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AIR EDUCATION AND TRAINING COMMAND

AIR EDUCATION AND TRAINING COMMAND MANUAL 11-2T-41-51-53, Volume 3

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Flying Operations

T-41, T-51, AND T-53 OPERATIONS PROCEDURES

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This publication implements Air Force Instruction (AFI) 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*. This publication prescribes standard procedures used by all Air Education and Training Command (AETC) pilots operating an Air Force T-41, T-51, or T-53 aircraft. This publication applies to all uniformed members of the Regular Air Force and Air Force Reserve, and to federal civilian employees assigned or attached to AETC for flying the T-41, T-51 and T-53. This publication does not apply to the Air National Guard or the United States Space Force. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFI 33-322, *Records Management and Information Governance Program*, and disposed of in accordance with the Air Force Records Disposition Schedule located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the office of primary responsibility using Department of the Air Force Form 847, *Recommendation for Change of Publication*; route Department of the Air Force Forms 847 through the Standardization and Evaluation functional channels. This publication may be supplemented; units will coordinate their supplements with the office of primary responsibility prior to certification and approval. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's commander for non-tiered compliance items. Any publication action to this publication (revision, interim change, guidance memorandum, etc.) must include coordination from the responsible AF/A3 office in accordance with AFI 11-200 prior to approval. The use of

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Chapter 1

GENERAL INFORMATION

1.1. Scope. This publication outlines the procedures applicable to the safe operation of the aircraft. Along with the complementary references cited, this publication prescribes standard operating procedures to be used by all pilots operating the aircraft. Units will provide local operating procedures in a supplement to this publication. **(T-2)**

1.2. Pilot's Responsibility. In conjunction with other governing directives, this publication prescribes procedures under most circumstances, but is not to be used as a substitute for sound judgment or common sense. The pilot in command is ultimately responsible for the safe and effective operation of the aircraft and will ensure all occupants of the aircraft comply with this directive. **(T-2)**

1.3. Deviations. Deviations from these procedures require specific approval of the 19th Air Force Director of Operations unless an urgent requirement or aircraft emergency dictates otherwise. In that case, the pilot in command has ultimate authority and responsibility for the course of action to be taken and will take the appropriate action to safely recover the aircraft. Report all deviations without waiver through command channels office of primary responsibility. **(T-2)**

1.4. References. The primary references for aircraft operations are this publication and Technical Orders (TO): 1T-41D-1, *Flight Manual, USAF Series, T-41D Aircraft;* 1T-51A-1, *Flight Manual, USAF Series, T-51A Aircraft*; and 1T-53A-1, *Flight Manual, USAF Series, T-53A Aircraft.* Training units may develop phase manuals from the procedures contained in these documents. Phase manuals may be used to augment initial and mission qualification training. They may expand these basic procedures but will not be less restrictive. **(T-2)** Only maneuvers described in these references will be flown. **(T-2)**

1.5. Maximum Flight Duty Period Flight Time. Air Force manual **(**AFMAN) 11-202, Volume 3, *Flight Operations*, lists maximum flight duty periods.

1.5.1. Units will consider the aircraft as "trainer" type aircraft. **(T-2)**

1.5.2. Use of additional crewmembers to extend the flight duty period (augmented crew) is not authorized. **(T-2)**

1.6. Clothing Requirements. AFMAN 11-301, Volume 1, *Aircrew Flight Equipment (AFE)*, prescribes minimum aircrew clothing requirements. In the absence of specific guidance, all aircrew members will wear flight suits and flight boots while operating the aircraft. **(T-2)** Aircrew will carry appropriate seasonal flight clothing. **(T-2)** Aircrew members will remove rings and scarves before performing aircrew duties. **(T-2)**

1.7. Seatbelts and Shoulder Harnesses. All occupants will wear seatbelt and shoulder harnesses (when equipped) at all times while operating the aircraft. **(T-2)**

1.8. Cargo Restrictions. None.

1.9. Interfly. Interfly requires written approval of both operations/flying training group commanders and notification of the 19th Air Force Standardization and Evaluation Division. **(T-2)** See Department of the Air Force Manual 11-401, *Aviation Management*.

1.10. Aerial Events. Units participate in aerial events according to Department of The Air Force Instruction 11-209, *Participation in Aerial Events.* **(T-2)**

Chapter 2

MISSION PLANNING

2.1. Responsibilities. The individual pilots and the operations functions of the organizations jointly share responsibility of mission planning. The pilot in command is ultimately responsible for mission planning.

2.2. General Procedures. Pilots will:

2.2.1. Accomplish sufficient flight planning to ensure safe mission accomplishment. **(T-2)** AFMAN 11-202, Volume 3, and this publication specify minimum requirements.

