

COMPLIANCE WITH THIS INSTRUCTION IS MANDATORY

This instruction, with its complementary Chapter 8, Local Operating Procedures, prescribes standard operational and weapons employment procedures to be used by ACC pilots when operating USAF F-117A aircraft. It implements policy guidance in AFD 11-4, *Aviation Service*. Det 1, 57 Wing may deviate from the contents of this instruction as outlined in individually approved test plans required for Follow On Test and Evaluation (FOT&E) purposes. For the purposes of 57 WG operations, 57 TG/CC equates to OG/CC for waiver authority. File a copy of all approved waivers with this instruction. This instruction does not apply to United States Air Force Reserve (USAFR) or Air National Guard (ANG) units.

SUMMARY OF CHANGES

This is the first publication of AFI 11-F117A, Volume 3, and contains substantially revised guidance.

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- General Briefing Guide
- Instrument/Navigation/Transition Briefing Guide
- Air Refueling Briefing Guide
- Combat Employment Briefing Guide
- Air-To-Surface Weapons Employment Briefing Guide
- Air Combat Training/Exercises Briefing Guide
- Low Level Navigation Briefing Guide
- Mission Debriefing Guide

Chapter 1

INTRODUCTION

1.1. General.

1.1.1. Scope. This instruction outlines those procedures applicable to the operation of the F-117A aircraft. With the complimentary references cited, this regulation prescribes standard operational procedures to be used by all ACC F-117A pilots.

1.1.2. Pilot's Responsibility. This instruction, in conjunction with other governing directives, prescribes procedures for F-117A aircraft under most circumstances, but is not to be used as a substitute for sound judgment or common sense. Operations or procedures not specifically addressed may be accomplished if they enhance safe, effective mission accomplishment.

1.1.3. Deviations. Deviations from these procedures require specific approval of HQ ACC unless an urgent requirement or an aircraft emergency dictate otherwise, in which case the pilot in command will take the appropriate action to safely recover the aircraft. Det 1, 57 WG may deviate from the contents of this instruction as outlined in individually approved test plans required for Follow On Test and Evaluation (FOT&E) purposes.

1.1.4. References. This instruction, in conjunction with TO 1F-117A-1, MCM 3-1, and AFI 11-214, are the primary references for F-117A operating procedures. Training units may develop phase manuals from the procedures contained in these documents. Phase manuals may be used to augment initial and mission qualification training at operational units. Phase manuals may expand these basic procedures, in no case will they be less restrictive.

1.2. Waivers.

1.2.1. Waiver requests will be forwarded through NAF to HQ ACC/DOT for approval.

1.2.2. ACC approved waivers will remain in effect until incorporated into this instruction unless otherwise stated in the approval correspondence.

1.3. Regulation Changes. Recommendations for changes to this instruction will be submitted on AF Form 847, Recommendation for Change of Publication (Flight Publications) to NAF who will in-turn forward to HQ ACC/DOTV (57 WG will forward directly to ACC) .

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

Chapter 2

MISSION PLANNING

2.1. Responsibilities. The responsibility for mission planning is shared jointly by individual pilots, the mission planning cell (MPC), and the intelligence function of F-117 units.

2.2. General Procedures.

2.2.1. Sufficient flight planning will be accomplished to ensure safe mission accomplishment to include fuel requirements, map preparation, and takeoff and landing data.

2.2.2. When operating from airfields equipped with a BAK-12 cable raised by a BAK-14 device, ensure the departure end cable is raised for all takeoffs and landings unless another arrestment system (cable/barrier) is immediately available.

2.2.3. The minimum available runway for takeoffs and landings is 8,000 feet. A compatible departure end barrier or cable is required for runway lengths up to 11,999 feet. Exceptions to these criteria may be waived by the OG/CC.

