BY ORDER OF THE COMMANDER **ACCI 11-U2**

AIR COMBAT COMMAND **VOLUME 3**

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Flying Operations

PILOT OPERATIONAL PROCEDURES--U2

COMPLIANCE WITH THIS INSTRUCTION IS MANDATORY

This instruction prescribes standard operational procedures for use by pilots who operate USAF U-2 aircraft. It implements policy in AFPD 11-2, Flight Rules and Procedures. When the guidance in this instruction duplicates, changes, or conflicts with already published information contained in other ACC documents, the material in this publication takes precedence. This publication does not apply to Air National Guard (ANG) or Air Force Reserve (AFRES) members. Units may supplement this publication. Forward a copy of unit supplements to HQ ACC/DOYR. Each U-2 aircrew member is authorized a copy of this publication.

SUMMARY OF REVISIONS

This is a new publication, but contains restrictions formerly located in ACCR 51-50, Volume 6.

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Chapter 1

INTRODUCTION

1.1. Pilot Responsibility. In conjunction with other governing directives, this regulation prescribes procedures for U-2 aircraft under most circumstances, but it is not a substitute for sound judgment.

1.2. Deviations. Deviations from these procedures require specific approval of HQ ACC/DOY unless an urgent requirement or an aircraft emergency dictates otherwise, in which case the pilot in command, or instructor, will take the appropriate action to safely recover the aircraft.

1.3. References. The primary references for U-2 operations are T.O. 1U-2R-1, T.O. 1U-2S-1, other applicable T.O.s; MCM 3-1, Volume 27; 9 OG/CC Operating Instructions, and this instruction.

1.4. Waivers. Forward waiver requests through the Numbered Air Force to HQ ACC/DOY for approval. Waivers, if approved, will be issued for a maximum of 1 year from the effective date.

1.5. Regulation Changes. Submit recommendations for change to this regulation on AF Form 847, Recommendation for Change of Publication, through the Numbered Air Force to HQ ACC/DOY.

Chapter 2

MISSION PLANNING

2.1. Flight Manuals. All U-2 pilots will be issued unclassified flight manuals and are personally responsible for maintaining knowledge of flight manual procedures.

2.2. Checklists. Each crew member will have and refer to appropriate checklists during flight operations to ensure accomplishing required actions.

2.3. Local Aircrew Aids. Locally developed aircrew aids are authorized. Specific guidance is published in AFI 11-408 BAFB Supp 1.

2.4. Mission Planning Responsibility. The mission pilot is ultimately responsible for proper mission planning.

2.4.1. Commanders will ensure all mission planning materials are current and command guidance is followed. Squadron and Forward Operating Location (FOL) operations officers will ensure adequate mission planning time is scheduled prior to flight.

2.4.2. For operational reconnaissance and HHQ sorties, responsibility for determining mission objectives, sensor selection, route of flight, country clearances, etc. is shared between operations and intelligence functions at the wing level or above.

2.5. Mission Planning Procedures. Mission planning must be sufficient to ensure safe and successful mission accomplishment. Areas covered will include, at a minimum, fuel requirements, chart preparation, mission objectives, threat study (when applicable), departure and arrival procedures, and communication procedures.

2.5.1. Map/chart preparation. All mission materials (other than FLIP) will be placed on boards to ease handling in the pressure suit. Annotate restricted/prohibited areas, route of flight, and emergency airfields along the route of flight. Known threats to the U-2 will be depicted..

2.5.2. Pre-flight briefings. Pilots are responsible for briefing the mobile prior to each flight. For all flights, the briefing will include emergency airspeeds for use immediately after takeoff, and the assistance desired from the mobile.

2.5.3. For training flights, do not accomplish any simulated emergencies without pre-briefing the mobile.

2.5.4. For high altitude training flights and operational missions, pre-brief mission objectives, sensor operation, and recovery plan.

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Preflight.

3.1.1. General. The pilot must review the aircraft forms, including weight and balance. The pilot is responsible for aircraft condition prior to acceptance for flight. Verbally confirm fuel load and wing dip with the crew chief.

3.1.2. Low Flights. The pilot will normally accomplish the aircraft preflight, to include the exterior inspection. The mobile officer may perform the exterior inspection if conditions warrant.

