BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE MANUAL 11-2U-2,
VOLUME 3

9 MARCH 2026

Flying Operations

U-2 OPERATIONS PROCEDURES

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

ACCESSIBILITY: This publication is available for downloading or ordering on the e-Publishing website at www.e-Publishing.af.mil.

RELEASABILITY: There are no releasability restrictions on this publication.

OPR: ACC/A3MU
Certified by: AF/A3T
Supersedes: AFMAN11-2U-2V3, 17 October 2018
Pages: 41

This publication implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, . It provides guidance and procedures on the safe and effective operations of the U-2 aircraft. It applies to all military and civilian personnel of the Regular Air Force and the Air Force Reserve who operate the U-2 aircraft, perform Mobile Officer duties, or act as Supervisor of Flying (SOF) for U-2 units. It does not apply to the Air National Guard or United States Space Force. This publication requires the collection and or maintenance of information protected by the Privacy Act of 1974 authorized by Department of Defense Instruction (DODI) 5400.11, *DOD Privacy and Civil Liberties Program*. The applicable System of Records Notices (SORN) F011 AF XO A, Aviation Resource Management System (ARMS), is available at **http://dpclo.defense.gov/Privacy/SORNs.aspx**. The reporting requirements in this publication are exempt from licensing in accordance with (IAW) Air Force Instruction (AFI) 33-324, *The Air Force Information Collections and Reports Management Program*. Ensure all records generated as a result of processes prescribed in this publication adhere to AFI 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to its office of primary responsibility (OPR), Air Combat Command (ACC) U-2 Operations Branch (ACC/A3MU) (**acca3.a3mu.u-2opsbranch@us.af.mil**, **ACCA3.A3MU.U-2OpsBranch@us.af.mil**, using the Department of the Air Force (DAF) Form 847, *Recommendation for Change of Product*; route DAF Forms 847 from the field through the appropriate functional chain of command. This publication may be supplemented at any level, but all supplements must be routed to ACC/A3MU for coordination prior to certification and approval. “The authorities to waive wing, unit, or delta level requirements in this publication are identified with a tier (“T-0, T-1, T-2, T-3”) number

following the compliance statement. See Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Product*, Table A10.1, for a description of the authorities associated with the Tier numbers. Submit waiver requests through the chain of command to the appropriate tier waiver approval authority, or, for non-tiered compliance items, to the requestor's commander. See **Paragraph 1.3** of this publication for further waiver guidance. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the DAF.

SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. **Chapter 1**: added responsibilities, guidance for conflicting publications, and waiver procedures. **Chapter 2**: added guidance for Operations Mobile Devices (OMDs), fuel planning, and clarified responsibilities. **Chapter 3**: added OMD operations, Mode-S usage, stall training, low approach and go-around considerations, touch-and-go weight limitations, Rapid Crew Swap (RCS) procedures, Ready Aircrew Program (RAP) Tasking Memorandum (RTM) stipulations, and hot-mic usage for students. **Chapter 5**: added hot brake procedures, hung pogo considerations, and hydrazine incident procedures. **Chapter 6**: added U-2 specific filing requirements from Air Force Manual AFMAN 11-202 Volume 3, ACC Supplement, *Flight Operations*, minimum takeoff weather, space weather considerations, and clarified radiation event procedures. **Chapter 7**: clarified Flight Duty Period, transition duty day limitations, and high flight recovery periods; changed flight recovery period waiver authority to group commander level. **Chapter 8**: updated orientation flight guidance. A margin bar (|) indicates newly revised material.

Chapter 1

GENERAL INFORMATION

1.1. General.

1.1.1. This manual provides guidance for operating the U-2 aircraft in most circumstances. It is not a substitute for sound judgement, nor does it override any existing aircraft limitation. Procedures not specifically addressed may be accomplished if they improve mission safety and effectiveness.

1.1.2. Conflicting Guidance. This manual is an original source document for many areas, but for utility and convenience, it restates information and guidance found in other publications. For matters where this manual is the source document, reference the **Waivers** section below. When guidance in this manual conflicts with another source document, that other document takes precedence.

1.2. Roles and Responsibilities.

1.2.1. Commanders. Commanders at their respective tier levels are responsible for complying with guidance in this manual (unless waived at the appropriate level). **(T-1)**

1.2.2. Pilot in Command (PIC). The PIC, regardless of rank, is ultimately responsible for and has final authority over the safe operation of the aircraft. **(T-0)** The PIC will not operate the aircraft in a careless, reckless, or irresponsible manner that could endanger life or property. PICs may deviate from this manual's procedures to protect life, preserve safety of flight, or when an in-flight emergency requires immediate action. PICs should not accept an aircraft for flight if they suspect the aircraft is not airworthy.

1.2.2.1. Aircrew. The responsibilities outlined in this manual and Air Force Manual (AFMAN) 11-202 Volume 3, *Flight Operations* including alcohol limitations, apply equally to Mobile Officers, backup pilots, and SOFs. **(T-1)**

1.2.3. Mobile Officers. The Mobile Officer is considered part of the U-2's aircrew and, in addition to their ground duties during takeoff and landing, serves as a safety observer, mission coordinator, and mission monitor. Because the U-2 typically flies single-seat, single-ship, the Mobile Officer is the equivalent of the pilot's wingman. Mobile Officers will normally be the backup pilot for the sortie.

1.3. Waivers. Submit waiver requests through the chain of command to the appropriate tier waiver approval authority. Tier waiver authorities are listed in DAFMAN 90-161, Table A10.1. For waiver authority purposes, units assigned to a Combatant Command will consider their respective Commander, Air Force Forces (COMAFFOR) as their Major Command (MAJCOM) (e.g., they should consider their operational control (OPCON) authority as their MAJCOM). For example, a U-2 unit conducting a mission in United States European Command would submit a T-1 waiver request to the United States Air Forces in Europe Commander (USAFE/CC). IAW DAFMAN 90-161, the approval authority for non-tiered compliance items is the requester's squadron commander. Commanders who approve waivers for non-tiered compliance items must send a copy of the approved waiver to this publication's OPR, ACC/A3MU, within 30 days of approval. **(T-1)** An email with a completed DAF Form 679, *Department of the Air Force Publication Compliance Item Waiver Request/Approval,* or equivalent will suffice. **(T-1)**

1.4. Key Definitions.

1.4.1. “Will” and “must” indicate a mandatory requirement.

1.4.2. “Should” indicates a preferred, but not mandatory, method of accomplishment.

1.4.3. “May” indicates an acceptable or suggested means of accomplishment.

Chapter 2

MISSION PLANNING

2.1. Responsibilities:

2.1.1. Unit commanders. Unit commanders will:

2.1.1.1. Establish and implement Risk Management (RM) processes specific to each mission or activity. RM assessments will include pilot circadian rhythm, fatigue, and fatigue countermeasures (e.g., nutrition, pharmaceuticals, adaption, and physical condition). **(T-2)**

2.1.1.2. Ensure availability of current mission planning materials consistent with command guidance. **(T-2)**

2.1.1.3. Provide local guidance and oversight for Operations Mobile Devices (OMDs) at each operating location. **(T-1)**

2.1.1.4. Develop mission plans based upon mission type, collection prioritization and objectives, sensor selection, threat environment, and airspace/communications requirements. **(T-2)**

2.1.1.4.1. For training missions, mission plans will follow syllabus guidance, local training objectives, RTM, or unit requirements. **(T-3)**

2.1.1.4.2. For operational reconnaissance missions, mission plans will refer to mission or theater Concept of Operations (CONOPs), directives, or similar guidance.

2.1.1.4.3. For Higher Headquarters (HHQ) directed missions:

2.1.1.4.3.1. For mission support exercises, inspections, and tests, mission plans will follow guidance from the controlling organization/agency. In the absence of specific guidance, coordinate with the tasking agency to define mission objectives.

2.1.1.4.3.2. For operational movements (e.g., deployment, redeployment, BUSY RELAY, and Programmed Depot Maintenance (PDM) input or delivery), coordinate with all parties to ensure aircraft delivery within the specified timeline.

2.1.2. Operations Officers (SQ/DO). The SQ/DO will:

2.1.2.1. Provide adequate mission planning time prior to flight. **(T-2)**

2.1.2.2. Ensure pilots have access to authorized and current OMDs for every flight in lieu of paper Flight Information Publications (FLIP). **(T-3)**

2.1.3. Mission Planners. Mission Planners will assess planned routes of flight against the threat environment (when appropriate) and are responsible for obtaining route and country clearances. **(T-2)**

2.1.4. Pilots. Pilots are ultimately responsible for proper mission planning. During mission planning, pilots will review, as applicable, mission routes, forecast weather, divert options, fuel requirements, Notices to Airmen (NOTAMs), threat assessments, mission boards, and mission kits (including local guides, pharmaceuticals, and OMDs).

2.2. Procedures.

2.2.1. Mission plans may be developed at a Forward Operating Location (FOL), an operational training squadron, or a Mission Planning Cell (MPC). At a minimum, plans must address fuel requirements, chart preparation, mission objectives, threat assessment (if applicable), departure/arrival procedures, and communications plans. **(T-2)**

2.2.2. Preparation of Materials.

2.2.2.1. Mission planners will place all mission materials (other than FLIP) on boards to ease handling in the Full Pressure Suit (FPS). **(T-3)**

2.2.2.2. Mission planners will annotate routes of flight, restricted/prohibited areas, emergency airfields, and known threats on their relevant maps/charts. **(T-2)**

2.3. Fuel Planning Procedures.

2.3.1. U-2 aircraft must carry enough fuel to meet all the following requirements:

2.3.1.1. Complete the planned flight to the destination or alternate (if required). **(T-0)**

2.3.1.2. Land with at least 125 gallons. **(T-0)**

2.3.1.3. Increase the planned flight time by 10% (up to a maximum of 45 minutes) or 20 minutes, whichever is greater. **(T-1)** Use max endurance fuel consumption at 10,000 feet MSL. **(T-2)** This prescribed fuel reserve is not required when flights are planned to hold in lieu of filing an alternate for isolated destinations (see **Paragraph 2.3.3**). **(T-2)**

2.3.2. If an alternate is required, the fuel load must permit the following prior to initiating a divert:

2.3.2.1. When both visibility and ceiling criteria necessitate an alternate: an approach at the filed destination. **(T-1)**

2.3.2.2. When visibility-only criteria necessitates an alternate: an approach and missed approach at the filed destination. **(T-1)**

2.3.3. Isolated destinations are remote or island airfields whose location precludes flight to a suitable alternate. If prevailing weather conditions at such destinations require an alternate, U-2 aircraft will have fuel on board to hold for 2 hours at the destination fix in lieu of filing an alternate. When planning to do so, the fuel reserve outlined in **Paragraph 2.3.1.3** is not required. **(T-2)**

2.4. Operational Mobile Device (OMD) Mission Planning.

2.4.1. Authorization. AFMAN 11-202V3 and Air Combat Command Instruction (ACCI) 11-270, *Operations Mobile Devices*, ACC permits use of Electronic Flight Bags (EFBs). 9th Operations Group (9 OG) OMDs consist of the following devices and software:

2.4.1.1. 9 OG-issues unclassified devices (for non-operational missions). **(T-1)**

2.4.1.2. 9 OG-issued missionized/redacted devices (for operational missions). **(T-1)**

2.4.1.3. Approved GPS receivers. **(T-1)**

2.4.2. FLIP and Publications. Pilots will ensure all required FLIP and publications are current, accessible, and viewable prior to flight. ForeFlight® is the primary application for FLIP; GoodReader® is the primary application for publications.