2.2.4. The maximum flight duty day is 10 hours for pilots flying at any time between official sunset and sunrise. The duty day begins when a pilot reports to his squadron or office and includes post flight ground operations through engine shutdown. Wing commander is the waiver authority for an extended flight duty day.

2.2.5. Mission leads will be designated to plan and brief missions involving fighter stream operations.

2.2.6. Flight leads will be designated for missions in which two aircraft operate together as a flight for any portion of the mission (i.e., two-ship trail departures and planned sequential attacks will have a flight lead designated). Two separate aircraft may operate in formation with the same tanker even though neither is a flight lead.

2.2.7. Multi-ship flight leads will be designated for flights in which more than two aircraft fly in close proximity for any portion of the mission (e.g., three-ship departures for air refueling operations will have a multi-ship flight lead designated).

2.3. Map/Chart Preparation.

2.3.1. Local Area Maps. A local area map is not required if the local in-flight guide includes jettison area, divert information, controlled bailout areas, and provides sufficient detail of the local area to remain within assigned training areas.

2.3.2. Charts. FLIP en route charts may be used instead of maps on navigational flights within areas which are adequately covered by these charts.

2.3.3. Navigation Route Maps. For overland tactical training flights, a current chart of sufficient scale and AF

Form 70, Pilot Flight Plan and Flight Log, providing navigation and terrain/obstacle avoidance information will be carried. Sufficient navigational information will be included to ensure successful mission accomplishment. This requirement applies unless charts are prepared IAW MCR 55-125 for preplanned missions. A minimum safe altitude (MSA) or route abort altitude (RAA) will be annotated on all maps. Maps will be updated from the Chart Update Manual (CHUM) and all man-made obstacles above the planned flight altitude will be highlighted.

2.3.4. Minimum Enroute Altitudes. Minimum enroute altitude (MEA) for peacetime mission planning will be no lower than 1,000 ft AGL within 2.5 miles of either side of course. Range operations may use MSA for minimum employment altitude. Waiver to these restrictions require unit commander approval. Pilots are personally responsible for reviewing assigned routes prior to flight to ensure compliance with this criteria. Momentary deviations from MEA are approved for weather avoidance during day VMC only.

2.4. Briefing/Debriefing.

2.4.1. Flight lead, mission leads, and/or mission planners are responsible for presenting a logical briefing which will ensure safe, effective mission accomplishment. Briefing guides will be used to provide a reference list of items which may apply to particular missions. Items listed may be briefed in any sequence. Specific items not pertinent to the mission need not be covered.

- Briefings will begin at least 1 1/2 hours before scheduled takeoff.
- The flight briefing will be structured to accommodate the capabilities of each pilot in the flight.
- When dissimilar aircraft are flown in formation, proper position (to ensure adequate wingtip clearance), responsibilities, and aircraft-unique requirements will be briefed for each phase of flight.
- Alternate missions will be briefed prior to flight.

2.4.2. If all flight members attend an initial or mass briefing, individual flight briefings need cover only those items that pertain to their particular flight.

2.4.3. Mission briefing guides are contained in Attachment 1. Units may supplement these guides as necessary. Units that fly missions not covered by this regulation, or its supplements, will develop and maintain briefing guides for those missions. OT&E weapons delivery and mission profiles are approved by the USAFWTC/CC and are reviewed during the specific test Safety Review Board.

2.5. Unit Developed Checklists/Local Pilot Aids.

2.5.1. Unit developed, expanded checklists may be used in lieu of flight manual checklists provided they contain, as a minimum, all items, verbatim and in order listed in the applicable checklist

2.5.2. Locally produced pilot aids will be developed. As a minimum, the following will be included:

- Briefing Guides.
- Local UHF channelization and airfield diagrams.
- Impoundment procedures, emergency action checklists, and NORDO/divert information.
- Other information as deemed necessary by individual

units. For example: stereo flight plans, quick turnaround procedures, local training areas, bailout and jettison areas, and instrument preflight.