3.1.3. High Flights. The mobile will perform the interior inspection to include navigation destination point (DP) check. The mobile will also review the aircraft forms and perform the exterior inspection.

3.2. Ground Visual Signals.

3.2.1. Comply with AFI 11-205.

3.2.2. Prior to engine start, verify intercom operation with the crew chief and rear cockpit (if applicable). If unable with the crew chief, use visual signals.

3.3. Taxi.

3.3.1. If unable to make a turn, stop; follow mobile's instructions for pushing the aircraft. Close coordination with the mobile is necessary to push an aircraft safely. Do not actuate control surfaces, run up the engine, or roll forward until cleared by mobile.

3.3.2. Taxi after receiving "ground crew clear" from mobile and taxi clearance from ATC.

3.4. Runway Line Up.

3.4.1. Intersection takeoffs are allowed if more than 5000' of runway remains after line up. Avoid performing intersection takeoffs if the stopping distance is critical and using the entire runway is operationally feasible.

3.4.2. At locations with crowned runways, do not line up on runway center line with fuel loads less than R-6. The pogos may fall out when the pins are removed. However, narrow runways or crosswind conditions may dictate that the centerline be used for fuel loads less than R-6.

3.4.3. Takeoffs Without Both Pogos. At light fuel loads (R/S-3 or less), a hand launch is permissible.

3.4.4. Before takeoff checks. Do not run-up power until receiving takeoff clearance and getting a "thumbs up" or verbal "ground crew clear" from the mobile.

3.5. Climbout. On all takeoffs, including touch & go, do not initiate a turn until reaching a minimum of 400' AGL.

3.6. Cruise.

3.6.1. Fly the Indicated Mach Number (IMN) recommended by the classified dash one performance charts based on aircraft configuration and mission. If mission objectives include significant loiter, maximum endurance Mach may be used.

3.6.2. Minimum airspeed above FL 600 is no-flap T-speed plus 10 knots.

3.7. Descent Descents from operational altitudes should normally be made in the reverse of the climbout airspeed schedule. Use caution not to exceed flight manual airspeed limits. Do not descend at maximum airspeeds unless mission tactics or training requirements dictate.

3.8. Stall Training.

3.8.1. Practice approaches to stalls at least 10,000' above the ground or above an undercast and below FL400. Ensure the stall strips are extended and fuel balance is checked. Recover immediately if any unusual stall characteristics develop.

3.8.2. Accomplish approach to stalls only on FCF or directed stall training sorties with a qualified IP on board, or as part of IP upgrade training.

3.8.3. Intentional stalls from nose high attitudes and accelerated stalls are prohibited.

3.9. VFR Patterns.

3.9.1. Minimum airspeed is 90 KIAS or T-speed plus 10 knots, whichever is higher (except for final approach and landing).

3.9.2. Overhead patterns. Fly initial at 130 KIAS and 1500' AGL (normal pattern). Initiate the break over the first third of the runway, or as directed by ATC.

3.9.3. Closed patterns. Airspeed during the closed pattern will be no lower than 90 KIAS or no-flap T + 10, whichever is higher. Do not exceed 130 KIAS during the pattern under normal conditions.

3.9.4. Night VFR patterns. Night overhead patterns may be flown as locally published. Operating visual glide slope lighting is mandatory for night VFR patterns.

3.10. Low Approaches. Initiate low approach, missed approach, or go-around at 10' or above unless performing the landing attitude demonstration in the U-2 RT/ST.

3.11. Mobile Control of Landings.

3.11.1. The mobile will chase all landings unless safety considerations preclude chase, or when conducting mobile training from a static position.

3.11.2. Static position mobile training should only be accomplished under the following conditions:

- Day
- Visibility 3 statute miles or better
- Crosswinds <10 knots
- An IP in the aircraft being monitored
- The mobile must be in a position to clearly view the final approach, touchdown, and rollout/takeoff phases

3.11.3. If the mobile will not be chasing the aircraft, or has to discontinue chase/loses sight, he must inform the pilot by transmitting "Call Sign, Mobile, Negative Chase". This call may include a short explanation, if warranted.

