

ROUTE PROCEDURES

1. Fence Checks
2. Tactical Formation/Turns
3. Low Level Navigation
   a. Dead Reckoning/Use of Navigation Aids/ Equipment
   b. Procedures/Techniques/Predictions
   c. Visual Procedures/Techniques/IR Predictions
   d. Updates/Calibrations
   e. Time/Fuel Control
   f. Terrain Avoidance/Wingman Considerations
   g. Leg Altitudes/Obstacles (MSL/AGL)
   h. Turnpoint Acquisition
4. Threat Reactions
   a. CHAFF/FLARES
   b. Engagement Criteria
   c. Flightpath Deconfliction
   d. Termination

CONTINGENCIES

1. Aircraft Fallout Plan
2. Rejoin After Late Takeoff

EMERGENCIES

1. Aircraft Malfunctions
2. Route Abort Procedures (RAA/MSA)/ATC Frequencies

TRAINING RULES/SPECIAL OPERATING INSTRUCTIONS

ALTERNATE MISSION

1. Type mission (Refer to Appropriate Mission Briefing Guide)
2. Mission Objectives

SPECIAL SUBJECTS

1. Airspace Restrictions
2. “G” Awareness/Ops Checks
3. Fuel Awareness/AB Use/Consumption Rates
4. Flightpath Deconfliction
5. Maneuvering Limitations
   a. Airspeed and “G”
   b. Recognition/Prevention/Recovery From Out of Control
6. Time to Ground Impact
   a. Wings Level
   b. Overbank/Under “G”
7. Night Considerations
8. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)

Attachment 10

AIR-TO-SURFACE WEAPONS EMPLOYMENT BRIEFING GUIDE/RANGE MISSION

A. RANGE INFORMATION

GENERAL INFORMATION

1. Target/Range Description
2. Restrictions
3. Range Entry/Holding
4. Radio Procedures
5. Formation
6. Sequence of Events
7. Pattern Procedures
8. Aircraft Fallout Plan
9. Rejoin on Range for Late Takeoffs

EMPLOYMENT PROCEDURES/TECHNIQUES

1. Avionics/Switch Positions
   a. Weapons Switchology/Delivery Mode
   b. Special Weapons Switchology
2. Laydown
   a. Ground Track/Altitude/Airspeed
   b. TGT
   c. Pickle/Release Point
   d. Breakaway/Recovery Technique
   e. Backup Deliveries
   f. Delivery Spacing
3. Popup Delivery
   a. Entry Airspeed/Altitude
   b. Pop Point/Pull-up Angle/Power Setting
   c. Target Acquisition
   d. Pull Down/Apex Altitudes
   e. Pattern Corrections
4. Roll-in

a. Position

b. Techniques (Pitch/Bank/Power)

c. Roll-out/Wind Effect

5. Final

a. Aim-off Distance

b. Dive Angle

c. Airspeed

d. HUD Depiction

e. Sight Picture/Corrections/Aim Point

f. Release Parameters

g. Release Indications

h. Recovery Procedures

OVER-WATER RANGE OPERATIONS

1. Employment Techniques

a. Depth Perception/Reduced Visual Cues

b. Distance/Altitude Estimation

c. Popup Positioning

(1) Timing

(2) Visual/Aircraft References To Establish Pull-up Point

2. Special Considerations

a. Adjusted Minimum Altitudes

b. Training Rules/Special Operating Procedures

RANGE DEPARTURE PROCEDURES

1. Armament Safety Checks
2. Rejoin
3. Battle Damage/Bomb Check
4. Jettison Procedures/Parameters
5. Hung/Unexpended Ordnance
6. Inadvertent Release

TRAINING RULES/SPECIAL OPERATIONS INSTRUCTIONS

ALTERNATE MISSION

1. Type Mission (Refer to Appropriate Mission Briefing Guide)

2. Mission Objectives

SPECIAL SUBJECTS

1. Error Analysis
2. Fouls
3. Minimum Altitudes
4. Target Fixation
5. "G" Awareness
6. Fuel Awareness/Ops Checks/AB Use/Consumption Rates
7. Maneuvering Limitations
   a. Airspeed/"G"/Stress (Carriage/Release)
   b. Recognition/Prevention/Recovery From Out of Control
8. Time to Ground Impact
   a. Wings Level
   b. Overbank/Under "G"
9. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)