2.2.2. Compute or obtain weight and balance, and takeoff and landing performance for each flight. **(T-2)** Major command-approved tabulated data may be used when available.

2.2.3. Ensure all passengers are manifested in accordance with AFMAN 11-202, Volume 3. **(T-2)**

2.2.4. Only file visual flight rules flight plans according to AFMAN 11-202, Volume 3. **(T-2)**

2.3. Briefings and Debriefings. The pilot in command is responsible for presenting a logical briefing that promotes safe, effective mission accomplishment. All pilots will attend the flight briefing and debriefing. **(T-2)** The pilot in command will structure the flight briefing to accommodate the capabilities of each pilot. **(T-2)** Passengers will be briefed on their specific responsibilities related to safe mission accomplishment. **(T-2)** On subsequent flights during the same day with the same crew, the pilot in command must brief only those items that have changed from the previous flights. **(T-2)**

2.3.1. Briefing Guides:

2.3.1.1. All missions will be briefed and debriefed, using the applicable briefing guide as a reference (**Attachment 2** and **Attachment 3**). **(T-2)** Aircrew brief items applicable to the mission in sufficient detail to prevent misunderstanding between aircrew members and passengers. **Note:** Briefing guides are reference lists of items that may apply to missions.

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

2.3.2. Alternate Missions:

2.3.2.1. Pilots will brief an alternate mission profile when applicable. **(T-2)** The alternate mission will not be more complex than the primary mission. **(T-2)** If the primary mission is a pattern-only sortie, an alternate mission is not required.

2.3.2.2. Missions or events not briefed will not be flown. **(T-2)** Solo student pilots will not deviate from the briefed primary or alternate mission profile. **(T-2)** Mission elements or events may be briefed airborne if it is practical to do so and flight safety is not compromised.

2.4. Maps and Charts:

2.4.1. A local sectional and visual flight rules terminal area charts must be on board the aircraft. **(T-2)** When flying outside the local area, appropriate charts covering the route of flight must be on board the aircraft. **(T-2)** Current charts produced by Falcon View or displayed on an electronic flight bag device meets the intent.

2.4.2. Pilots will ensure low-level charts or route books identify the location and dimensions of class B, class C, and class D airspace; civil and military airfields; and other potential high density traffic areas (restricted areas, military operating areas, alert areas, parachute activity areas, and ultra-light, hang glider, or glider sites, etc.) within five nautical miles of any planned route. **(T-2)** Pilots will annotate and brief applicable airfield approach control and tower frequencies, and the intersections of published military training routes. **(T-2)**

2.5. Required Documents. The following documents must be on board for flight:

2.5.1. Aircraft weight and balance report. **(T-2)**

2.5.2. Airworthiness certificate. **(T-2)**

2.5.3. Aircraft registration. **(T-2)**

2.5.4. Air Force Technical Order (AFTO) Form 781, *ARMS Aircrew/Mission Flight Data Document*. **(T-2)**

2.5.5. TO 1T-41D-1CL-1, *Pilot's Abbreviated Flight Crew Checklist, USAF Series T-41D Aircraft,* or TO 1T-51A-1CL-1, *Pilot's Abbreviated Flight Crew Checklist, USAF Series T-51A Aircraft*, or TO 1T-53A-1CL-1, *Pilot's Abbreviated Flight Crew Checklist, USAF Series T-53A Aircraft.* **(T-2)**

2.5.6. A unit-developed pilot aid according to **paragraph 2.6.2** of this publication. **(T-2)**

2.5.7. Applicable airport information. **(T-2)**

2.6. Unit-Developed Checklists and Pilot Aids:

2.6.1. When aircrew use unit-developed checklists in lieu of flight manual checklists (according to AFI 11-215, *Flight Manuals Program*), the checklists must contain, as a minimum, all items (verbatim and in order) listed in the applicable flight manual checklist. **(T-2)** Crewmembers will still carry a current flight manual checklist (**paragraph 2.5.5**) and have it immediately available on all flights. **(T-2)**

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

2.6.2.1. Briefing guides. **(T-2)**

2.6.2.2. Local radio frequencies. **(T-2)**

2.6.2.3. Appropriate airfield diagrams, including aircraft arresting systems. **(T-2)**

2.6.2.4. Emergency information, including emergency action checklists, lost communications procedures, and diversion information. **(T-2)**

2.6.2.5. Cross-country procedures, including command and control, aircraft security, and aircraft servicing. **(T-2)**

2.6.2.6. Local training areas. **(T-2)**

2.6.2.7. Other information deemed necessary by the local unit. **(T-2)**

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Preflight:

3.1.1. Aircraft Systems. Students will not fly solo in aircraft requiring an operational check. **(T-2)** Pilots may perform operational checks during dual student training sorties if the checks do not interfere with training objectives.