3.12. Touch & Go Landings.

3.12.1. All touch & go landings will be supervised by an instructor (either in the mobile or in the aircraft).

3.12.2. Minimum runway length for touch & go landings is 6,000 ft.

3.12.3. The landing zone for all U-2 landings is the first third of the runway. Initiate the takeoff phase of touch & go landings no later than 4,000 ft remaining.

3.12.4. Do not perform touch & go landings if the aircraft has mission equipment (PME) uploaded. The tracker camera and Electronic Warfare Systems (EWS) are not considered PME for the purpose of touch & go landings.

3.13. No-Voice Landings All landings will be given altitude calls unless the pilot asks for a no-voice landing. No-voice landings are not considered simulated emergency procedures and may be flown on any pattern/landing (except operational/HHQ sorties) with the following restrictions.

- Will not be flown with greater than 10 knots of crosswind.
- Will not be flown when the runway is snow, slush, or ice covered.
- Will not be flown when an emergency exists, or a precautionary landing is being made.

3.14. Full Stop Landings. Minimum runway for full stop landings is 4,000'.

Chapter 4

SIMULATED EMERGENCY PROCEDURES

4.1. General. Practice simulated emergencies under day visual meteorological conditions (VMC) only. Simulated emergencies will only be practiced by Instructor Pilots or under the supervision of an IP.

4.2. Simulated Flameout Patterns (SFOs).

4.2.1. Do not practice SFOs from the initial takeoff leg of the pattern. All SFOs will be flown from a high key point as described in the flight manual or later in this chapter (non-standard SFOs).

4.2.2. Enter all SFOs from a stabilized pitch attitude and power setting. Do not fly any portion of the SFO in idle power, except for the landing.

4.2.3. The purpose of SFOs is to practice recovering the aircraft after gliding to a suitable landing field; therefore, the minimum entry altitude for a no-flap SFO is high key at 1,000' AGL, and configured IAW the flight manual. The minimum entry altitude for a with-flap SFO is 1,500' AGL and copnfigured IAW the flight manual.

4.2.4. A non-standard SFO is any SFO which is begun at a position other than high key. Non-standard SFOs may be entered from altitudes above those described in the flight manual.

4.3. No-Flap Patterns.

4.3.1. Practice no-flap instrument approaches (in VMC), and VFR patterns to touch & go landings are authorized.

4.3.2. Practice gust-up, no-flap patterns to touch & go landings are authorized.

4.3.3. Practice no-flap landings without the use of trim (simulating hydraulic pressure loss) are authorized provided the trim setting used is within the normal flight range (1 unit nose down to 2 units nose up).

4.4. Full Stop Landings. Full stop landings from simulated emergency patterns are not authorized.

Chapter 5

EMERGENCY PROCEDURES

5.1. General. This chapter contains procedures to be followed when emergencies or abnormal conditions occur. They do not, however, supersede or replace flight manual procedures or sound judgment.

5.1.1. No aircraft will be accepted for flight with a known malfunction addressed in the emergency/abnormal procedures section of the flight manual until corrective action is completed.

5.2. Takeoff Aborts. If hot brakes are suspected, declare a ground emergency and do not taxi.

5.3. Air Aborts. The pilot-in-command is primarily responsible for handling in-flight emergencies (IFEs). Time and conditions permitting, the pilot will inform the mobile or command post, and the mobile will confirm necessary BOLDFACE procedures and applicable checklists are accomplished. See ACCI 11-463, BAFB Sup 1 for mobile and SOF responsibilities during IFEs.

5.4. Hung Pogo Procedures.

5.4.1. In the event of a hung pogo, the pilot should avoid flying over populated areas and avoid making abrupt pitch and power changes. Declare an emergency and comply with local procedures and flight manual guidance with the following restrictions.

- Descend no lower than 1000’ AGL.
- Extend the stall strips, ensure bleed valves are open (U-2R), and slow no lower than computed no-flap T-speed + 10 knots.
- Lower the flaps to 35 degrees when over the drop zone. Do not allow the airspeed to decrease below computed T-speed + 10 knots during the latter part of flap extension.