B. SURFACE ATTACK TACTICS

GENERAL INFORMATION

1. Intelligence/Threat Scenario
2. Low Level (See Low Level Briefing Guide)
3. Fence Checks
4. Operating Area Entry/Description/Boundaries
5. Target Area/Clearing Pass
   a. Location/Description/Elevation/TOT
   b. Visual Cues in the Target Area
   c. Target Area Weather
      (1) Ceiling/Visibility
      (2) Winds/Altimeter
      (3) Sun Angle/Shadows
      (4) IR Considerations
6. Threat Array
   a. Type/Capabilities
   b. Locations

c. Countermeasures

(1) CHAFF/FLARE

(2) Terrain masking

(3) Radio Silent Procedures

(4) Authentication/Comm-Jamming/Chattermark Procedures

d. Threat Reactions

(1) LOWAT

(2) IP to Action Point

(3) During Delivery

7. Ordnance/Weapons Data

a. Type/Fuzing

b. Weapons Settings

c. Desired Effects

d. Specific Aim Points

e. Minimum Altitudes

(1) Safe Escape/Safe Separation

(2) Fuze Arming/Frag Avoidance

8. Laser Operations

EMPLOYMENT PROCEDURES

1. Tactics

a. Overview

b. Ingress

(1) Formation

(2) Speed/Altitude

c. Weapons Delivery

(1) Type Delivery

(2) Switchology

(3) Attack Parameters

(a) Action Point/Pop Point

(b) Altitudes (Pull Down/Apex/Release/Minimum)

(4) Visual Lookout/Mutual Support Responsibilities

d. Egress

(1) Recovery/Return to Low Altitude

(2) Loss of Mutual Support/Rendezvous Point

RANGE DEPARTURE PROCEDURES

1. Armament Safety Checks
2. Rejoin
3. Battle Damage/Bomb Check
4. Jettison Procedures/Parameters
5. Hung/Unexpended Ordnance
6. Inadvertent Release

MISSION REPORTING (BDA/INFLIGHT REPORT)

CONTINGENCIES

1. Rejoin for Late Takeoff
2. Two-/Three-Ship Options
3. Tactical Lead Changes
4. Air-to-Air TACAN
5. Codewords
6. Weather Backup Deliveries
7. Degraded Systems
8. Reattack
9. Wounded Bird/Escort Procedures

TRAINING RULES/SPECIAL OPERATING INSTRUCTIONS

ALTERNATE MISSION

1. Type Mission (Refer to Appropriate Mission Briefing Guide)
2. Mission Objectives

SPECIAL SUBJECTS

1. Error Analysis
2. Fouls
3. Minimum Altitudes
4. Target Fixation
5. “G” Awareness
6. Fuel Awareness/Ops Checks/AB Use/Consumption Rates
7. Maneuvering Limitations

a. Airspeed/“G”/Stress (Carriage/Release)

b. Recognition/Prevention/Recovery From Out of Control

8. Time to Ground Impact

a. Wings Level

b. Overbank/Under “G”

9. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)

C. CLOSE AIR SUPPORT

GENERAL INFORMATION

1. Intelligence/Threat Scenario
2. Low Level
3. En Route Formation(s)/Lookout Responsibilities/LOWAT (if applicable)
4. Fence Checks
5. Ordnance/Weapons Data

a. Type/Fuzing

b. Weapons Settings

c. Simulated Ordnance Procedures/Minimum Altitudes

(1) Safe Escape/Safe Separation

(2) Fuse Arming/Frag Avoidance

(3) Missile Launch Parameters

6. Control Agency

a. Call Sign

b. Frequencies

7. Coordination

a. Attack Package Times/Support

b. Other Weasel Flights

c. Data Gathering/Passage

d. Airspace Restrictions

e. Mission Number

f. Friendly Forces

g. Play Time

CLOSE AIR SUPPORT PROCEDURES

1. Working Area

2. Formations/Working Altitudes
3. Target Types/Threat Array
4. Attack Tactics

WEAPONS DELIVERY

1. Tactics
   a. Type Delivery
   b. Switchology
   c. Attack Parameters
      (1) Action Point/IP/Pop Point
      (2) Altitude (Pull down/Apex/Release/Minimum)
   d. Visual Lookout/Mutual Support Responsibilities
   e. Egress
      (1) Recovery/Return to Low Altitude
      (2) Loss of Mutual Support/Rendezvous Point
2. Battle Damage/Bomb Check
3. Mission Reporting (BDA/Inflight Report)