3.1.2. Foreign Object Damage. To reduce the risk of foreign object damage and personal injury, personnel will ensure loose items are always secured in the cockpit. **(T-2)**

3.1.3. Preflight Inspections:

3.1.3.1. If the issued survival kit is missing or its inspection is overdue, contact the Aircrew Flight Equipment office. **(T-2)**

3.1.3.2. Visually check fuel quantity prior to every flight. **(T-2)** Check fuel samples for impurities and proper type after every refueling and before the first flight of the day. **(T-2)** To obtain the most valid sample, fuel should be allowed to settle for 30 minutes to an hour after refueling. If the sample is good, pour back into tank or follow local procedures for sump fuel. **(T-2)** If the sample is bad, immediately contact local refueling and maintenance personnel. **(T-2)**

3.1.3.3. Pilots will not hand-prop the aircraft. **(T-2)** If the pilot confirms the master and ignition switches are off with the ignition key removed, the propeller may be turned to facilitate ground handling or to loosen congealed oil prior to cold starts. This does not constitute hand-propping.

3.1.3.4. If the aircraft requires the use of external power to start the engine for the first sortie of the day, personnel will notify maintenance and make an entry in the AFTO Form 781A, *Maintenance Discrepancy and Work Document*. **(T-3)** Only maintenance personnel will connect and disconnect the external power source. **(T-3)** If the aircraft requires the use of external power to start on any subsequent flight with the engine warm, abort the aircraft and make an entry in the AFTO Form 781A. **(T-3)**

3.1.3.5. Aircraft remaining off-station overnight will carry chocks, tie-downs, and extra engine oil.

3.2. Ground and Taxi Operations:

3.2.1. Refueling Operations. Personnel not actively involved in refueling will remain at least 50 feet away from an aircraft refueling operation. **(T-2)** In addition, do not operate the engine, taxi, or radiate electromagnetic energy (radio, distance measuring equipment, cell phones, or transponder operation) within the 50 feet safety zone. **(T-2)**

3.2.2. Ground Handling:

3.2.2.1. Pilots will ground handle the aircraft whenever minimum wingtip clearances will be compromised during taxi. **(T-3)**

3.2.2.2. A qualified pilot or maintenance personnel must supervise ground handling. **(T-3)** **Note*:*** Improper ground handling may result in structural damage.

3.2.2.3. Do not use the empennage (tail section) to ground handle or turn the aircraft. **(T-3)**

3.2.3. Prior to Starting Engine:

3.2.3.1. At home station, pilots will ensure a fire bottle is in the vicinity prior to engine start. **(T-2)**

3.2.3.2. When starting behind another aircraft, pilots will ensure a minimum of 25 feet nose-to-tail separation. **(T-2)**

3.2.4. Engine Start:

3.2.4.1. A qualified pilot or maintenance personnel will perform all engine starts. **(T-2)** **Exception:** Student pilots may start the engine under the supervision of an instructor pilot.

3.2.4.2. If the engine fails after warmup for no apparent reason, abort the aircraft. **(T-2)** Enter all engine failures or abnormalities on the AFTO Form 781A to include the total time the engine ran. **(T-2)**

3.2.5. After Engine Start. Pilots will:

3.2.5.1. Not onload or offload personnel or equipment while the engine is running. **(T-2)**

3.2.5.2. Use caution to avoid upsets due to strong jet or propeller blast from larger aircraft. **(T-2)** If aircraft control is lost during taxi, the pilot will immediately shut down the engine. **(T-2)**

3.2.5.3. Avoid taxiing through snowdrifts and significant accumulations of ice. **(T-2)** To avoid damage to the propeller, pilots will plan to taxi around gravel and puddles of water and avoid high power settings on the ground (greater than 1500 revolution per minute) when possible. **(T-2)** When damage to the prop tips is likely, pilots will maintain full aft elevator control unless wind conditions dictate otherwise. **(T-2)**

3.2.5.4. Avoid rolling over any cables or arresting gear during taxi, takeoff, or landing. **(T-2)**

3.2.6. Minimum Spacing and Taxi Interval. Comply with the minimum taxi clearances in AFMAN 11-218, *Aircraft Operations and Movement on the Ground.* In addition, pilots will maintain:

3.2.6.1. At least 50 feet behind light single-engine aircraft. **(T-2)**

3.2.6.2. At least 100 feet behind multi-engine or jet aircraft. **(T-2)**

3.2.6.3. A minimum of 500 feet behind taxiing helicopters. **(T-2)**

3.2.7. Wind Limitations. When the wind equals or exceeds gusts of 35 knots, pilots will turn the aircraft into the wind and cease all taxi operations. **(T-2)** If a tow is required, shutdown the engine, set the parking brake, and wait for the tow to arrive. **(T-2)**

3.2.8. Engine Run-up. Do not perform an engine run-up while an aircraft is stopped or taxiing within 100 feet of the front of your aircraft. **(T-2)** Do not taxi within 100 feet of the front of another aircraft performing an engine run-up. **(T-2)**

3.3. Takeoff and Landing:

3.3.1. Runway:

3.3.1.1. All takeoffs and landings require prepared surface runways. **(T-2)** The minimum runway required for normal operations is 2,485 by 40 feet or the sum of the takeoff and landing rolls, whichever is greater. **(T-3) Note:** T-53 aircrews will compare the sum of the takeoff and landing roll to the accelerate-stop distance and use the greater of the two values. **(T-2) Exception:** The flying training group commander may approve operations on shorter runways when the takeoff and landing distances do not exceed 80 percent of the usable runway.

3.3.1.1.1. Do not take any headwind component into account when computing takeoff and landing distances. **(T-2) Exception:** The squadron commander may approve operations considering up to one-half of the steady state headwind component to compute takeoff and landing distances.

3.3.1.1.2. Do not consider the runway prior to above-ground aircraft arresting cables as usable for takeoff. **(T-2)** Do not consider the runway after above-ground aircraft arresting cables as usable for landing. **(T-2)**

3.3.1.2. Do not take off or land over a raised web barrier (for example, MA-1A or BAK-15) unless the minimum runway and the planned rate of climb will clear the barrier by 35 feet. **(T-2)**

3.3.1.3. Intersection takeoffs are approved as long as the usable runway remaining meets the minimum requirements of **paragraph 3.3.1.1**. When aircrews use less than the entire runway for takeoff, base takeoff data calculations on the actual runway remaining from the point where takeoff starts. **(T-2)**

3.3.1.4. The minimum runway condition reading for takeoff or landing is 12. **(T-2)** In the absence of a runway condition reading, pilots will use braking action reports to determine runway condition. **(T-2)** Pilots will not takeoff or land with braking action reported as poor. **(T-2)** Pilots will not take off or land if the existing crosswind component exceeds the runway condition reading. **(T-2)**

3.3.2. Weather Requirements:

3.3.2.1. The maximum density altitude for T-41 takeoffs above 2,350 pounds gross weight is 9,500 feet. **(T-2)**

3.3.2.2. The maximum density altitude for T-53 takeoffs is 10,000 feet. **(T-3)**

3.3.3. Minimum Runway Spacing. Reduced same runway separation is authorized in accordance with AFMAN 13-204, Volume 3, *Air Traffic Control*.

3.4. Fuel Requirements. Pilots will:

3.4.1. Plan all missions to land with a minimum of five gallons (T-51) or nine gallons (T-41 or T-53) of usable fuel remaining. **(T-2)**

3.4.2. Declare minimum fuel to the controlling agency when it becomes apparent an aircraft will land at the base of intended landing with less than the required fuel reserve:

3.4.2.1. With five gallons (T-51) or nine gallons (T-41 or T-53) usable fuel or less, declare minimum fuel. **(T-2)**

3.4.2.2. With two and half gallons (T-51) or six gallons (T-41 or T-53) usable fuel or less, or when both tanks indicate less than 1/8 full, whichever occurs first, declare emergency fuel. **(T-2)**

3.5. Minimum Altitudes:

3.5.1. The minimum en route altitude is 1,000 feet above ground level unless further restricted by AFMAN 11-202, Volume 3. **(T-2) Exception:** The flying training group commander may approve T-51 pilots to fly actual National Intercollegiate Flying Association competition checkpoint overflights down to 500 feet above ground level when required by National Intercollegiate Flying Association judges.