2.4.3. Paper Publications. Pilots will carry hard copies of Flight Crew Checklist 1U-2S-1CL-1, *Pilot's Checklist*, Flight Crew Checklist 1U-2S-1CL-2, *Pilot's Mission Operation and Avionics Checklist*, and the local In-Flight Guide (IFG) on all flights. **(T-3)**

2.4.4. Quantity. Solo U-2S/TU-2S pilots will carry two OMDs. Dual TU-2S pilots will carry one OMD per pilot. **(T-2)**

2.5. Briefing and Debriefing.

2.5.1. Aircrew will conduct all briefings and debriefings following the guidance in this manual, the IFG, and local directives in a suitable environment. Only brief those items relevant to the mission.

2.5.2. Participants may brief items understood by everyone as "standard."

2.5.3. The PIC is responsible for briefing the Mobile Officer prior to each flight. For flights in the TU-2S, briefings will address Cockpit/Crew Resource Management (CRM) and crew coordination between the front and rear cockpits during normal and Emergency Procedures (EPs). **(T-2)**

2.5.4. Simulated EPs will only be accomplished if they have been briefed with the Mobile Officer. **(T-3)**

2.5.5. The SQ/DO will approve all formation flights, including dissimilar formations. When planning to fly the U-2 in formation, pilots will brief proper aircraft positioning, pilot/crew responsibilities, and any unique aircraft requirements for each phase of flight to all formation crew members. **(T-3)**

2.5.6. At a minimum, preflight briefings will include all the following:

2.5.6.1. Mission objectives and requirements. **(T-2)**

2.5.6.2. Mission data and planned route of flight. **(T-2)**

2.5.6.3. Weather, NOTAMs, and flight restrictions. **(T-2)**

2.5.6.4. Applicable "Go, No-Go" items. **(T-2)**

2.5.6.5. RM assessment and mitigation. **(T-2)**

2.5.6.6. CRM. **(T-2)**

2.5.6.6.1. Pilot/Mobile Officer/SOF interaction. **(T-2)**

2.5.6.6.2. Task management. **(T-2)**

2.5.6.6.3. Situational awareness. **(T-2)**

2.5.6.6.4. Decision making. **(T-2)**

2.5.6.6.5. Visual search responsibilities. **(T-2)**

2.5.6.7. Mid-Air Collision Avoidance (MACA) from military and civilian aircraft. **(T-2)**

2.5.6.8. Training rules and procedures. **(T-2)**

2.5.6.9. Night procedures (when applicable). **(T-2)**

2.5.6.10. EPs, including desired assistance from the Mobile Officer. **(T-2)**

2.5.6.11. Divert airfields and fuel reserve requirements. **(T-2)**

2.5.7. For all high-altitude flights, briefings will also include (as applicable):

2.5.7.1. Payload operations and restrictions. **(T-2)**

2.5.7.2. Mission timing, taskings, and route study. **(T-2)**

2.5.7.3. Theater-specific operational procedures/guidance. **(T-2)**

2.5.7.4. Theater-specific intelligence, threats, restricted/no-fly areas, and Command and Control coordination. **(T-2)**

2.5.7.5. Physiological concerns, fatigue management, and duty day limitations. **(T-2)**

2.5.7.6. Diplomatic Clearances. **(T-2)**

2.5.7.7. Search and Rescue (SAR) or Combat Search and Rescue (CSAR) procedures. **(T-2)**

2.5.8. For ferry flights or BUSY RELAY missions, the briefing will also include (as applicable):

2.5.8.1. Flight plan and diplomatic clearances. **(T-2)**

2.5.8.2. Passport/visa requirements. **(T-2)**

2.5.8.3. Required FLIP. **(T-2)**

2.5.8.4. Launch authority and mission monitoring. **(T-2)**

2.5.8.5. Communications plan, including HF radio usage. **(T-2)**

2.5.9. Pilots will debrief all missions. **(T-2)**

2.6. Flight Manuals and Checklists.

2.6.1. Pilots are responsible for maintaining familiarity with flight manual procedures. **(T-1)**

2.6.2. Pilots will refer to appropriate checklists during flight operations to ensure the accomplishment of required actions. **(T-1)** Appropriate checklists are one of the following:

2.6.2.1. 1U-2S-1CL-1, 1U-2S-1CL-2, and Acceptance and Functional Check Flight Manual 1U-2S-6CF-1CL-1, *Functional Check Flight Checklist.* **(T-3)**

2.6.2.2. The Electronic Flight Aid (EFA) page of the Multi-functional Display (MFD). **(T-3)**

2.6.2.3. A locally developed pilot aid, such as a paper “flimsy” or digital Unit Developed Checklist (UDC), that combines steps from the 1U-2S-1CL-1 and 1U-2S-1CL-2 into a single product. **(T-3)**

2.7. In-Flight Guide (IFG).

2.7.1. FOLs and deployed locations will develop a local IFG, which must include the following:

2.7.1.1. Briefing guide and RM matrix. **(T-2)**

2.7.1.2. Local UHF/VHF/Headquarters (HQ)/HF channelization. **(T-2)**

2.7.1.3. Airfield diagram(s). **(T-2)**

2.7.1.4. Taxi procedures. **(T-2)**

2.7.1.5. Local departure and arrival/recovery procedures. **(T-2)**

2.7.1.6. Local EP and no radio guidance. **(T-2)**

2.7.1.7. Local fuel dump guidance and hung pogo procedures. **(T-2)**

2.7.1.8. Divert/alternate base information. **(T-2)**

2.7.1.9. On-scene commander guidance for CSAR operations. **(T-2)**

2.7.1.10. Any other information deemed necessary by the SQ/DO. **(T-2)**

2.8. Flight Crew Information File (FCIF).

2.8.1. Pilots, Mobile Officers, and SOFs will review FCIF Volume 1, Parts B and C, before all missions or ground aircrew duties, and update the FCIF currency record (e.g. PEX). **(T-2)**

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Preflight.

3.1.1. The pilot will verify the aircraft condition and review all aircraft forms, including weight and balance data, before accepting the aircraft for flight.

3.1.2. For low flights, the pilot will normally accomplish the aircraft pre-flight, including the exterior inspection. **(T-3)** The Mobile Officer may perform the exterior inspection if needed.

3.1.3. For high flights, the Mobile Officer will:

3.1.3.1. Review the aircraft forms, including weight and balance data. **(T-3)**

3.1.3.2. Accomplish the exterior inspection. **(T-3)**

3.1.3.3. Perform the interior inspection, including navigation system checks (destination points, emergency airfields, and bullseyes). **(T-3)**

3.2. Ground Visual Signals.

3.2.1. Prior to engine start, pilots will establish radio contact with the Mobile Officer, except for communication-out launches.

3.2.2. For engine start and ground operations prior to taxi, the pilot will maintain two-way voice communication with the crew chief via intercom. If the intercom is inoperative, the pilot may use visual signals.

3.3. Taxi.

3.3.1. Pilots will only taxi after the Mobile Officer provides a radio transmission or visual signal confirming the ground crew is clear. **(T-3)**

3.3.2. If unable to complete a turn, pilots will stop the aircraft and follow the Mobile Officer's instructions. Safely pushing an aircraft requires close coordination between the pilot, Mobile Officer, and ground crew. The pilot will not actuate control surfaces, advance the throttle, or roll forward until cleared by the Mobile Officer. **(T-3)**

3.3.3. When Electronic Warfare System (EWS) wingtip receivers are installed, pilots will not taxi with a wingtip in contact with the runway or taxiway. **(T-3)**

3.3.4. To prevent tailwheel damage, pilots will avoid taxiing over raised centerline lights or cables (strung or unstrung).

3.4. Runway Line Up and Takeoff.

3.4.1. Intersection Takeoffs.

3.4.1.1. Pilots will avoid performing intersection takeoffs if the stopping distance is critical, or if use of the entire runway is operationally feasible.

3.4.1.2. Pilots will only perform an intersection takeoff if the takeoff ground distance plus abort stopping distance is less than the available runway remaining. **(T-2)**

3.4.2. At fuel loads of R-5 or less, pilots will avoid lining up on a crowned runway's centerline due to the risk of one or both pogos falling out after pin removal, unless operationally necessary.

3.4.3. Takeoff Without One or Both Pogos.

3.4.3.1. For training missions: at fuel loads of R-3 or less, pilots may conduct a hand launch with no pogos installed. At fuel loads above R-3, pilots will only conduct a hand launch if at least one pogo is installed. **(T-3)**

3.4.3.2. For operational or HHQ-directed missions: pilots will only conduct hand launches if approved by the unit commander.

3.4.4. Pilots will only advance the throttle to initiate takeoff after they receive both the takeoff clearance and confirmation from the Mobile Officer, via radio or visual signal, that the ground crew is clear.

3.5. Operational Mobile Device (OMD) Operations.

3.5.1. During critical phases of flight, pilots will ensure OMDs are either stowed or appropriately secured and viewable. If time and conditions permit during ejection or egress, pilots should stow OMDs. At all times, OMDs must not interfere with flight control movement, emergency egress, or oxygen deployment. **(T-1)**

3.5.2. Pilots should keep iPads out of direct sunlight, especially during ground ops. Overheating iPads should be removed from direct sunlight to allow them to cool.