COMBAT SAR PROCEDURES

1. Communications Procedures
2. Downed Aircraft Procedures
3. On-Scene Commander
4. Fuel Considerations
5. Ordnance Considerations

CONTINGENCIES

1. Two-/Three-Ship Option
2. Tactical Lead Changes
3. Air-to-Air TACAN
4. Codewords/Comm Out Signals
5. Weather Backup Deliveries
6. Degraded Systems
7. Reattack
8. Asymmetrical Considerations
9. Jettison Procedures/Parameters

10. Hung/Unexpended Ordnance Procedures
11. Wounded Bird/Escort Procedures

TRAINING RULES/SPECIAL OPERATIONS INSTRUCTIONS

ALTERNATE MISSION

1. Type Mission (Refer to Appropriate Mission Briefing Guide)
2. Mission Objectives

SPECIAL SUBJECTS

1. Error Analysis
2. Fouls
3. Minimum Altitudes
4. Target Fixation
5. “G” Awareness
6. Fuel Awareness/Ops Checks/AB Use/Consumption Rates
7. Maneuvering Limitations
   a. Airspeed/“G”/Stress (Carriage/Release)
   b. Recognition/Prevention/Recovery From Out of Control
8. Time to Ground Impact
   a. Wings Level
   b. Overbank/Under “G”
9. Hazards Associated with Human Factors (Channelized Attention, Task Saturation/ Prioritization, and Complacency)

Attachment 11

CREW COORDINATION/PASSENGER/GROUND CREW BRIEFING GUIDE

CREW COORDINATION/PASSENGER

1. Preflight
2. Prohibited Items
3. Cockpit Layout
4. Flight Maneuvering Parameters
5. Change of Aircraft Control
6. Rear Seat Landing Procedures
7. Emergencies
   a. Runway Departure
   b. Canopy Loss
   c. Ejection/Egress (With and Without Intercom)/Ejection Mode Selector Handle Position
   d. Loss of Intercom
   e. Bird Strike Procedures/Use of Visor(s)
8. Flight Control Interference
   a. Rudder Interference - Rudder Pedal Adjustment
   b. Stick Interference - Lapbelt, utility light, personal equipment, leg position, paddle switch override

GROUND CREW

1. Act Only on Pilot's Instructions
2. Ground Emergency Procedures
3. Hand Signals
4. Aircraft Danger Areas

Attachment 12

MISSION DEBRIEFING GUIDE

GROUND PROCEDURES

TAKEOFF/JOIN-UP/DEPARTURE

EN ROUTE PROCEDURES

RECOVERY/LANDING/AFTER LANDING

GENERAL

1. SIIs
2. Radio Procedures
3. Flight Discipline/Effectiveness

MISSION ACCOMPLISHMENT/ANALYSIS

1. Mission Reconstruction
2. Mission Support
3. VTR/Film Assessment
4. Anti-G Straining Maneuver Effectiveness
5. Learning Objectives Achieved
6. Lessons Learned
7. Recommendations for Improvement

COMMENTS/QUESTIONS

Attachment 13

IC 99-1 TO AFI 11-2T/AT-38, VOLUME 3

IC 99-1 to AFI 11-2T/AT-38, Volume 3, *T-38 and AT-38 Operations Procedures*

5 AUGUST 1999

SUMMARY OF REVISIONS

This revision incorporates interim change (IC) 99-1 which permits T-38 and AT-38 aircrews to fly approach category D minimums if they can meet specified requirements and it deletes the requirement for an emergency or divert to occur in order to fly approach category D minimums. See the last attachment of this publication (**Attachment 13**) for the complete IC. A | indicates revision from the previous edition.

4.1.2. Approach category D minimums may be used where no category E minimums are published if:

4.1.2.1. A straight-in approach is flown.

4.1.2.2. The aircraft is flown at a final approach airspeed of 165 KIAS or less.

4.1.2.3. The aircraft is flown at 260 knots true airspeed (KTAS) or less for the missed approach segment of the approach. *(**NOTE:*** At high pressure altitudes and temperatures, 260 KTAS may not be compatible with published missed approach airspeeds and category D approaches should not be flown.)