3.5.2. (T-41/T-51) The minimum altitude during simulated forced landing training to other than a runway is 500 feet above ground level. **(T-2) Exceptions:**

3.5.2.1. A simulated forced landing flown to an approved runway may be flown to touchdown.

3.5.2.2. The unit may designate specific areas for simulated forced landing training down to 200 feet above ground level with an instructor pilot in the aircraft. The unit will ensure these specific areas are surveyed annually. **(T-2)** Units will make aircrews aware of obstacles in the vicinity. **(T-2)**

3.6. In-flight Weather Requirements:

3.6.1. All operations will remain in visual meteorological conditions as defined in AFMAN 11-202, Volume 3. **(T-2) Note:** Flight in weather near minimums presents increased risks even for experienced pilots. Pilots will use judgment to land or reverse course rather than fly in marginal conditions. When forecast winds, visibility, or ceiling reach or exceed limits, pilots will carefully consider routes and fuel requirements for possible diversions. **(T-2)**

3.6.2. If lightning or thunderstorms are reported within 10 nautical miles of the area of operation, pilots will ensure the aircraft is not exposed to hail, lightning, windshear, or microbursts. **(T-2)** Units will terminate operations when lightning is within five nautical miles. **(T-2)**

3.6.3. Units will publish procedures to limit operations when wind chill or outside air temperatures (low or high) could affect safety. **(T-2)** Refer to Department of the Air Force Instruction 48-151*, Thermal Injury Prevention Program.*

3.7. Instructor Pilot-Required Maneuvers. Do not accomplish the following maneuvers without an instructor pilot on board the aircraft:

3.7.1. Practice simulated forced landing to other than a runway **(T-2)**

3.7.2. Practice unusual attitudes and recoveries **(T-2)**

3.7.3. Federal Aviation Administration Short Field Takeoffs **(T-2)**

3.7.4. Federal Aviation Administration Soft Field Takeoffs **(T-2)**

3.7.5. Federal Aviation Administration Soft Field Landings **(T-2)**

3.7.6. Federal Aviation Administration Ground Reference Maneuvers **(T-2)**

3.8. Instrument and Navigation Procedures:

3.8.1. Simulated instrument flight and practice instrument approach procedures are not authorized. **(T-2)**

3.8.2. The Bendix/King KLN 94™ global positioning system installed in the T-41, the Cirrus Perspective Avionics System™ installed in the T-53 are approved for use as mission enhancement systems in accordance with AFMAN 11-202, Volume 3. They are not approved for instrument navigation. **(T-2)**

3.8.3. The minimum airspeed during point-to-point navigation is the no-wind, flaps-UP (no flap) final approach speed. **(T-2)** Flaps will remain in the up/zero position during point-to-point navigation. **(T-2)**

3.9. Night Procedures. Pilots will not take off prior to morning civil twilight at lighted airports or official sunrise for unlit airfields. **(T-2)** Pilots must land before the end of evening civil twilight at lighted airfields or before official sunset for unlit airfields. **(T-2)**

3.10. Passenger Procedures. Department of the Air Force Manual 11-401 lists passenger approval authorities and restrictions. In addition, passengers will not control the aircraft during critical phases of flight (takeoff, landing, and traffic patterns) or below 1,000 feet above ground level. **(T-2)**

3.11. Simulated Emergency Procedures:

3.11.1. The pilot in command will brief all airborne simulated emergencies before flight. **(T-2)**

3.11.2. Do not practice compound or multiple simulated emergencies in-flight. **(T-2)**

3.11.3. Do not initiate simulated emergencies below 300 feet above ground level. **(T-2)**

3.12. Non-towered Airfield Operations:

3.12.1. Operations at non-towered, public-use airfields requires Wing Commander approval. **(T-3)** Conduct these operations as follows:

3.12.1.1. Aircrews will monitor the published common traffic advisory frequency and make all radio calls and position reports recommended in the Aeronautical Information Manual available at **https://www.faa.gov/air_traffic/publications/atpubs/aim_html/index.html**. **(T-3)** **Exception:** Aircrews may deviate from recommended Aeronautical Information Manual radio calls if local guidance specifies alternative procedures.

3.12.1.2. Pilots should plan to fly rectangular patterns as depicted in the Aeronautical Information Manual. Simulated forced landings are permitted at airfields with a letter of agreement. **(T-2)** Overhead patterns are not authorized. **(T-2)**

3.12.1.3. Aircrews will immediately notify the operations supervisor if any hazardous conditions exist at a non-towered airfield that would prevent normal operations. **(T-3)**

3.12.2. Each flying training group commander will require and approve a training program to prepare aircrews to operate in the non-towered airfield environment. **(T-2)** As a minimum, the program will include a discussion of all applicable codes of federal regulations, advisory circulars, and Aeronautical Information Manual references on non-towered airfield operations.

(T-2) Training will emphasize standard civilian radio phraseology. **(T-3)** This training may be conducted during initial or mission qualification training.