5.4.2. If the pogo still fails to release:

- If aircraft T-speed is greater than 78.6 KIAS (24,300 lb aircraft), proceed to the local hung pogo fuel dump area to adjust the aircraft gross weight for landing, conditions permitting.
- If aircraft gross weight and fuel on board allow, perform a normal landing on center line. If the pogo drops, stop straight ahead and terminate the emergency. A re-launch using the opposite side pogo or using hand launch procedures is permissible.

5.5. Fuel Restrictions.

5.5.1. Declare minimum fuel whenever usable fuel at touchdown will be less than 125 gallons.

5.5.2. Declare emergency fuel whenever usable fuel at touch down will be less than 50 gallons. After landing, shut down the engine whenever sump quantity indications become unreliable (usually less than 25 gallons) regardless of fuel depicted on the counter. Do not allow the engine to flame out.

Chapter 6

WEATHER RESTRICTIONS

6.1. Ceiling and Visibility. Fully qualified pilots comply with AFI 11-206, ACC Sup 1 ceiling and visibility criteria for filing, takeoff, and landing. For student training and interview sorties, comply with syllabus restrictions.

6.2. Surface winds.

6.2.1. Maximum steady state surface wind (forecast or reported) for training sorties is 30 knots, due to parachute canopy size and the hazards associated with being dragged.

6.2.2. Maximum surface wind for operational or HHQ directed sorties is 40 knots due to towing restrictions.

6.2.3. Cross winds.

6.2.3.1. Maximum cross wind component for dry or wet runway operations is 15 knots.

6.2.3.2. Maximum cross wind component for touch & go landings is 12 knots. See BAFB SUP1 for specific guidance on performing touch & go landings when crosswinds exceed 10 knots.

6.2.3.3. Maximum cross winds for operations with loose snow on the runway is 9 knots, and for an icy (RCR 5) runway is 5 knots. Do not perform touch & go landings on snow or ice covered runways.

6.2.4. Tail winds.

6.2.4.1. Maximum tail wind component for takeoffs and full stop landings is 10 knots.

6.2.4.2. Maximum tail wind component for touch & go landings is 5 knots.

6.3. Turbulence. U-2 sorties will not fly into areas of forecast or reported severe turbulence, nor will they remain in areas where actual moderate turbulence is encountered.

Chapter 7

PHYSIOLOGICAL/CREW REST PROCEDURES.

7.1. General. This chapter discusses the special physiological stresses experienced by pilots flying long duration missions in the full pressure suit and outlines crew rest and duty day limitations to reduce the stresses and increase safety.

7.2. High Altitude Flights.

7.2.1. For flights during normal duty hours, pilots will not be scheduled any additional activities for the remainder of the duty period.

7.2.2. Pilots landing after 1930L are excused from duty for 13 hours after actual landing time or 12 hours after completion of post flight duties, whichever is later.

7.2.3. Mobile officers will adhere to the same duty day criteria as the pilot they are mobiling (Exception: FCF and transition duty day restrictions do not apply to the mobile). A crew duty day extension for the pilot applies to the mobile and SOF as well.

7.2.4. Recovery Period. Adhere to the following recovery times (turn times). 9 OG/CC or FOL commanders may waive these times only after careful consideration of the pilot's recent duty history, the importance of the mission, AFI 11-401, ACC Sup 1, and ACCI 11-220 restrictions. These limits should not normally be waived for training sorties at Beale AFB or FOLs. Times are landing to takeoff, except for high flights < 2.5 hrs, for which the 13 hr recovery period is from landing to start of official duties.

HIGH FLIGHT DURATION	TO HIGH FLT	TO LOW FLT
< 2.5 hrs	13 hrs	13 hrs
2.5 hrs to < 6.5 hrs	36 hrs	18 hrs
6.5 to < 9.0 hrs	48 hrs	36 hrs
9.0 hrs or longer	48 hrs	48 hrs

7.2.5. Aborted flights of less than 2.5 hours duration may be re-launched with the same pilot. Carefully consider the circumstances of the original abort, the mission to be accomplished, and the condition of the pilot. If a backup pilot is used instead, the original pilot may perform mobile duties.

7.2.6. For flights 9.0 hrs or longer, the first 24 hour period following landing will be compensatory time off (CTO). The second 24 hour period will be ground duties only (GDO). Supervisors may perform SOF duties at their discretion if basic ACCI 11-463 and BAFB Sup 1 crew rest provisions are complied with.