Attachment 14

IC 2001-1 TO AFI 11-2T/AT-38, VOLUME 3, T-38 AND AT-38 OPERATIONS PROCEDURES

23 AUGUST 2001

SUMMARY OF REVISIONS

This change incorporates interim change (IC) 2001-1 which prohibits carrying oil and/or hydraulic fluid on aircraft, except in the weapon system support pod (paragraph **3.2.5.**); clarifies low-altitude training obstacle clearance (paragraph **3.17.7.**); changes specialized undergraduate pilot training (SUPT) to joint specialized undergraduate pilot training (JSUPT) (paragraph **3.18.1.**); changes minimum takeoff spacing for instrument trail departures to 20 seconds minimum (paragraph **4.4.1.**); authorizes simulated instrument flight safety observers to occupy either cockpit (paragraph **4.8.1.**); changes "clearance" to "separation" (paragraphs **7.7.1.3.** and **7.7.1.4.**); and updates office symbols, references, and abbreviations and acronyms used in this publication. See the last attachment of the publication, IC 2001-1, for the complete IC. A H indicates revision from the previous edition.

OPR: HQ AETC/DOFV (Maj Steven R. Tindall)

(2d Purpose Paragraph):

This AFI does not apply to the Air National Guard. Major commands (MAJCOM) are to forward proposed MAJCOM-level supplements to this volume to HQ USAF/XOOT through HQ AETC/DOFV for approval prior to publication according to AFPD 11-2, paragraph 4.2. After approved and published, copies of MAJCOM-level supplements will be sent to HQ USAF/XOOT, HQ AETC/DOFV, and user-MAJCOM OPRs. Field units below MAJCOM level will forward copies of their supplements to their parent MAJCOM OPR for post-publication review. See paragraph **1.6.** of this volume for guidance on submitting comments and suggesting improvements to this instruction. The Privacy Act of 1974 affects this instruction.

1.4. References. The primary references for T/AT-38 operations are Technical Order (T.O.) 1T-38A-1, *USAF Series T-38A and AT-38B Flight Manual*; MCMAN 11-238, Volume 1, *(A)T-38 Flying Fundamentals* (projected to be AFMAN 11-2XX, Volume 1); MCMAN 11-238, Volume 2, *(A)T-38 Mission Employment Fundamentals* (projected to be AFMAN 11-2XX, Volume 2); 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. Phase manuals may expand these basic procedures, but in no case will they 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 (stan/eval) channels. Parent MAJCOMs will forward approved recommendations to HQ AETC/DOFV. In accordance with (IAW) AFPD 11-2, paragraph 2.4.1, HQ USAF/XO is approval authority for changes or revisions to this instruction. The MAJCOM DO is waiver authority for this instruction. Waiver requests may be submitted in message or memo format.

3.2.5. Cans of oil and/or hydraulic fluid will not be carried in the aircraft, except in the weapon system support pod (WSSP).

3.17.1. Low-level formation positions and tactics will be flown, using MCM 3-1, Volume 1 (projected to be AFTTP 3-1); MCMAN 11-238, Volume 1 (projected to be AFMAN 11-2XX, volume 1); and MCMAN 11-238, Volume 2 (projected to be AFMAN 11-2XX, Volume 2); as guides.

3.17.3. If flight leads are unable to visually acquire or ensure lateral separation from known vertical obstructions that are a factor to the route of flight, they will direct a climb no later than 3 NM prior to the obstacle to ensure vertical separation by 2 NM from the obstacle.

3.17.7. During low-altitude training, maintain a minimum of 500 feet above the highest terrain or obstacle within 1/2 NM of the aircraft.

3.18. Minimum Altitudes. A pilot's minimum altitude will be determined and certified by the unit commander according to AFI 11-2T/AT-38, Volume 1, *T-38 and AT-38 Aircrew Training*. Pilots participating in approved step-down training programs will comply with the requirements and restrictions of that program. The following minimum altitudes apply to low-level training unless higher altitudes are specified by route restrictions or a training syllabus:

3.18.1. For pilots who have not completed step-down training and who are not designated for flights at lower altitudes, the minimum altitude is 1,000 feet AGL. Completion of a Joint Specialized Undergraduate Pilot Training (JSUPT) or Introduction to Fighter Fundamentals (IFF) Instructor Pilot (IP) course clears JSUPT or IFF IPs to fly or instruct low-level navigation or formation missions (without offensive air-to-air employment or threat reaction) down to 500 feet AGL.