3.13. Functional Check Flights:

3.13.1. Do not conduct a functional check flight with other type missions except functional check flight continuation training or functional check flight upgrade training flights. **(T-2)** All functional check flight requirements will be accomplished by a functional check flight pilot or a pilot in training status with a functional check flight instruction pilot on board. **(T-2)**

3.13.2. Functional check flight pilots will complete, at a minimum, the general, flight control, or engine portion of the applicable Dash 6 checklist. **(T-3)** More than one of the sections may be completed if required for the inspection of the aircraft systems. **Exception:** The flying training group commander may authorize a functional check flight to check only systems disturbed by maintenance, inspection, or modification.

3.13.3. Functional check flight maneuvers must comply with TOs 1T-41D-6CF-1, *Acceptance and Functional Check Flight Procedures Manual, USAF Series T-41D Aircraft;* or 1T-51A-6CF-1, *Acceptance and Functional Check Flight Procedures Manual, USAF Series T-51A Aircraft;* or 1T-53A-6CF-1, *Acceptance and Functional Check Flight Procedures Manual, USAF Series T-53A Aircraft*, or they will not be flown or practiced on functional check flight missions. **(T-2)**

3.14. Transfer of Aircraft Control. Both pilots must know who has control of the aircraft at all times. **(T-2)** In all cases:

3.14.1. The pilot assuming control of the aircraft will state, "I have the aircraft" and will shake the yoke or stick. **(T-2)** Once assuming control of the aircraft, maintain control until relinquishing it. **(T-2)**

3.14.2. The pilot relinquishing control will state, "You have the aircraft." **(T-2)**

3.15. Post Flight. After flight, aircrews will:

3.15.1. Complete the AFTO Form 781 and notify maintenance of discrepancies. **(T-2)**

3.15.2. Ensure the aircraft is tied down or hangered if facilities are available. **(T-2)** Ensure the aircraft is chocked in an appropriate parking spot. **(T-2)** If the forecast includes winds gusting to 30 knots, or greater, the pilot will tie down the aircraft at the wings and tail. **(T-2)**

Chapter 4

OPERATING RESTRICTIONS

4.1. Required Equipment Exceptions. All installed systems and equipment must be functional unless Table 4.1 (T-41), Table 4.2 (T-51), or Table 4.3 (T-53) lists an exception. **(T-2)** The pilot in command will ensure any item considered essential to mission completion is fixed or corrected prior to flight. **(T-2)** Pilots may consult squadron supervisors for additional guidance, if necessary.

4.2. Waivers. The flying training group commander may approve flights without the requirements of this chapter for operational necessity.

Table 4.1. T-41 Required Equipment Exceptions.

Equipment	Exception
Fuel System	
Miniflo-L™ fuel computer	Not required for flight.
Landing Gear	
Tires	Valve stem caps not required.
Avionics	
Headset and intercom	Required for all crewmembers. Noise cancelling may be inoperative.
Transponder	Required to depart home station. Flight is permitted to reposition for repairs.
Very high frequency (VHF) communication radios	One radio must transmit and receive.
VHF omni-directional range receivers and omni bearing selector displays	Not required for local area flight. For flights outside the local area, a single VHF omni-directional range and its corresponding omni bearing selector may be inoperative.
Distance measuring equipment, automatic direction finder, and marker beacon	Not required for flight.
Chronometer	Not required for flight.
Global positioning system receiver, display, and remote omni bearing selector	Not required for flight.
Remote emergency locator transmitter activation switch	Not required if the emergency locator transmitter (ELT) automatic activation and manual activation switch at ELT unit are operative.
Instrument and panel lights	Not required for flight.

Equipment	Exception
Turn coordinator and inclinometer	Not required for flight.
Airframe and Cabin	
Seatbelt and shoulder harness	Seatbelt or shoulder harness may be inoperative for unoccupied seats.
Cabin heat and cabin air	The cabin heat control need not function if secured in the closed position. The cabin air need not function if secured closed and the upper air vents function.
Survival kit	See **paragraph 3.1.3.1**.
Electrical System	
Multifunction G-meter/voltmeter	Not required for flight.
Landing and taxi lights	One bulb may be inoperative. The flashing landing light system is not required for flight.
Position lights	Not required between the hours of official sunrise and sunset.
Pitot heat	Not required for flight unless visible moisture is present or when flying above the freezing level.

Table 4.2. T-51 Required Equipment Exceptions.

Equipment	Exception
Fuel System	
Miniflo-L™ fuel computer	Not required for flight.
Landing Gear	
Tires	Valve stem caps not required.
Avionics	
Headset and intercom	Required for all crewmembers. Noise cancelling may be inoperative.
Transponder	Required to depart home station. Flight is permitted to reposition for repairs.
VHF communication radios	One radio must transmit and receive.
VHF omni-directional range receivers and omni bearing selector displays	Not required for local area flight. For flights outside the local area, a single VHF omni-directional range and its corresponding omni bearing selector may be inoperative.