3.5.3. Pilots will only use weather data on OMDs as a reference to increase situational awareness and not as a primary means of weather avoidance. **(T-2)**

3.5.4. Pilots will only use their aircraft position on the OMD to aid situational awareness. Pilots will not use OMDs as a primary flight reference or as a substitute for any required navigation equipment. **(T-2)**

3.5.5. On operational missions, pilots will not record flight data (screen captures, GPS trails, and flight plans) on the iPad. **(T-3)**

3.6. Descent. Pilots should avoid descending at maximum airspeeds unless required by mission, tactical, or training objectives.

3.7. Stall Training.

3.7.1. Stall training will only be accomplished on training missions with a Flying Training Unit Instructor Pilot (FTUIP) or Functional Check Flight (FCF) Pilot on board. FCF qualified pilots who are not FTUIPs may perform stall training in a TU-2S but will not observe or instruct non-FTUIPs, except when on an FCF upgrade sortie. **(T-2)**

3.7.2. Pilots will not perform accelerated or intentional stalls from nose high attitudes.

3.7.3. Pilots will only perform stall demonstrations with the following restrictions:

3.7.3.1. Visual Meteorological Conditions (VMC) only. **(T-2)**

3.7.3.2. Maximum altitude of Flight Level (FL)400. **(T-2)**

3.7.3.3. Minimum altitude of 10,000 feet Above Ground Level (AGL), and at least 5,000 feet above an undercast cloud deck. **(T-2)**

3.7.3.4. Fuel balanced, stall strips extended, and yaw string centered. **(T-2)**

3.7.3.5. If any unusual characteristics develop, pilots will immediately recover the aircraft. **(T-2)**

3.8. Visual Flight Rules (VFR) Patterns.

3.8.1. During the closed pattern, pilots will maintain at least 90 Knots Indicated Airspeed (KIAS) or no-flap threshold speed plus 10 KIAS (T_{NF} + 10), whichever is greater.

3.8.2. Pilots will not exceed 30° angle of bank in the traffic pattern.

3.8.3. Pilots are authorized to perform VFR patterns and touch-and-go landings at night.

3.9. Low Approaches and Go-Arounds.

3.9.1. Pilots should initiate low approaches, missed approaches, and go-arounds before reducing the throttle to idle at 10 feet, unless performing a landing attitude demonstration in the TU-2S.

3.9.2. If initiating a go-around after pulling the throttle to idle at 10 feet, and aircraft damage is suspected from runway contact, consider aborting the go-around and making a full stop instead of taking a damaged aircraft back into the air.

3.10. Mobile Officer Duties During Landing.

3.10.1. The Mobile Officer will chase all landings unless safety considerations preclude chase, or when conducting Mobile Officer training from a static position. **(T-2)**

3.10.1.1. If the Mobile Officer will not be chasing the landing, inform the pilot by transmitting "Call Sign, Mobile, Negative Chase." This call may include a brief explanation, if warranted.

3.10.1.2. If the Mobile Officer must discontinue chasing the landing, or loses sight of the aircraft, inform the pilot as soon as possible. This call may include a brief explanation, as safety and conditions allow.

3.10.2. Mobile Officers may perform training from a static position under the following conditions:

3.10.2.1. Day. **(T-3)**

3.10.2.2. Visibility of 2 statute miles or greater. **(T-3)**

3.10.2.3. Crosswinds of 10 knots or less. **(T-3)**

3.10.2.4. An instructor Pilot (IP) on board the aircraft. **(T-3)**

3.10.2.5. The Mobile Officer is in a position from which they can clearly view the final approach, touchdown, and rollout/takeoff. **(T-3)**

3.10.3. Mobile Officers should make altitude calls anytime the aircraft is below 10 feet, even after the aircraft initiates a go-around.

3.10.4. When a secondary Mobile is used, it is the secondary Mobile's responsibility to maintain visual of and deconfliction from the primary Mobile. The secondary Mobile will remain aft of the primary mobile at all times.

3.11. Touch-and-Go Landings.

3.11.1. Inexperienced pilots, as defined by AFMAN 11-2U-2 Volume 1, *U-2 Aircrew Training*, will only perform touch-and-go landings if they are supervised by an experienced pilot in either the aircraft or the mobile. **(T-3)**

3.11.2. The minimum runway length for touch-and-go landings is 6,000 feet. **(T-2)**

3.11.3. Pilots may only perform touch-and-go landings on dry or wet runways (no snow, slush, or ice). **(T-2)**

3.11.4. The maximum gross weight for touch-and-go landings is 24,300 pounds, or 860 gallons for a 0-knot jet.

3.11.5. The landing zone is the first third of the runway. Pilots should execute a go-around if a landing cannot be made in the first third of the runway.

3.11.6. Pilots should initiate the takeoff phase of a touch-and-go landing with at least one-third of the runway remaining. **(T-3)**

3.11.7. Pilots will not perform touch-and-go landings with Primary Mission Equipment (PME) installed on the aircraft, with the exception of EWS and line-of-sight data links (forward, aft, or both). **(T-3)** If performed with EWS and/or line-of-sight data links, limit touch-and-go landings. **(T-3)**

3.11.8. For Touch-and-Go Landing crosswind limitations, reference Paragraphs **6.2.2.4 and 6.2.2.5**.

3.12. No-Voice Landings.

3.12.1. On all landings, Mobile Officers will provide altitude calls unless the pilot asks for a no-voice landing.

3.12.2. No-voice landings are not considered a simulated EP. Pilots may fly no-voice landings on any pattern/landing under the following conditions:

3.12.2.1. Crosswinds of 10 knots or less.

3.12.2.2. Dry or wet runway only (no snow, slush, or ice).

3.12.2.3. Not in conjunction with an actual emergency or precautionary landing.

3.12.2.4. Training missions only.

3.13. Full Stop Landings.

3.13.1. The computed landing distance will not exceed 80 percent of the available runway. **(T-2)**

3.13.2. With PME installed, the pilot will stop straight ahead on the runway. Once pogos are installed, the pilot may continue to taxi. **(T-2)**

3.13.3. For landing crosswind limitations, reference Paragraphs **6.2.2.1 through 6.2.2.3**.

3.14. Rapid Crew Swap (RCS) Procedures.

3.14.1. RCS flights are defined as two 1.0-hour training flights with the pilot and Mobile Officer switching after the first flight. RCS flights are intended to maximize operations training opportunities while minimizing maintenance requirements.

3.14.2. Pilots will brief both flights prior to stepping for the first flight.

3.14.3. The first pilot will not use techniques to intentionally burn fuel and will instead accomplish useful training that does not require touch-and-go landings until reaching max gross weight tough-and-go limit (e.g., radar pattern with an approach end circle, glide to a low approach, non-standard SFOs to a low approach, etc.).

3.14.4. The second pilot will turn on both the outboard and inboard sump tank transfer switches prior to initiating takeoff to prevent fuel starvation for lightweight takeoffs. The pilot will only turn them off when the sump tank fuel level has stabilized at 50 gallons (+/- 4 gallons) after leveling off.

3.15. Takeoff and Landing with Arresting Gear. Pilots will not takeoff or land over runway arresting gear, regardless of its strung or slack status. The takeoff or landing must be safely accomplished between the arresting gear cables. **(T-2)**

3.16. Alert Launch Procedures. Alert launch procedures specified in 1U-2S-1, *U-2 Flight Manual*, and 1U- 2S-CL-1 will only be used for real-world operations when an actual alert launch is required. **(T-2)**

3.17. Hot Microphone (Mic) Usage for Basic Qualification (BQ) Students.

3.17.1. For BQ-1 through BQ-6, student pilots will engage hot mic during critical phases of flight (patterns and approach to stall). **(T-3)**

3.17.2. For BQ-8 through BQ-14, students will engage hot mic from the perch point until airborne after the touch and go. **(T-3)**

3.18. Interfly.

3.18.1. Interfly allows pilots to fly with different units or organizations. Normally, interfly should be limited to special circumstances (e.g., test events or exercises), but may be used to relieve short-term reductions of qualified manpower. Pilots assigned to ACC HQ may fly with any MAJCOM for the purpose of inspections, evaluations, and training management visits with approval of that MAJCOM. The following must be observed when conducting interfly operations:

3.18.1.1. Aircraft ownership will not be transferred. **(T-2)**

3.18.1.2. The operational squadron will prepare and sign flight orders. **(T-2)**

3.18.1.3. Pilots will be qualified in both the aircraft and the configured systems/payloads required for the specific mission. **(T-2)**

3.18.1.4. Mishap and safety investigations will follow the guidance outlined in Department of the Air Force Instruction (DAFI) 91-204, *Safety Investigations and Reports*. **(T-2)**

3.18.2. ACC Standardization and Evaluations Branch (ACC/A3TV) maintains current Memoranda of Agreement (MOA) for interfly using ACC-assigned aircraft.

3.18.2.1. With a valid MOA, the 9 OG/CC or COMAFFOR is the approval authority for interfly on ACC aircraft under their control.

3.18.2.2. Without a valid MOA, ACC/A3TV is the approval authority for interfly on ACC aircraft.

3.18.2.3. Interfly on ACC-owned aircraft during contingency operations must be approved by both ACC Director of Operations (ACC/A3) and the respective MAJCOM/A3.

Chapter 4

SIMULATED EMERGENCY PROCEDURES

4.1. General Guidance.

4.1.1. Inexperienced pilots, as defined in AFMAN 11-2U-2V1, will only fly simulated EPs with an experienced pilot/IP in the mobile or a current and qualified TU-2S IP in the aircraft or mobile. **(T-3)**

4.1.2. The minimum weather for simulated EPs is Day VMC, including the period of civil twilight. **(T-3)**

4.1.3. With a current and qualified TU-2S IP on the TU-2S, the minimum weather for simulated EPs is Day IMC with weather conditions at or above the published circling minima for the approach being flown. **(T-3)**

4.1.4. Simulated EPs may only be performed on training missions when PME is not installed. For the purpose of simulated EPs, EWS and line-of-sight data links (either forward, aft, or both) are not considered PME. **(T-3)**

4.2. Simulated Flameout Patterns (SFOs).

4.2.1. Pilots will not practice SFOs from the initial takeoff leg of the pattern. **(T-3)**

4.2.2. Pilots will enter all SFOs from a stabilized pitch attitude and power setting.

4.2.3. Pilots will start SFO patterns from a high key or low key point, as described in 1U-2S-1, but may begin from other positions at altitudes above those points.