4.4.1. Use a minimum of 20-second takeoff spacing.

4.8.1. Safety observers may occupy either the front or rear cockpit of the T/AT-38 during simulated instrument flight. Under these conditions, an operable intercom is required.

7.7.1.3. For a precision or nonprecision final, the wingman will momentarily turn away to ensure separation, commence a climb, inform lead, proceed to the missed approach point, and carry out the published missed approach procedure while obtaining a separate clearance from approach control.

7.7.1.4. For a missed approach, the wingman will momentarily turn away to ensure separation, inform lead, and continue the published or assigned missed approach procedure while climbing to 500 feet above missed approach altitude. He or she will obtain a separate clearance from approach control.

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 11-2T/AT-38, Volume 1, *T-38 and AT-38 Aircrew Training*

MCMAN 11-238, Volume 1, *(A)T-38 Flying Fundamentals* (projected to be AFMAN 11-2XX, Volume 1)

MCMAN 11-238, Volume 2, *(A)T-38 Mission Employment Fundamentals* (projected to be AFMAN 11-2XX, Volume 2)

Abbreviations and Acronyms

JSUPT—joint specialized undergraduate pilot training

WSSP—weapon system support pod

Attachment 15 (Added-AETC)

IC 2003-1

INTERIM CHANGE (IC) 2003-1 TO AFI 11-2T-AT-38, VOLUME 3/AETC SUP 1, *T-38 AND AT-38 OPERATIONS PROCEDURES*

12 AUGUST 2003

SUMMARY OF REVISIONS

This IC incorporates flight crew information file (FCIF) guidance on takeoff and landing data (TOLD) and allows operations to continue under some circumstances where the BAK-15 remotely control equipment is not operating. When incorporated into the supplement, this IC will be the last attachment. A bar (|) in the left margin indicates revision from the previous edition.

OPR: HQ AETC/DOFV (Lt Col Kurt Anders)

Certified by: HQ AETC/DOF (Col Anthony A. Imondi)

Approving Authority:

THOMAS J. QUELLY, Colonel, USAF

Deputy Director of Operations

3.6.8. (Added) The go/no-go speed for operations with or without a BAK-15 is as follows (paragraphs **3.6.8.1. (Added)** through **3.6.8.3.2.2. (Added)**): (***NOTE:*** The BAK-15 is the only barrier suitable for stopping an aircraft with a pylon, pod, or suspension unit [SUU]; the MA1A is suitable only for a clean aircraft. See **Table 3.1. (Added)** for a summary of BAK-15 barrier operations.)

Table 3.1. (Added) Summary of BAK-15 Barrier Operations.

ITEM	A	B	C	D	E	F
	Condition	**BAK-15 Position**	**Solos May Take off**	**Formation Takeoffs**	**Who Performs Takeoff?**	**Use for Go/No-Go Speed**
1	Category I CEFS<ARS	down	yes	yes	any pilot	ARS
2		up				TOS
3			yes (note)	no		
4	Category III DS<TOS		no		rated pilot	SETOS with delayed rotation

NOTE: When CFL is not within 1,000 feet of runway length.

3.6.8.1. (Added) Operations With a Remotely Controlled BAK-15. Takeoffs will be accomplished on the frequency of the agency, either tower or runway supervisory unit (RSU), that controls the runway and BAK-15. The barrier will be in the lowered position and will be raised only when the pilot calls for it. (***EXCEPTION:*** The barrier will be in the raised position for AT-38 SUU Category III takeoffs. The pilots will have the barrier raised prior to takeoff.) Requirements by category are as follows:

3.6.8.1.1. (Added) Category I. Use takeoff speed (TOS) as go/no-go speed.

3.6.8.1.2. (Added) Category III:

3.6.8.1.2.1. (Added) For decision speed (DS) less than TOS, approval of the OG/CC is required. After receiving approval to take off in Category III conditions, the squadron supervisor will brief the aircrew and the supervisor of flying (SOF) on the situation and ensure the crew has the most current data. Only a rated pilot may perform the takeoff. Use the TOS as the go/no-go speed.

3.6.8.1.2.2. For DS greater than TOS in a clean configuration, takeoffs are not authorized. With OG/CC approval, AT-38s with a jettisonable SUU may take off with a DS above TOS. The BAK-15 will be in the raised position for these takeoffs. Delay rotation until approximately 150 knots indicated air speed (KIAS) and ensure the nosewheel is off the runway no later than 174 knots groundspeed. Use the single engine takeoff speed (SETOS) as the go/no-go speed.