Equipment	Exception
Distance measuring equipment, automatic direction finder, and marker beacon	Not required for flight.
Chronometer	Not required for flight.
Remote ELT activation switch	Not required if ELT automatic activation and manual activation switch at ELT unit are operative.
Instrument and panel lights	Not required for flight.
Turn coordinator and inclinometer	Not required for flight.
Airframe and Cabin	
Seatbelt and shoulder harness	Seatbelt or shoulder harness may be inoperative for unoccupied seats.
Cabin heat and cabin air	The cabin heat control need not function if secured in the closed position. The cabin air need not function if secured closed and the upper air vents function.
Survival kit	See **paragraph 3.1.3.1**.
Electrical System	
Landing light	A functioning landing light is required. The flashing portion of the system may be inoperative.
Position/Navigation lights	Not required between the hours of official sunrise and sunset.
Pitot heat	Not required for flight unless visible moisture is present or when flying above the freezing level.
Carburetor ice detection system	Not required for flight.

Table 4.3. T-53 Required Equipment Exceptions.

Equipment	Exception
Landing Gear	
Tires	Valve stem caps are not required.
Avionics	
Headset and intercom	Required for all crewmembers. Noise cancelling may be inoperative.
Transponder	Required to depart home station. Flight is permitted to reposition for repairs.
VHF communication radios	One radio must transmit and receive.

Equipment	Exception
VHF omni-directional range receivers	Not required for local area flight. For flights outside the local area, a single VHF omni-directional range may be inoperative.
Global Positioning System	Not required for flight.
Remote ELT activation switch	Not required if ELT automatic activation and manual activation switch at ELT unit are operative.
Instrument and panel lights	Not required for flight.
Turn coordinator	Not required for flight.
Airframe and Cabin	
Safety Harness	Safety harness may be inoperative for unoccupied seats.
Cabin Heat	The cabin heat control need not function if secured in the closed position.
Survival Kit	See **paragraph 3.1.3.1**.
Electrical System	
Position lights	Not required between the hours of official sunrise and sunset.
Pitot Heat	Not required for flight unless visible moisture is present or when flying above the freezing level.

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Director, Operations and Communications

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

DAFI 11-209, *Participation in Aerial Events,* 20 May 2021

DAFI 48-151, *Thermal Stress Program*, 2 May 2022

DAFMAN 11-401, *Aviation Management*, 27 October 2020

AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, 3 May 2022

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AFMAN 11-202, Volume 3, *Flight Operations*, 10 January 2022

AFMAN 11-218, *Aircraft Operations and Movement on the Ground*, 5 April 2019

AFMAN 11-301, Volume 1, *Aircrew Flight Equipment (AFE),* 31 May 2023

AFMAN 13-204, Volume 3, *Air Traffic Control*, 22 July 2020

Technical Order 1T-41D-1, *Flight Manual, USAF Series, T-41D Aircraft,* 15 March 2023

Technical Order 1T-41D-1CL-1, *Pilot's Abbreviated Flight Crew Checklist, USAF Series T-41D Aircraft,* 15 March 2023

Technical Order 1T-41D-6CF-1, *Acceptance and Functional Check Flight Procedures Manual, USAF Series T-41D Aircraft*, 1 April 2007

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Technical Order 1T-51A-1CL-1, *Pilot's Abbreviated Flight Crew Checklist, USAF Series T-51A Aircraft*, 15 January 2023

Technical Order 1T-51A-6CF-1, *Acceptance and Functional Check Flight Procedures Manual, USAF Series T-51A Aircraft,* 1 April 2007

Technical Order 1T-53A-1, *Flight Manual, USAF Series, T-53A Aircraft*, 28 September 2022

Technical Order 1T-53A-1CL-1, *Pilot's Abbreviated Flight Crew Checklist, USAF Series T-53A Aircraft*, 1 August 2022

Technical Order 1T-53A-6CF-1, *Acceptance and Functional Check Flight Procedures Manual, USAF Series T-53A Aircraft*, 17 April 2012

The Air Almanac, 2022

Aeronautical Information Manual, 3 November 2022

Prescribed Forms

None

Adopted Forms

DAF Form 847, *Recommendation for Change of Publication*

AFTO Form 781, *ARMS Aircrew/Mission Flight Data Document*

AFTO Form 781A, *Maintenance Discrepancy and Work Document*

Abbreviations and Acronyms

AETC—Air Education and Training Command

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFTO—Air Force Technical Order

CAPS—Cirrus Airframe Parachute System

ELT—emergency locator transmitter

TO—technical order

VHF—very high frequency

Office Symbols

None

Terms

Aeronautical Information Manual—The Federal Aviation Administration's official guide to basic flight information and air traffic control procedures.