4.3. No-Flap Patterns. Pilots may practice no-flap patterns/landings without the use of pitch trim to simulate a loss of hydraulic pressure. Pilots will set pitch trim between one unit nose down and two units nose up prior to initiating the simulation. **(T-2)**

4.4. Full Stop Landings from a Simulated Emergency Procedure.

4.4.1. Pilots may end a simulated EP pattern with a full stop landing if necessary to accomplish required training. Pilots will comply with all full stop landing guidance (see **Paragraph 3.13**). **(T-2)**

4.4.2. No-flap full stop landings will only be performed under the supervision of an IP, either in the mobile or aircraft (TU-2S). **(T-3)**

Chapter 5

EMERGENCY PROCEDURES (EPS)

5.1. General Guidance. Guidance in this chapter is additive to procedures outlined in 1U-2S-1 and does not supersede or replace flight manual guidance or sound judgment.

5.2. Hot Brakes.

5.2.1. Indications for dragging brake assemblies include excessive power needed for taxi or smoke in the vicinity of the wheels. If pilots or mobiles suspect dragging or hot brakes, immediately notify the maintenance pogo crew (POGO) so they can check the brake temperature with an IR thermometer and taxi clear of the runway.

5.2.1.1. The danger zone for tire explosion is a 45-degree cone, perpendicular to the tire, which extends out to 300 feet. Mobile Officers and maintenance personnel should avoid this danger zone when hot brakes are suspected.

5.2.2. If POGO confirms brakes are hot (a temperature greater than 750° F / 400° C) or if they confirm the presence of smoke (not steam) caused by dripping hydraulic fluid or other lubricants:

5.2.2.1. The pilot or Mobile Officer will declare an emergency with ground control.

5.2.2.2. POGO will not pin the Emergency Start System (ESS) or install pogos on the wings.

5.2.2.3. POGO will chock the tail landing gear wheel.

5.2.2.4. If necessary, POGO can use their fire suppression equipment to facilitate a safe pilot egress.

5.2.3. To reduce the likelihood of hot brakes on landing rollout, pilots should allow the aircraft to decelerate with flaps and speed brakes extended and apply wheel brakes once slowed to 50 knots.

5.3. Hung Pogo.

5.3.1. If a pogo does not release on takeoff, the pilot should declare an emergency and avoid making abrupt pitch and power changes while maneuvering to the locally designated drop zone at a minimum of 130 knots while maintaining a safe altitude. Avoid over-flying populated areas.

5.3.2. When executing the hung pogo procedure, pilots will not descend below 1,000 feet AGL.

5.3.3. If the hung pogo fails to release during the hung pogo procedure, pilots will fuel dump if desired and plan a hung pogo landing (planning to stop straight ahead on the runway).

5.3.4. If the hung pogo releases during the approach but prior to pulling the throttle to idle at 10 feet, pilots will terminate the emergency and either continue the mission if fuel load permits or continue the approach/landing.

5.3.5. If the hung pogo releases after pulling the throttle to idle at 10 feet, pilots will continue the landing, terminate the emergency, and have the aircraft inspected for damage.

5.3.5.1. If damage is suspected, pilots will perform normal shutdown procedures on the runway and should consider balancing fuel prior to shutdown to assist POGO in raising/lowering the wings.

5.3.5.2. If no damage is evident and fuel load permits, pilots should consider performing a hand launch to continue the mission (see **Paragraph 3.4.3**.).

5.4. Hydrazine Incidents.

5.4.1. Hydrazine incidents are defined as intentional or inadvertent ESS activation, or a suspected or detected hydrazine leak.

5.4.2. All personnel, except Hydrazine Response Team members, must remain at least 150 feet upwind or 500 feet downwind of the aircraft until the area is determined to be free of hydrazine. **(T-1) Exceptions:** Properly equipped fire and rescue personnel to extract the pilot if necessary.

5.4.3. If a hydrazine incident happens in the air, pilots will:

5.4.3.1. Perform applicable checklists and declare an emergency. **(T-1)**

5.4.3.2. Inform tower prior to landing of possible hydrazine contamination. **(T-1)**

5.4.3.3. After landing, taxi to the locally designated hydrazine response area (usually the runway hammerhead) so ground personnel can perform a hydrazine check. **(T-1)**

5.4.3.4. Remain on oxygen with engine running and canopy seal ON. **(T-1)**

5.4.3.5. Keep landing light on. **(T-1)**

5.4.3.6. Await instructions from the Incident Commander (usually the Fire Chief). **(T-1)**

5.4.4. If a hydrazine incident happens on the ground, pilots will:

5.4.4.1. Stop movement to avoid spreading contamination. **(T-1)**

5.4.4.2. Declare an emergency with Ground Control. **(T-1)**

5.4.4.3. Remain on oxygen with engine running and canopy seal ON. **(T-1)**

5.4.4.4. Await instructions from the Incident Commander (usually the Fire Chief). **(T-1)**

5.5. Fuel Restrictions.

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

5.5.2. Pilots will declare emergency fuel whenever usable fuel at touchdown will be less than 50 gallons.

5.5.3. After landing, pilots will shut down the engine if sump quantity drops and remains below 25 gallons or if indications become unreliable, regardless of how much fuel remaining is indicated on the counter.

Chapter 6

WEATHER RESTRICTIONS

6.1. Minimum Takeoff Weather.

6.1.1. When departure airfield weather is below the lowest compatible approach minimums, pilots will file a takeoff alternate, adhering to all requirements in AFMAN 11-202V3 ACC Supplement **Paragraph 5.2.2**.

6.1.2. Minimum Takeoff Visibility.

6.1.2.1. For HHQ/operational missions, unit commanders may authorize takeoffs when visibility is less than 1600 RVR, but no lower than 1000 RVR, when the collection priorities justify the increased risk, with the following requirements:

6.1.2.1.1. The runway must have operating centerline lights. **(T-2)**

6.1.2.1.2. The runway's centerline markings must be visible. **(T-2)**

6.1.2.1.3. There must be at least two operating RVR systems, and all RVR systems must report at least 1000 RVR. **(T-2)**

6.1.2.2. For all other flights, the minimum takeoff visibility is 1600 RVR. **(T-2)**

6.1.2.3. For student training, pilots will comply with syllabus guidance and restrictions. **(T-2)**

6.1.3. When taking off with a low ceiling and visibility, pilots will consider the increased risk for flying a precautionary or flameout pattern immediately after takeoff, to include low-altitude ejection criteria.

6.2. Wind Restrictions.

6.2.1. Maximum steady state surface winds (forecast or reported):

6.2.1.1. HHQ/Operational missions: 40 knots. **(T-1)**

6.2.1.2. Training missions: 30 knots. **(T-1)**

6.2.2. Maximum crosswind component:

6.2.2.1. Takeoff/landing dry or wet (RCR 23 – 12): 15 knots. **(T-1)**

6.2.2.2. Takeoff/landing snow (RCR 9): 9 knots. **(T-1)**

6.2.2.3. Takeoff/landing ice (RCR 5): 5 knots. **(T-1)**

6.2.2.4. Touch-and-go landings (runway width ≥ 300 feet): 12 knots. **(T-1)**

6.2.2.5. Touch-and-go landings (runway width < 300 feet): 10 knots. **(T-1)**

6.2.2.6. No voice touch-and-go landings: 10 knots. **(T-1)**

6.2.3. Maximum tailwind component:

6.2.3.1. Takeoff/landing: 10 knots. **(T-1)**

6.2.3.2. Touch-and-go landings: 5 knots. **(T-1)**

6.3. Cold Weather.

6.3.1. Pilots will not perform touch-and-gos on runways covered with slush, snow, or ice. **(T-1)**

6.3.2. When landing on runways covered with slush, snow, or ice, pilots should raise the flaps after touchdown if landing distance permits to increase aileron authority and prevent possible damage to flaps.

6.4. Icing. If icing is encountered, pilots will climb above or descend below the icing level as soon as possible. Pilots will not loiter in icing conditions. **(T-1)**

6.5. Turbulence.

6.5.1. U-2 missions will not be flown into areas of forecast or reported severe turbulence. **(T-1)** The U-2 is a turbulence category 3 (CAT III) aircraft. Turbulence forecasts in TAF and hazard charts are specified for CAT II aircraft. Reference in AFH 11-203 Volume 2, *Weather for Aircrews – Products and Services*, Table 2.3 as a guide for converting turbulence categories.

6.5.2. Pilots will not loiter in areas where encountered turbulence is moderate or greater. **(T-1)**

6.6. Space Weather.

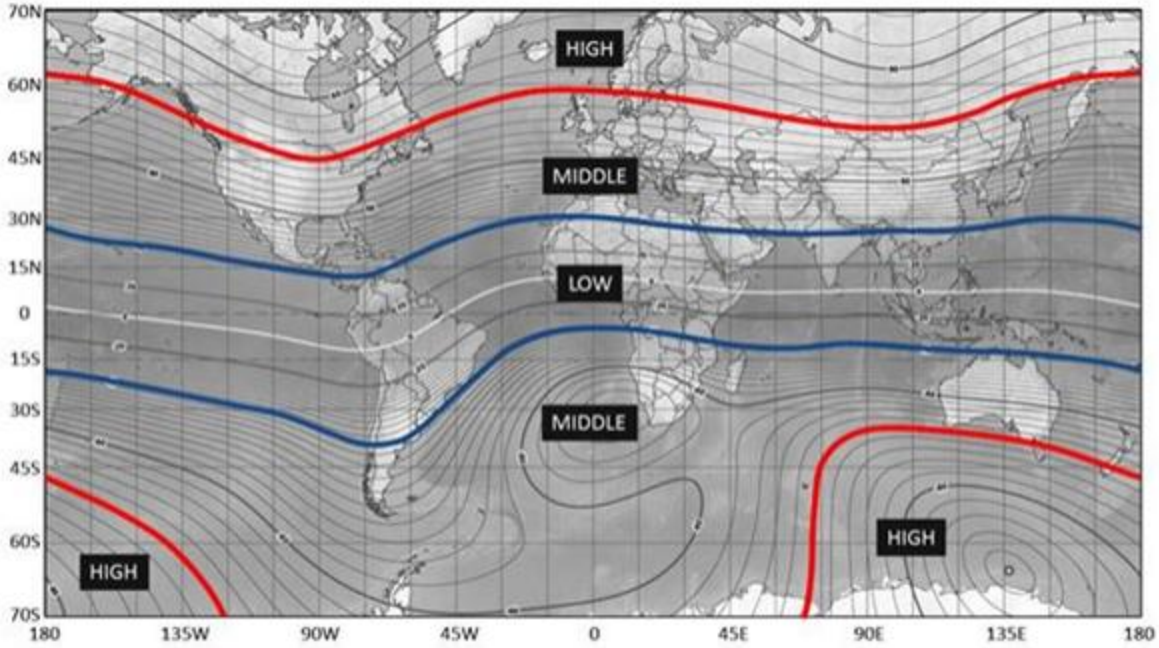
6.6.1. Overview. High altitude flight exposes pilots to increased levels of radiation from solar and cosmic rays. For non-occupationally exposed workers, the maximum acceptable amount of radiation is 100 millirem (mRem) per year. **(T-0)** For occupationally exposed workers, such as U-2 pilots, the maximum acceptable amount of radiation is 5,000 mRem per year (Reference: 10 CFR Part 20.1201 (a) (i)). **(T-0)** U-2 pilots receive, on average, 300-500 mRem per year. Exposure levels are dependent upon three primary factors:

6.6.1.1. Altitude. Exposure increases with altitude, commensurate with reduced atmospheric density and associated shielding effects.