7.2.7. There is no limit on normal low flights the day prior to a high flight provided an adequate mission planning period is provided.

7.3. Low Altitude Flights.

7.3.1. For flight during normal duty hours, complete the remainder of the normal duty day.

7.3.2. For flights landing after 1930L, both the pilot and mobile are excused from duty for 13 hours after the actual landing time, or 12 hours after completion of post flight duties, whichever is later.

7.3.3. A minimum of 3 hours will be scheduled between successive low flights, landing to takeoff.

7.3.4. When ambient temperatures exceed 90 degrees Fahrenheit, successive same day low sorties are prohibited.

7.4. Crossing Time Zones. All crew members deploying to overseas locations that require crossing more than three time zones should be given 48 hours at the FOL prior to their first flight to allow circadian rhythm synchronization. This provision is waiverable by 9 OG/CC and does not apply to BUSY RELAY aircraft ferry flights.

7.5. Crew Rest. 12 hours crew rest is required with a minimum period of 8 hours uninterrupted sleep/rest prior to show time. As a minimum, this must be accomplished in a climatically controlled, quiet, and easily accessible location. At TDY locations, accommodations should be inspected by the FOL commander to determine compliance.

7.6. Wear of Jewelry. Jewelry will not be worn under the pressure suit.

7.7. Exercise. .

7.7.1 Do not engage in heavy exercise immediately prior to a high altitude flight.

7.7.2. Avoid heavy exertion for 12 hours after high flights due to increased susceptibility to decompression sickness (the bends).

Chapter 8

ORIENTATION FLIGHTS

8.1. General. U-2 orientation flights will be conducted IAW DOD 4515.13R, AFI 11-401, ACCI 11-450, this instruction, and unit supplements.

8.2. Policy.

8.2.1. Orientation flights will be limited to those individuals who must possess a firsthand knowledge of the U-2 program.

8.2.2. Approval authority. The approval authority for various categories of passengers is defined in ACCI 11-450.

8.3. Responsibilities.

8.3.1. Coordination. HQ ACC/DOOO is the single point of contact for coordinating all U-2 orientation flights requiring COMACC or higher approval.

8.3.2. The Wing/CC is responsible for hosting orientation recipients as necessary.

8.3.3. The OG/CC will design and administer the orientation flight program.

8.4. Mission Profiles. For Distinguished Visitor (DV) flights, a high mission profile should be planned. For incentive and familiarization flights, a high or low mission profile may be planned, as appropriate.

Attachment 1

GLOSSARY OF ACRONYMS

ACC	Air Combat Command
ACCI	Air Combat Command Instruction
ACCR	Air Combat Command Regulation
AFI	Air Force Instruction
AFM	Air Force Manual
AFR	Air Force Regulation
AFTO	Air Force Technical Order
AGL	Above Ground Level
ARTCC	Air Route Traffic Control Center
ATC	Air Traffic Control
CFIC	Combat Flight Instructor Course
DH	Decision Height
DOD	Department of Defense
EWS	Electronic Warfare System
FAF	Final Approach Fix
FAR	Federal Aviation Regulation
FL	Flight Level
FLIP	Flight Information Publications
FTU	Formal Training Unit
GCC	Graduated Combat Capability
HAT	Height Above Touchdown
HHD	Higher Headquarters Directed
HHQ	Higher Headquarters
IAF	Initial Approach Fix
IAW	In Accordance With
IFF	Identification Friend or Foe
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
INS	Inertial Navigation Set/System
IP	Instructor Pilot
IQT	Initial Qualification Training
KIAS	Knots Indicated Airspeed
KTAS	Knots True Airspeed
MAJCOM	Major Command
N/A	Not applicable
NAF	Numbered Air Force
NORDO	Non radio aircraft
OG/CC	Operations Group Commander
OPR	Office of Primary Responsibility
PME	Primary Mission Equipment
RCR	Runway Condition Reading
SOF	Supervisor of Flying
TACAN	Tactical Air Navigation system
TDZ	Touchdown Zone
TDY	Temporary Duty
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rule
VMC	Visual Meterological Conditions
VOL	Volume