3.6.8.2. (Added) Operations Without a BAK-15: (***NOTE:*** This includes operations when the remote control equipment is not operating and the BAK-15 is lowered.)

3.6.8.2.1. (Added) Category I. Use adjusted refusal speed (ARS) as go/no-go speed. Operating when critical engine failure speed (CEFS) exceeds ARS requires OG/CC approval. However, if operating under these conditions, only a rated pilot will perform the takeoff and CEFS will be used as go/no-go speed. Stopping distance for aborts with both engines running will be higher than planned in the performance charts because thrust is still being produced during the 3-second delay and after the throttles are pulled to idle. ***NOTE:*** Compute ARS by calculating refusal speed (RS), using runway length minus 2,000 feet.

3.6.8.2.2. (Added) Category III. Category III operations are prohibited.

3.6.8.3. (Added) Operations With a Raised, Nonremotely Controlled BAK-15. Manually raising the BAK-15 when the remote control equipment is not operating may allow operations to continue in some circumstances, as follows:

3.6.8.3.1. (Added) Category I. Use TOS as the go/no-go speed. When CEFS exceeds ARS, no formation takeoffs are allowed. However, single-ship interval takeoffs are allowed. Solo students will not take off when critical field length (CFL) is within 1,000 feet of the runway length.

3.6.8.3.2. (Added) Category III:

3.6.8.3.2.1. (Added) When DS is less than TOS, delay rotation until approximately 150 KIAS (T-38A) or 155 KCAS (T-38C) and ensure the nosewheel is off the runway no later than 174 knots groundspeed. Only a rated pilot may perform the takeoff. Use the SETOS as the go/no-go speed.

3.6.8.3.2.2. (Added) When DS is greater than takeoff speed in a clean configuration, takeoffs are not authorized. With OG/CC approval, AT-38s with a jettisonable SUU may take off with a DS above TOS. Use the SETOS as the go/no-go speed.

Abbreviations and Acronyms(Added)

CEFS—critical engine failure speed

CFL—critical field length

SETOS—single engine takeoff speed

TOS—takeoff speed

Attachment 16 (Added-AETC)

IC 2003-2

INTERIM CHANGE (IC) 2003-2 TO AFI 11-2T-AT-38, VOLUME 3/AETC SUP 1, *T-38 AND AT-38 OPERATIONS PROCEDURES*

4 SEPTEMBER 2003

SUMMARY OF REVISIONS

This IC deletes the reference to **Table 3.1. (Added)** from paragraph **3.6.8. (Added)** and adds it to paragraph **3.6.8.3. (Added)** It changes the title of **Table 3.1. (Added)** and places the table immediately following paragraph **3.6.8.3. (Added)** (the paragraph about nonremotely controlled BAK-15 barrier operations). (***NOTE:*** In addition, it changes Item 3, Column A, of **Table 3.1. (Added)**) When incorporated into the supplement, this IC will be the last attachment. A bar (|) in the left margin indicates revision from the previous edition.

3.6.8. (Added) The go/no-go speed for operations with or without a BAK-15 is as follows (paragraphs **3.6.8.1. (Added)** through **3.6.8.3.2.2. (Added)**): (***NOTE:*** The BAK-15 is the only barrier suitable for stopping an aircraft with a pylon, pod, or suspension unit [SUU]; the MA1A is suitable only for a clean aircraft.)

3.6.8.3. (Added) Operations With a Raised, Nonremotely Controlled BAK-15. Manually raising the BAK-15 when the remote control equipment is not operating may allow operations to continue in some circumstances, as follows: (***NOTE:*** In addition, see **Table 3.1. (Added)**.)

Table 3.1. (Added) Summary of Nonremotely Controlled BAK-15 Barrier Operations.

ITEM	A	B	C	D	E	F
	Condition	**BAK-15 Position**	**Solos May Take off**	**Formation Takeoffs**	**Who Performs Takeoff?**	**Use for Go/No-Go Speed**
1	Category I CEFS<ARS	down	yes	yes	any pilot	ARS
2		up				TOS
3	Category 1 CEFS>ARS		yes (note)	no		
4	Category III DS<TOS		no		rated pilot	SETOS with delayed rotation

NOTE: When CFL is not within 1,000 feet of runway length.