6.6.1.2. Latitude. Exposure increases at higher geographic and geomagnetic latitudes, with approximately 8 times the radiation at the poles than at the equator (see **Figure 6.1**.).

6.6.1.3. Duration. Exposure increases with time spent aloft, and multiple missions could be flown during a long-lasting radiation event.

Figure 6.1. Geomagnetic Latitude and Radiation Exposure Risk.



6.6.2. Space Weather Monitoring.

6.6.2.1. 24/7 space weather monitoring is provided by the Space Weather Operations Center (SWOC), 2d Weather Squadron (2 WS), 557th Weather Wing (557 WW), Offutt AFB 2d Weather Squadron Space Operations Center (2 WS/WXZ). In-depth and real-time products are available on their NIPR homepage at **https://weather.af.mil/uplift/spacewxhome**.

6.6.2.2. SWOC publishes a daily Space Environment Global Situational Awareness Outlook chart, which summarizes radiation risk and HF/UHF radio interference, at **https://weather.af.mil/static_products/images/SPWXSUM5.PNG**. This chart can be included as needed in mission planning products for operational missions.

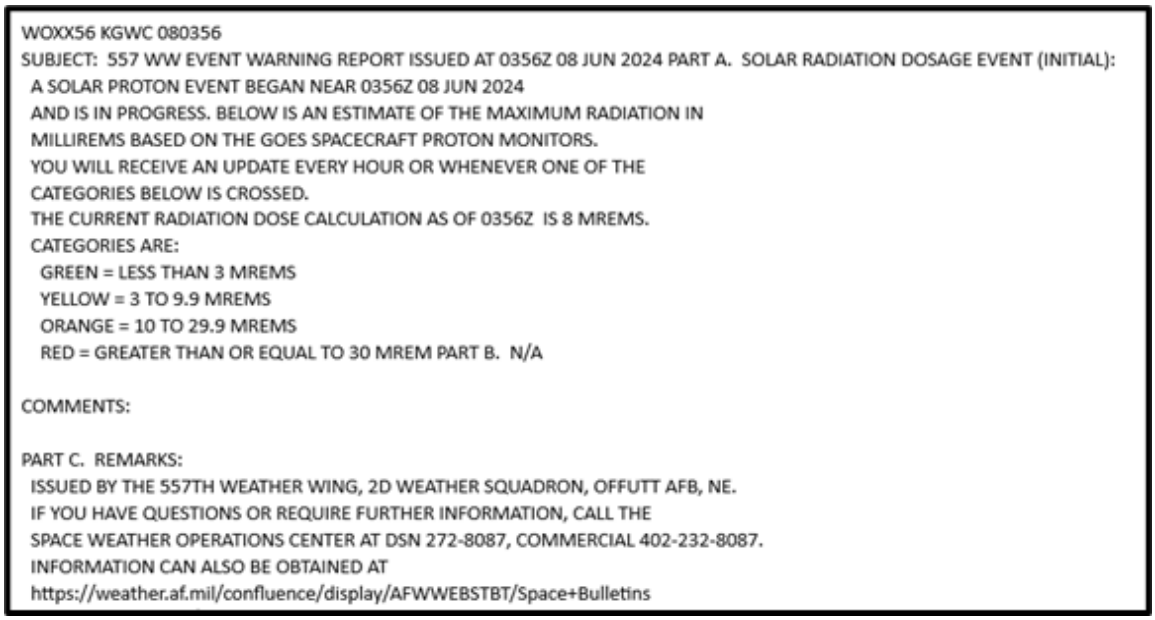
6.6.2.3. 99th Reconnaissance Squadron U-2 Mission Planning Cell (99 RS/MPC) can include several radiation dosage charts in mission planning products upon request based on Nowcast of Atmospheric Ionizing Radiation for Aviation Safety (NAIRAS) model data from **https://iswa.ccmc.gsfc.nasa.gov/IswaSystemWebApp/?layout=NAIRAS**. These charts can depict useful information such as a plot of the current radiation dose based on geomagnetic latitude, a plot that has the highest dose from the last 12 hours, and a line chart showing the change in maximum radiation dose over the last 12 hours. The charts are produced hourly and available by request.

6.6.2.4. When a radiation event is forecast or detected, SWOC publishes a WOXX56 Radiation Dosage Event Warning bulletin (see **Figure 6.2**) to their email distribution list when the event begins, for every hour it is in progress, and when it ends. The WOXX56 includes the calculated radiation dose in mRems per hour. **(T-2)**

6.6.2.4.1. Individuals and organizations may add their personal NIPR or organizational inbox email address to SWOC's WOXX56 distribution list at the Air Force Weather

Web Services (https://weather.af.mil/AFW_WEBS/SpaceWeather/subscription/index.php).

Figure 6.2. Sample WOXX56 Bulletin.



```
WOXX56 KGWC 080356
SUBJECT: 557 WW EVENT WARNING REPORT ISSUED AT 0356Z 08 JUN 2024 PART A. SOLAR RADIATION DOSAGE EVENT (INITIAL):
 A SOLAR PROTON EVENT BEGAN NEAR 0356Z 08 JUN 2024
 AND IS IN PROGRESS. BELOW IS AN ESTIMATE OF THE MAXIMUM RADIATION IN
 MILLIREMS BASED ON THE GOES SPACECRAFT PROTON MONITORS.
 YOU WILL RECEIVE AN UPDATE EVERY HOUR OR WHENEVER ONE OF THE
 CATEGORIES BELOW IS CROSSED.
 THE CURRENT RADIATION DOSE CALCULATION AS OF 0356Z IS 8 MREMS.
 CATEGORIES ARE:
   GREEN = LESS THAN 3 MREMS
   YELLOW = 3 TO 9.9 MREMS
   ORANGE = 10 TO 29.9 MREMS
   RED = GREATER THAN OR EQUAL TO 30 MREM PART B. N/A

COMMENTS:

PART C. REMARKS:
 ISSUED BY THE 557TH WEATHER WING, 2D WEATHER SQUADRON, OFFUTT AFB, NE.
 IF YOU HAVE QUESTIONS OR REQUIRE FURTHER INFORMATION, CALL THE
 SPACE WEATHER OPERATIONS CENTER AT DSN 272-8087, COMMERCIAL 402-232-8087.
 INFORMATION CAN ALSO BE OBTAINED AT
 https://weather.af.mil/confluence/display/AFWWEBSTBT/Space+Bulletins
```

6.6.3. Pregnancy and Radiation Limits. Pilots will notify their primary care manager upon learning they are pregnant to limit fetal radiation exposure. **(T-1)** The total dosage limit for the fetus and mother is 500 mRem over the entire gestation period, which includes all sources of radiation (i.e., high flights, diagnostic medical procedures, everyday background exposure). **(T-0)** The recommended monthly limit is 50 mRem, which can be exceeded in as little as 25 flight hours above 40,000 feet. This limitation does not affect eligibility for low altitude flights (Reference AFMAN48-149, *Flight and Operational Medicine Program*, and AFMAN48-125, *Personnel Ionizing Radiation Dosimetry*, Chapter 6).

6.6.4. Radiation Risk Mitigation Strategies. The current Solar Cycle 25 began in December 2019 and is forecast to peak in July 2025, when it will generate the cycle's maximum number of solar events. This peak activity is expected to last a few years. Increased solar activity can produce Coronal Mass Ejections (CMEs), which can last up to a few days, during which a U-2 pilot could potentially receive as much as 2000 mRems in a single sortie. During periods of elevated radiation, pilots and commanders should employ one or more of the following radiation risk mitigation strategies:

6.6.4.1. Electronic Personal Dosimeter (EPD). For all high-altitude flights, pilots will fly with an EPD mounted in the cockpit. **(T-1)** The EPD only needs to be inside the cockpit and does not need to be physically attached to the pilot. EPDs are installed and removed by 9th Physiological Support Squadron Operations Plan Flight (9 PSPTS/OSX) personnel and are managed by the 9th Operational Medical Readiness Squadron Bioenvironmental Engineering (9 OMRS/SGXB). **(T-2)**

6.6.4.2. Timing. Most solar events last less than 24 hours. Missions should be shortened, delayed, or rescheduled to minimize pilot radiation exposure, to include utilizing the back-up pilot to split the mission into two flights. Additionally, pilots who have flown during

periods of significant radiation should not be scheduled to fly during the same or another period of significant radiation. Local time of day or night has no significant impact on radiation dosage.

6.6.4.3. Latitude. The average radiation dosage at 67,000 feet at 38° north geomagnetic latitude is 1.5-2.0 mRem per hour. Mission routes should be planned at as low a geomagnetic latitude as feasible (see **Figure 6.1**.).

6.6.4.4. Altitude. The radiation dosage at 40,000 feet is less than the dosage at 70,000 feet. Missions or recalls should be flown at a lower altitude if fuel and operational requirements permit.