Air Almanac—The air almanac provides astronomical data required for air navigation and is issued annually by the US Naval Observatory.

Bingo fuel/time—A pre-briefed fuel/time state that allows the aircraft to return to the base of intended landing or an alternate using normal recovery procedures.

Critical phases of flight—Periods of flight operations during takeoff, landings, and all emergency procedures.

Cross-country—Flights outside of the unit-designated local area.

Day—The time between the beginning of morning civil twilight and the end of evening civil twilight as published in the Air Almanac, converted to local time.

Home station—An airfield where the aircrew usually operates from for day-to-day missions and where aircraft maintenance is available. This includes deployed locations during a deployment.

Joker fuel/time—A prebriefed fuel/time needed to terminate an event and transition to the next mission phase.

Knots—Nautical miles per hour.

Night—The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

Attachment 2

MISSION BRIEFING GUIDE

A2.1. General:

A2.1.1. Time hack.

A2.1.2. Pilot in command /call sign/tail number.

A2.1.3. Personal considerations: cell phones (off), medical status, crew rest, glasses, rings, jewelry, scarf, and required clothing.

A2.1.4. Flight Crew Information File/Special Interest Items.

A2.1.5. Operational risk management considerations.

A2.1.6. Aircraft fuel state, weight and balance, maintenance status.

A2.1.7. Cockpit/Crew Resource Management (mission analysis, situational awareness, communication, risk management and decision making, crew coordination, task management).

A2.1.8. Instructor intervention.

A2.2. Mission:

A2.2.1. Mission objectives.

A2.2.2. Mission/flight requirements.

A2.2.3. Takeoff time.

A2.2.4. Weather: observed, forecast, and required.

A2.2.5. Notices to Airman, airfield summaries, and Notices to Airman publications.

A2.3. Takeoff and Departure:

A2.3.1. Planned runway.

A2.3.2. Departure routing and noise sensitive areas.

A2.4. Area Work and Satellite Airfield Operations:

A2.4.1. Assigned area.

A2.4.2. Maneuver profile and parameters.

A2.4.3. Area simulated forced landings.

A2.4.4. Satellite airfield operations and airfield summaries.

A2.5. Recovery and Pattern Work:

A2.5.1. Corridor or arrival routing.

A2.5.2. Pattern entry.

A2.5.3. Pattern profile, touch and go, and go around.

A2.5.4. Wake turbulence and/or spacing.

A2.5.5. Pattern altitudes.

A2.6. Additional Information:

A2.6.1. Clearing and areas of potential conflict.

A2.6.2. Checklist and radio procedures.

A2.6.3. Transfer of aircraft control.

A2.6.4. Bingo, Joker fuel, or required fuel for mission.

A2.6.5. Alternate mission.

A2.7. Emergency Procedures:

A2.7.1. Crew responsibilities.

A2.7.2. Takeoff emergencies.

A2.7.3. Cirrus Airframe Parachute System (CAPS) deployment altitudes and controlled CAPS area.

A2.7.4. Emergency ground egress.

A2.7.5. Physiological incident or instructor incapacitation.

A2.7.6. Emergency divert airfields.

A2.7.7. Emergency procedure of the day.

A2.8. Questions.

Attachment 3

PASSENGER CHECKLIST AND BRIEFING GUIDE

A3.1. Prior to Flight:

A3.1.1. Flight authorized.

A3.1.2. Complete hold harmless agreement.

A3.1.3. Complete medical form.

A3.1.4. Personal considerations: current medical status, cell phones (off), glasses, rings, scarves, gloves, coats, etc.

A3.1.5. Seat assignments, and strap-in procedures.

A3.1.6. Ramp safety.

A3.1.7. Foreign object debris.

A3.2. Mission:

A3.2.1. Passenger flying and authorized or restricted maneuvers.

A3.2.2. Flight instruments and their uses.

A3.2.3. Clearing.

A3.2.4. In-flight checks and radio procedures.

A3.2.5. Transfer of aircraft control.

A3.2.6. Mission overview:

A3.2.6.1. Takeoff.

A3.2.6.2. Departure.

A3.2.6.3. Area work.

A3.2.6.4. Arrival.

A3.2.6.5. Additional information.

A3.3. Emergency Procedures:

A3.3.1. Ground egress.

A3.3.2. Abort.

A3.3.3. Fire (engine or electrical).

A3.3.4. Airborne emergencies.

A3.3.5. Bird strike.

A3.3.6. Physiological episodes (eyes, ears, sinus, airsickness, etc.)

A3.4. Questions.