2.6. Personal Equipment. Pilots will have the following on all flights:

- Flashlight (night flights).
- Life preserver (flights over water beyond gliding distance from land).
- F-117A-1 CL, -6 CL and -34 CL (as necessary), Inflight Guide (basic and annex), and applicable approach plates.
- G-suit.

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Ground Visual Signals. Normally, the pilot and ground crew will communicate by the intercom system during all start-engine, pretaxi checks, and End of Runway (EOR) checks. The intercom system will also be used to the maximum extent possible anytime maintenance technicians are performing "redball maintenance" on the aircraft. When ground intercom is not used, visual signals will be in accordance with AFI 11-218 and this instruction. The crew chief will repeat the given signal when it is safe to operate the system. The following signals augment AFI 11-218:

- Flight Control Checks. With clenched fist, make several circular movements as if moving the control stick around the cockpit.
- Refueling Receptacle Open or Closed. Display hand flat on top of helmet with fingers extended. To open, raise fingers to the vertical position and heel of hand remaining stationary. To close, reverse signal.
- Main Gear and Nose Gear Safety Pins and Tail Hook Pin Removed. Point four fingers at the crew chief.
- Weapons Bay Open or Close. Display hands with fingers extended, palms up, and edges of hands touching. Move hands apart several times.
- Trapeze Up or Down. With the edge of one hand, make a "karate chop" into the open palm of the other hand.
- Antennas. With a quick movement, extend fingers from a clenched fist several times.

3.2. Preflight.

3.2.1. The pilot will physically inspect the drag chute cable to ensure the metal pin has been removed from the drag chute. If the pin has been previously removed, it will be documented in the AFTO Form 781.

3.2.2. Aircraft Equipment Required for Flight. In addition to equipment required by AFI 11-206, as supplemented, the following must be operational for local area flying:

- Both MDIs
- TACAN
- Standby Flight Instruments
- IFF
- ILS (if landing after civil twilight)

3.3. Taxi.

3.3.1. Minimum taxi interval for day operations is 150 feet staggered or 300 feet in trail. Minimum taxi interval for night operations is 300 feet on centerline. Spacing may be reduced when holding short of or entering the runway/quick check area.

3.3.2. Quick Check and Arming. Place hands in view of ground personnel while the quick check inspection and arming/dearming is in progress.

3.3.3. When ice and/or snow are present, the Supervisor of Flying (SOF) will ensure that the hangar area and planned taxi route has been checked for safe conditions. Aircraft will not be taxied when any portion of the taxiway has a reported RCR less than 10.

3.4. Runway Line up. For two-ship elements, the second aircraft should be placed on the upwind side. Each pilot will lineup in the center of his half of the runway. Three ship flights may line up in echelon with the wingmen upwind. Spacing between aircraft elements will be a minimum of 500 feet. All aircraft will maintain wingtip clearance if runway width permits. If wingtip clearance cannot be maintained, aircraft will not runup until the preceding aircraft has begun the departure roll.

3.5. Takeoff.

3.5.1. Formation takeoffs are prohibited.

3.5.2. Takeoff will not be attempted if the RCR is reported less than 12.

3.5.3. The maximum wing fuel imbalance for takeoff is 1000 pounds. Pilots will not attempt to balance wing fuel on the ground with the fuel source selector as this may force fuel overboard.

3.5.4. On training missions, do not take off if the computed takeoff roll exceeds 70% of the available runway.

3.5.5. The takeoff interval between aircraft will be a minimum of 10 seconds for day and 20 seconds for night.

3.5.6. At the start of the takeoff roll, steer toward the center of the runway.

3.5.7. Day weather criteria for a VFR join-up underneath a ceiling is 1500/3.

3.6. Formation: General.

3.6.1. At night, the only authorized formation is trail or station keeping, fingertip and route are not authorized. Formations will be supervised by a certified flight lead. Maximum flight size is four aircraft in day VMC and three aircraft in IMC or at night.