6.6.5. High Altitude Radiation Index (HARI) Matrix. The HARI Matrix (**Table 6.1**) is designed to assist commanders and aircrew in determining the recommended course of action for missions affected by radiation events. First, identify the geomagnetic latitude (low, middle, or high) for the relevant mission (see **Figure 6.1**.). Second, use the "Max Global Radiation Dose" from the WOXX56 bulletin (which is in mRem/hr, despite not saying so) to find the radiation condition color for that geomagnetic latitude. Third, use the radiation condition color to identify the recommended course of action for non-essential and essential operations. Additional information on space weather can be obtained by contacting 9th Operations Support Squadron Combat Weather Team (9 OSS/OSW) or 99th Reconnaissance Squadron Mission Planning Cell Weather Team (99 RS/MPC WX).

6.6.5.1. Non-essential operations include syllabus, training, exercise, test, or BUSY RELAY sorties.

6.6.5.2. Essential operations include all real-world collection sorties, Sensitive Reconnaissance Operations (SRO), Joint Task Force (JTF) support, contingency taskings, or wartime missions.

Table 6.1. High Altitude Radiation Index (HARI) Matrix.

WOXX56 Max Global Radiation Dose (mRem/hr)	**Geomagnetic Latitude (reference Figure 6.1.)**		
	LOW 0º - 30º N/S	**MIDDLE** 30º - 60º N/S	**HIGH** 60º - 90º N/S
Less than 3	Green	Green	Yellow
3 - 10	Green	Yellow	Red
10 - 30	Yellow	Red	Red
More than 30	Red	Red	Red
Recommended Course of Action			
Green	Continue as normal.		
Yellow	Non-essential operations: recall/suspend or continue with mitigation strategies. Essential operations: continue with mitigation strategies.		
Red	Non-essential operations: recall/suspend. Essential operations: recall/suspend or continue with mitigation strategies.		

6.6.6. Radiation Event Procedures and Responsibilities. Due to the speeds involved, a radiation event can occur with little or no warning. If a radiation event is forecast or detected, the following procedures must be accomplished as soon as possible to minimize radiation exposure to pilots. Contact information for each organization can be found in **Table 6.2**.

6.6.6.1. SWOC. SWOC publishes a WOXX56 bulletin to their email distribution list when a radiation event is forecast or detected, for every hour it is in progress, and when it ends. **(T-2)**

6.6.6.2. 9 OSS/OSW.

6.6.6.2.1. Upon receipt of a WOXX56, 9 OSS/OSW provides immediate notification of the radiation dose and any relevant times to 9 OG/CC and the On-Call Flight Surgeon. **(T-2)** 9 OSS/OSW also provides a courtesy notification to 9 OMRS/SGXB. **(T-3)** When Beale airfield is closed, the 25th Operational Weather Squadron (25 OWS) will notify the standby forecaster and/or provide notifications.

6.6.6.2.2. 9 OSS/OSW will post any radiation impacts to all applicable mission weather products and keep 9 OG/CC informed of any relevant updates. **(T-2)**

6.6.6.3. 9 OG/CC.

6.6.6.3.1. 9 OG/CC provides immediate notification to FOL commanders with the radiation dose and any relevant times. **(T-2)**

6.6.6.3.2. In consultation with the on-call flight surgeon, 9 OG/CC uses the HARI Matrix (**Table 6.1**) to determine the recommended Northern Command (NORTHCOM course of action for Beale AFB missions (e.g., local high flights, NORTHCOM missions, exercises, or BUSY RELAY). 9 OG/CC will coordinate with the relevant OPCON authority and PIC to make a determination for affected missions, including potential mitigation strategies as listed in **Paragraph 6.6.4**. **(T-2)**

6.6.6.4. FOL Commanders. In consultation with their flight surgeon, FOL Commanders use the HARI Matrix (**Table 6.1**) to determine the recommended course of action for their missions. FOL Commanders will coordinate with the relevant OPCON authority and PIC to make a determination for affected missions, including potential mitigation strategies as listed in **Paragraph 6.6.4**. **(T-2)**

Table 6.2. Contact Information for Radiation Event Procedures.

	DSN	Comm	Email
SWOC	(312) 272-8087	(402) 232-8087	spaceweather@us.af.mil
9 OSS/OSW	(312) 368-9134	(530) 634-9134	9.ossosw@us.af.mil
9 OG/CC	(312) 368-9367	(530) 634-9367	9og.cc@us.af.mil
25 OWS	(312) 228-7653	(520) 228-7653/7655	25OWS.Ops@us.af.mil
99 RS/MPC	(312) 368-8909	(530) 634-8909	99rs.mpc.weather@us.af.mil
Flight Surgeon	N/A	(530) 218-3433	N/A
9 OMRS/SGXB	(312) 368-2045	(530) 634-2045	usaf.beale.9-mdg.mbx.9-omrs-

			sgxb@health.mil

Chapter 7

FLIGHT READINESS

7.1. Crew Rest Facilities.

7.1.1. Crew rest facilities will be single occupancy, climate-controlled, hard billets at an easily accessible location separated from noise and bright lighting. **(T-3)**

7.1.2. Fabric-based billets (e.g., tents) or multi-occupancy billets will not be used due to noise and occupancy disruptions. **(T-3)**

7.1.3. Pilots must have access to a suitable dining facility that can provide a high protein, low residue pre-flight meal. **(T-3)** If such a facility is unavailable, then pilots must have access to a means for cooking a high protein, low residue pre-flight meal. **(T-3)**

7.1.4. At FOLs and deployed locations, unit commanders will inspect crew rest facilities to determine compliance and suitability while considering the unique physiological demands associated with solo, extended duration, high altitude flight. **(T-3)**

7.1.5. FOL and deployed location unit commanders may waive any of these requirements, provided the unit's RM process accounts for the increased risk for subpar crew rest or lack of a pre-flight meal. **(T-3)**

7.2. Flight Duty Period (FDP) and Scheduling.

7.2.1. FDP duration, including any extensions, applies equally to pilots, backup pilots, Mobile Officers, and SOFs. **(T-3)**

7.2.2. Normal FDP is 12 hours. **(T-2)**

7.2.3. FDP for BUSY RELAY missions between Beale AFB and RAF Fairford, and between Hickam AFB and Osan AB, is 16 hours. **(T-3)**

7.2.4. FDP Extension. When an RM assessment determines that operational requirements justify the increased risk, FDP may be extended:

7.2.4.1. By up to 2 hours by the PIC.

7.2.4.2. By up to 4 hours (up to a max of 16 hours) by unit commanders. **(T-3)**

7.2.4.3. By more than 4 hours by the OG/CC. **(T-2)**

7.2.5. Transition Duty Day. Transition duty day applies for flights with planned practice approaches, simulated emergency procedures, low approaches, or touch-and-go landings during any portion of the flight. Transition Duty Day limits FDP to the following:

7.2.5.1. U-2S: 12 hours; 8 hours when wearing the FPS. **(T-3)**

7.2.5.2. TU-2S: 12 hours with two qualified pilots; 10 hours with one qualified pilot; 8 hours when wearing the FPS. **(T-3)**

7.2.6. Low Altitude Flights.

7.2.6.1. For flights landing within normal duty hours, pilots will complete the remainder of the normal duty day. **(T-2)**

7.2.6.2. For flights landing after 1930 (local time), both the pilot and Mobile Officer are excused from duty for 13 hours after actual landing time, or 12 hours after completion of post-flight duties, whichever is later. **(T-2)**

7.2.6.3. For successive low altitude flights (U-2 to U-2, U-2 to T-38, or T-38 to U-2), pilots will have a minimum of 3 hours scheduled from landing to the successive takeoff. **(T-2)**

7.2.7. High Altitude Flights.

7.2.7.1. For flights landing within normal duty hours, pilots will not be scheduled for any additional activities or duties for the remainder of the normal duty day. **(T-2)**

7.2.7.2. For flights landing after 1930 (local time) or outside of normal duty hours, the pilot, Mobile Officer, and SOF are excused from duty for 13 hours after actual landing, or 12 hours after completion of post- flight duties, whichever is later. **(T-2)**

7.2.8. Crossing Time Zones.

7.2.8.1. When travel to an FOL or deployed location involves crossing more than three time zones, pilots will be scheduled for a minimum of 48 hours of ground time at the location prior to first flight to allow for circadian rhythm synchronization. **(T-3)**

7.2.8.2. When traveling as part of a BUSY RELAY movement, the mandated ground time in **Paragraph 7.2.8.1** is not required. Pilots will instead be scheduled sufficient ground time to permit adequate mission planning and crew rest. **(T-3)**

7.3. High Altitude Flights.

7.3.1. Jewelry. Pilots will remove all jewelry prior to donning the FPS. Pilot will not wear any jewelry, including watches, under the FPS. **(T-1)**

7.3.2. Prebreathing. For high altitude flights in aircraft without the Cabin Altitude Reduction Effort (CARE), pilots will prebreath 100% oxygen for a minimum of 60 minutes prior to departing the traffic pattern. **(T-1)**

7.3.3. Exercise. Pilots will avoid heavy exercise for 12 hours after high altitude flights to prevent exercise injury or irritation from masking decompression sickness (DCS) symptoms. **(T-1)**

7.3.4. Aborted flights of less than 2.5 hours duration may be re-launched with the same pilot after considering the circumstances of the aborted flight, the mission, and the pilot's physical and mental condition. If the backup pilot is used for the re-launched flight, the original pilot may perform duties as the Mobile Officer.

7.3.5. Flight Recovery Periods. To help manage fatigue and mitigate DCS from high altitude flights, pilots will have a minimum flight recovery period from landing to any subsequent takeoff as outlined in **Table 7.1**. **(T-3)**

7.3.5.1. For high flights with durations less than 2.5 hours, the flight recovery period is measured from landing to subsequent start of official duties. **(T-3)**

7.3.5.2. For high flights with durations of 9.0 hours or longer, the first 24 hours after landing will be compensatory time off (CTO). **(T-2)**

7.3.5.3. Waivers to Flight Recovery Periods.

7.3.5.3.1. When considering waiving flight recovery periods, unit commanders will account for the pilot's recent duty history, physical condition, and priority of the mission.

7.3.5.3.2. OG/CCs may waive the 72-hour flight recovery period for high flights with durations of 9.0 hours or longer to no less than 48 hours. **(T-2)**

7.3.5.3.3. OG/CCs may waive the first 24 hours of CTO for high flights with durations of 9.0 hours or longer to allow pilots to perform SOF duties, provided they still adhere to the crew rest provisions outlined in AFI 11-418, *Operations Supervision.* **(T-2)**

7.3.5.3.4. Waivers to flight recovery periods require that a monthly report be submitted to the 9 OG no later than the first duty day of the next month. **(T-2)**

Table 7.1. Minimum High Altitude Flight Recovery Periods.

High Flight Duration (hours)	Flight Recovery Period (hours)	
	To High Flight	To Low Flight
Less than 2.5 (Note 1)	13	13
2.5 – 6.5	36	18
6.6 – 8.9	48	36
9.0 or greater (Note 2, 3)	72	48

Notes:

1. For high flights shorter than 2.5 hours, the flight recovery period is measured from landing to subsequent start of official duties instead of from landing to subsequent takeoff.
2. OG/CCs may waive the 72-hour flight recovery period to no less than 48 hours.
3. OG/CCs may waive the first 24 hours of CTO to allow pilots to perform SOF duties.

7.4. Chemical, Biological, Radiological, Nuclear and High-Yield Explosives (CBRNE) Environment.

7.4.1. The U-2 is not designed for operations in a CBRNE environment.

7.4.2. The FPS is not considered an Aircrew Chemical Defense Ensemble, nor does it provide a similar level of protection.

7.4.3. Contamination avoidance is the most important defense measure for both the aircraft and pilot. If contamination is suspected, the pilot should remain on oxygen and process through a Contamination Control Area. Assistance will be necessary to safely remove the pilot from the FPS.

Chapter 8

ORIENTIATION FLIGHTS

8.1. Policy.

8.1.1. U-2 orientation flights will be conducted IAW DAFMAN 11-401, *Aviation Management* and this publication. **(T-2)**

8.1.2. U-2 orientation flights will be limited to those individuals who must possess a first-hand knowledge of the U-2 program or operations. **(T-2)**

8.1.3. Refer to DAFMAN 11-401 for passenger categories and approval authorities.

8.1.4. Orientation flights may only be performed by FTUIPs.

8.2. Responsibilities.

8.2.1. ACC Flight Operations Division (ACC/A3T) is the OPR for coordinating all U-2 orientation flights requiring COMACC approval or higher.

8.2.2. 9th Reconnaissance Wing Commander (9 RW/CC). 9 RW/CC is responsible for hosting orientation flight recipients as necessary.

8.2.3. 9 OG/CC. 9 OG/CC is responsible for designing and administering the U-2 orientation flight program.

8.3. Mission Profiles.

8.3.1. For distinguished visitors (DV), orientation flights should be a high-altitude flight profile.

8.3.2. For all other categories, orientation flights may be a high or low altitude profile, as appropriate.

8.3.3. Simulated Emergencies will not be performed on orientation flights. **(T-3)**

8.4. Sensitive Information.

8.4.1. Orientation flight pilots, ground crew, and teams will safeguard controlled information about the U-2 platform or capabilities from participants who do not possess the necessary security clearance and/or need-to-know. **(T-1)**

8.4.2. If necessary, orientation flight participants will complete a non-disclosure agreement (NDA) establishing ground rules regarding any exchange of sensitive information. 9th Reconnaissance Wing Public Affairs (9 RW/PA) is the designated OPR for NDAs. The non-disclosure provisions in this manual are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or executive order relating to classified information, communications to Congress, the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling executive orders and statutory provisions are incorporated into this manual and are controlling. **(T-1)**

Chapter 9

AIRCRAFT SECURITY

9.1. General Guidance.

9.1.1. Aircraft security requirements are defined in DAFI 31-101, *Base Defense Operations.* Additive guidance unique to the base or operating location may also be specified in an Installation Defense Plan (IDP).

9.1.2. Security Requirements and Responsibilities.

9.1.2.1. When operating at an FOL or deployed location which is US-controlled, the unit commander will coordinate security requirements with the organizations responsible for providing security. **(T-2)**

9.1.2.2. When operating at an FOL or deployed location which is not US-controlled, the unit commander will coordinate security requirements with appropriate host base or host nation personnel. If the host base cannot provide security commensurate with Protection Level (PL) 2 standards, coordinate with the tasking US agency to obtain additional support or move aircraft to a location where adequate security is available. **(T-2)**

9.1.2.3. When an aircraft is in transient status (e.g., an aircraft divert), the pilot is responsible for coordinating security requirements with the host base or local authorities. Pilots will ensure adequate security is in place prior to leaving the aircraft. **(T-2)** Refer to DAFI 31-101, Chapter 9, for specific transient aircraft security guidelines.

9.1.3. Securing Classified Material.

9.1.3.1. Security personnel are not responsible for securing classified material.

9.1.3.2. Maintenance and operations personnel will protect classified material and components IAW Department of Defense Manual (DODM) 5200.01 Volume 3, *DOD Information Security Program: Protection of Classified Information*, DAFMAN 16-1404 Volume 3, *Information Security Program: Protection of Classified Information*. **(T-1)**

9.2. Protection Level (PL).

9.2.1. U-2 aircraft are normally designated a PL 3 resource when in the Continental United States (CONUS), Alaska, or Hawaii.

9.2.2. U-2 aircraft are designated a PL 2 resourced when:

9.2.2.1. Located Outside the Continental United States (OCONUS) (excluding Alaska and Hawaii).

9.2.2.2. Configured with Sensitive Compartmented Information (SCI).

9.3. BUSY RELAY Movements.

9.3.1. For all BUSY RELAY movements, pilots will coordinate with the appropriate organization(s) at each enroute stop to ensure adequate security is available. **(T-2)**

9.3.2. When an aircraft is present at an enroute stop:

9.3.2.1. BUSY RELAY commanders will provide an Entry Authority List (EAL) to the appropriate security agency and ensure those individuals with escort authority are annotated. **(T-2)**

9.3.2.2. Operations, support, and maintenance personnel who are assigned to the movement and possess their home station AF Form 1199, *USAF Restricted Area Badge*, as supported by the EAL, possess unescorted entry to the aircraft. **(T-2)**

9.3.2.3. Personnel not identified in **Paragraph 9.3.2.2** will be escorted. **(T-2)** U-2 pilots, Mobile Officers, mission planners and assigned crew chiefs have escort authority.

9.4. Photographic Privileges.

9.4.1. All active U-2 pilots are authorized photographic privileges of U-2 aircraft within PL 2 and PL 3 restricted areas.

9.4.2. Pilots will ensure they comply with all requirements, restrictions and limitations as published in: **(T-3)**

9.4.2.1. The SENIOR YEAR Program Security Classification Guide.

9.4.2.2. Base or installation security guidelines (e.g., IDP).

JOHN M. KLEIN JR., Major General
Deputy Chief of Staff, Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

5 USC § 522a, *Records Maintained on Individuals* (Privacy Act of 1974)

9 OG OI 11-25, *Solar Event Procedures*, 23 Aug 2013

10 CFR § 20.1201, *Occupational Dose Limits for Adults*

ACCI 11-270, *Operations Mobile Devices*, 6 November 2024

Acceptance and Functional Check Flight Manual 1U-2S-6CF-1CL-1, *Functional Check Flight Checklist*, 1 April 2025

AFH 11-203V2, *Weather for Aircrews – Products and Services,* 13 August 2015

AFI 11-418, *Operations Supervision*, 22 December 2021

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

AFI 33-324, *The Air Force Information Collections and Reports Management Program*, 22 July 2019

AFMAN 11-202V3, *Flight Operations*, 10 January 2022

AFMAN 11-202V3 ACC Supplement, *Flight Operations*, 8 November 2022

AFMAN 11-2U-2V1, *U-2 Aircrew Training*, 31 May 2023

AFMAN 48-148, *Ionizing Radiation Protection*, 20 July 2020

AFMAN 48-149, *Flight and Operational Medicine Program*, 13 October 2020

AFPD 11-2, *Flying Operations*, 31 January 2019

BAFBI 21-180, *Hydrazine Policies and Procedures,* 23 June 2023

DAFI 31-101, *Base Defense Operations* (FOUO), 10 September 2024

DAFI 91-204, *Safety Investigations and Reports*, 10 March 2021

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

DAFMAN 16-1404V3, *Information Security Program: Protection of Classified Information*, 12 April 2022

DAFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 27 October 2020

DAFMAN 90-161, *Publishing Processes and Procedures*, 18 October 2023

DODI 5400.11, *DOD Privacy and Civil Liberties Program*, 29 January 2019

DODM 5200.01V3, *DOD Information Security Program*, 24 February 2012

Flight Crew Checklist 1U-2S-1CL-1, *Pilot's Checklist*, 1 April 2025

Flight Crew Checklist 1U-2S-1CL-2, *Pilot's Mission Operation and Avionics Checklist*, 1 April 2025

SENIOR YEAR Program Security Classification Guide, 20 December 2016

TO 1U-2S-1, *U-2S/TU-2S Flight Manual*, 1 April 2025

U-2 RTM AS-26, 1 October 2025

Adopted Forms

AF Form 1199, *USAF Restricted Area Badge*

DAF Form 679, *Department of the Air Force Publication Compliance Item Waiver Request/Approval*

DAF Form 847, *Recommendation for Change of Product*

Abbreviations and Acronyms

AB—Air Base

ACC—Air Combat Command

ACCI—Air Combat Command Instruction

AFB—Air Force Base

AFI—Air Force Instruction

AFMAN—Air Force Manual

AFPD—Air Force Policy Directive

AGL—Above Ground Level

ARMS—Aviation Resource Management System

BQ—Basic Qualification

CARE—Cabin Altitude Reduction Effort

CAT—Category

CBRNE—Chemical, Biological, Radiological, Nuclear Environment

CME—Coronal Mass Ejection

COMAFFOR—Commander, Air Force Forces

CONOPs—Concept of Operations

CONUS—Continental United States

Comm—Commercial

CRM—Cockpit/Crew Resource Management

CSAR—Combat Search and Rescue

CTO—Compensatory Time Off

DAF—Department of the Air Force

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

DCS—Decompression Sickness

DOD—Department of Defense

DODI—Department of Defense Instruction

DODM—Department of Defense Manual

DSN—Defense Switched Network

DV—Distinguished Visitor

EAL—Entry Authority List

EFA—Electronic Flight Aid

EFB—Electronic Flight Bag

EP—Emergency Procedure

EPD—Electronic Personal Dosimeter

ESS—Emergency Start System

EWS—Electronic Warfare System

FCF—Functional Check Flight

FCIF—Flight Crew Information File

FDP—Flight Duty Period

FL—Flight Level

FLIP—Flight Information Publications

FOA—Field Operating Agency

FOL—Forward Operating Location

FPS—Full Pressure Suit

FTUIP—Flying Training Unit Instructor Pilot

GPS—Global Positioning System

HARI—High Altitude Radiation Index

HF—High Frequency

HHQ—Higher Headquarters

HQ—Headquarters Frequency

IAW—In Accordance With

IDP—Installation Defense Plan

IFG—In-Flight Guide

IMC—Instrument Meteorological Condition

IP—Instructor Pilot

IR—Infrared

JTF—Joint Task Force

KIAS—Knots Indicated Airspeed

MACA—Mid-Air Collision Avoidance

MAJCOM—Major Command

Max—Maximum

MFD—Multi-Function Display

Mic—Microphone

MOA—Memorandum of Agreement

MPC—Mission Planning Cell

mRem—Millirem

N/A—Not Applicable

NAF—Numbered Air Force

NAIRAS—Nowcast of Atmospheric Ionizing Radiation for Aviation Safety

NAS—National Airspace System

NDA—Non-Disclosure Agreement

NIPR—Non-Classified Internet Protocol Router

NORTHCOM—Northern Command

NOTAM—Notice to Airmen

OAT—Outside Air Temperature

OCONUS—Outside the Continental United States

OPCON—Operational Control

OPR—Office of Primary Responsibility

OMD—Operations Mobile Device

PDM—Programmed Depot Maintenance

PEX—Patriot Excalibur

PIC—Pilot in Command

PL—Protection Level

PME—Primary Mission Equipment

POGO—Maintenance Pogo Crew

RAF—Royal Air Force

RAP—Ready Aircrew Program

RCS—Rapid Crew Swap

RCR—Runway Condition Report

RM—Risk Management

RTM—RAP Tasking Memorandum

RVR—Runway Visible Range

SAR—Search and Rescue

SCI—Sensitive Compartmented Information

SFO—Simulated Flameout Pattern

SOF—Supervisor of Flying

SORN—System of Records Notices

SQ/DO—Squadron Operations Officer

SRO—Sensitive Reconnaissance Sorties

SWOC—Space Weather Operations Center

TNF—Threshold, No Flap

TO—Technical Order

UDC—Unit Developed Checklist

UHF—Ultra High Frequency

VFR—Visual Flight Rules

VHF—Very High Frequency

VMC—Visual Meteorological Condition

Office Symbols

2 WS/WXZ—2d Weather Squadron Space Operations Center

9 OG/CC—9th Operations Group Commander

9 OMRS/SGXB—9th Operational Medical Readiness Squadron Bioenvironmental Engineering

9 OSS/OSW—9th Operations Support Squadron Combat Weather Team

9 PSPTS/OSX—9th Physiological Support Squadron Operations Plan Flight

9 RW/CC—9th Reconnaissance Wing Commander

9 RW/PA—9th Reconnaissance Wing Public Affairs

99 RS/MPC—99th Reconnaissance Squadron U-2 Mission Planning Cell

99 RS/MPC WX—99th Reconnaissance Squadron U-2 Misson Planning Cell Weather Team

ACC/A3—Air Combat Command Director of Operations

ACC/A3MU—Air Combat Command U-2 Operations Branch

ACC/A3T—Air Combat Command Flight Operations Division

ACC/A3TV—Air Combat Command Standardization and Evaluations Branch

COMACC—Commander, Air Combat Command Commander

USAFE/CC—United States Air Forces in Europe Commander

Terms

BUSY RELAY—BUSY RELAY missions are the movements that swap individual aircraft out with Beale AFB and the FOLs.

Civil Twilight—The period of time lasting from 30 minutes before sunrise to actual sunrise, or actual sunset to 30 minutes after sunset, during which VFR flights are permitted.

Commander, Air Force Forces (COMAFFOR)—The COMAFFOR is the senior Air Force commander directly responsible to a joint force commander within a joint context. For example, the USAFE/CC is the COMAFFOR for United States European Command.

Critical Phases of Flight—Includes all ground operations involving taxi, takeoff, and landing, and all other flight operations conducted below 10,000 feet, except cruise flight. (Title 14, Code of Federal Regulations, Section 121-542, *Flight Crew Duties*).

Crowned Runway—A runway with its center slightly elevated or "crowned" that tapers to the edge for water run-off.

Decompression Sickness—A sometimes fatal condition caused by the release of nitrogen gas bubbles as they leave their dissolved form throughout the body upon a rapid decrease in barometric pressure during ascent to high altitude. Symptoms are typically marked by joint pain, accompanied in mild forms by fatigue and skin irritation (e.g., itching, burning, or blotching), and in severe forms by shortness of breath, chest pain, paralysis, and confusion.

Essential Operations—Essential operations include all real-world collection sorties, SRO, JTF support, contingency taskings, or wartime missions.

Flight Duty Period—The period of time in which aircrew can perform official duties. FDP begins when an aircrew member first reports for official duty and ends at final engine shutdown after the final flight of the completed mission.

Flight Recovery Period—the period of time following a high altitude flight dedicated to pilot recovery.

Forward Operating Location—A facility that can support sustained operations with a small permanent presence of support or contractor personnel and equipment, typically based at a U.S. or allied military airfield.

Geomagnetic Latitude—A system of latitude reckoned in similar fashion to geographic latitude, but measured in reference to terrestrial magnetism, i.e., geomagnetic meridians referenced to the geomagnetic equator.

Hand Launch—the launch of a U-2 takeoff where the pogo crew holds the wingtip on the runway instead of the pogos themselves.

HHQ Directed Mission—A mission tasked at or above the Numbered Air Force (NAF) level, not inclusive of operational reconnaissance missions. Such missions typically include deployment, redeployment, and missions flown in support of inspections, test events, joint or flag-level exercises, and delivery of aircraft to/from PDM.

High Altitude Flight—A flight planned to fly higher than 40,000 feet MSL in which the pilot is required to wear the FPS.

Hot Brakes—Brakes overheated from heavy/excessive braking or from mechanical defect that lead to a measured brake temperature of at least 750° F / 400° C.

Interfly—Permits pilots to fly with other units. Normally limited to special circumstances (e.g., test events or exercises), but may be used to relieve short-term shortfalls of qualified manpower. Pilots assigned to ACC headquarters may fly with any MAJCOM for the purpose of inspections, evaluations, and training management visits, provided the host MAJCOM concurs.

Mission Planning Cell (MPC)—The MPC is a centrally-located facility or organization which is resourced to conduct all U-2 mission planning tasks, inclusive of transmitting completed mission planning products and associated electronic files to forward locations.

Mobile Officer—The U-2 Mobile Officer (Mobile) is the safety observer, mission coordinator, and mission monitor for the flight. The Mobile serves as the pilot's wingman, and his/her unique position and access to information is critical to enhancing the pilot's situational awareness. The Mobile will normally be the backup pilot for the sortie and normally performs aircraft preflight duties as required for high altitude missions.

National Airspace System—The common network of US airspace; air navigation facilities, equipment and services, airfields or landing areas; aeronautical charts, information and serviced; rules regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

Non-essential Operations—Non-essential operations include syllabus, training, exercise, test, or BUSY RELAY sorties.

No-Voice Landing—A landing executed without altitude calls from the Mobile Officer.

Nondisclosure Agreement (NDA)—A binding agreement between two parties, which defines what sensitive information may, and may not, be shared or made public.

Operational Command (OPCON)—OPCON is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission.

Operational Reconnaissance Mission—A real-world mission tasked by a combatant command, and on which collection of imagery or signals intelligence information is executed to support the command's objectives. Missions typically include SRO, JTF support, and wartime or contingency operations, but may also include Defense Support to Civil Authorities (DSCA) when such missions are authorized/approved.

Operations Mobile Device (OMD)—U-2 OMD is a backup GPS system that qualifies as an EFB and consists of a 9 OG-issued Apple iPad® Mini (missionized/redacted), a Bad Elf® GPS unit or Stratus® puck or equivalent, and the ForeFlight® Mobile iOS® application.

Pilot in Command (PIC)—The PIC is the aircrew member designated by competent authority, regardless of rank, as being responsible for, and is the final authority for the operation of the aircraft.

Pogo—Pogos are removable wheeled struts for support of the wings. They are used for ground operations. They are manually unpinned by ground crews on the runway prior to take off and drop off on take-off roll. They are manually re-inserted by ground crews after landing for continued ground operations.

Primary Mission Equipment—Payloads with which the U-2 may be configured for mission operations, inclusive of sensors, data links and EWSs.

Protection Level (PL)—the level of security dedicated to different categories of Air Force assets.

RAP Tasking Memorandum (RTM)—The RTM outlines the ACC Continuation Training program for the calendar year. The RTM defines training events for aircrew to stay current.

Ready Aircrew Program (RAP)—The RAP established minimum annual training requirements for combat aircrew.

Supervisor of Flying (SOF)—When on duty, the SOF is a group-level position and a direct representative of the Operations Group Commander (OG/CC). The SOF is the focal point for command and control of flight operations. OG/CC decision authority is delegated to this position to accomplish the mission. As the OG/CC's representative, the SOF ensures that in-flight emergency recovery plans and weather-related mission changes reflect sound airmanship, follow established guidance, and adhere to sound operational RM principles. The SOF directs appropriate actions to correct/prevent unsafe situations. This includes the use of all resources to include radios, FM nets, telephone hot lines and all wing-flying operations on the ground or in the air. During an emergency or an abnormal situation, the SOF provides aircrews with guidance, timely advice and assistance to determine a correct course of action.

Threshold Speed—Computed airspeed in KIAS the U-2 plans to cross the runway threshold.

Transition Duty Day—Reduced Flight Duty Period for flights with planned practice approaches, simulated emergency procedures, low approaches, or touch-and-go landings during any portion of the flight.

VFR-on-Top—ATC authorization for an IFR aircraft to operate in VFR conditions at any appropriate VFR altitude. A pilot receiving this authorization must comply with the VFR visibility, distance from cloud criteria, and the minimum IFR altitudes. The use of this term does not relieve controllers of their responsibility to separate aircraft in Class B and Class C airspace or terminal radar service areas. For U-2 aircraft, this typically applies at over above FL600 in the National Airspace System (NAS).