3.6.2. Aircraft will not be chased at night unless an emergency situation exists and the SOF has coordinated for the chase.

3.6.3. Airborne visual signals will be in accordance with AFI 11-205.

3.6.4. Turning rejoins will be conducted at 300 KCAS and 30 degrees of bank, straight ahead rejoins will be at 300 KCAS, unless otherwise briefed. Element rejoins will be flown with the wingman in route formation.

3.6.5. Flight leaders will not normally break up formations until each pilot has a positive fix from which to navigate.

3.6.6. Changing Leads.

- Lead changes will be initiated from a stabilized, wings level attitude.
- The minimum altitude for lead changes is 1,000 AGL (day) and 2,000 AGL (night).
- Lead changes will not be initiated with the wingman further aft than normal fingertip or route position.
- Prior to initiating lead change, the leader will ensure that the wingman assuming the lead is in a position from which the lead change can be safely initiated and visual contact maintained.
- Wingmen will acknowledge by head nod or radio.
- The lead change is effective upon acknowledgment.
- The former leader (new wingman) then moves to the wing (briefed) position.
- At night, lead changes will be accomplished with the radio. Initiation and acknowledgement will be made with radio calls.

3.7. Close Formation.

3.7.1. Fingertip. Wingmen will maintain wingtip clearance. Fingertip is a position that aligns the tip of the lead aircraft's wing with the midpoint of the engine exhaust (fore and aft) and aligns the aft tips of the vertical stabilizers (in and out). The wingman will stack just low enough to see the wingtip position light on the underside of the wing.

3.7.2. Echelon. Turns into the echelon will be avoided if at all possible. If a turn is made into the echelon, each aircraft will maintain the same relative position as in straight and level flight. On turns away from the echelon, the fuselages of all aircraft will be maintained in the same horizontal plane.

3.7.3. Crossunder. Wingmen will reduce power and drift aft and low of the lead aircraft to ensure nose-tail and vertical separation, cross to the opposite side, and move back to the original position.

3.8. Route Formation. Route formation is an extension of fingertip formation with up to approximately 500 feet between aircraft. This position allows the wingman to check cockpit instruments, provide visual lookout, and still be close enough to move into close formation if weather or other circumstances dictate. During turns, the element or aircraft turned into will stack low only as necessary to keep lead in sight and remain below his plane of maneuvering. Crossunders may be directed using a wing dip, as in close formation.

3.9. Station Keeping/Trail Formation.

3.9.1. Station keeping position is a modified trail formation wherein the wingman maintains a position 500

to 1,000 feet below or above lead and approximately 1,000 to 6,000 feet (0.2-1.0 NM) behind lead. Trail/Station keeping formations will be maintained by visual reference and A/A TACAN. IRADS will not be used to achieve or maintain trail/station-keeping formation.

3.9.2. For night time operations, the lead will have an operational lower rotating beacon to facilitate rejoins or to support trail formations. Exceptions is when conducting beacon-out training IAW para 3.26. Maximum number of aircraft in a trail/station-keeping formation, at night or in forecasted/actual IMC, is three.

3.9.3. Station keeping formation requires an ATC assigned altitude block when operating in controlled airspace.

3.10. Tactical Formation. See MCM 3-1.

3.11. IP/SEFE Chase.

3.11.1. Chase operations with a T-38 will only be accomplished by:

- Instructor pilots (T-38 IP or F-117 IP) and/or SEFEs certified IAW T-38 Companion Trainer Qualification Course.
- Det-1, 57 WG FOT&E pilots.

3.11.2. On transition sorties which require a chase, the T-38 chase aircraft will descend no lower than 50 feet AGL when performing a chase pick-up.

3.11.3. In-flight, the chase aircraft will maneuver as necessary for mission accomplishment, but will normally not stack below the lead aircraft on minimum altitude profiles.

3.11.4. In the traffic pattern, the chase aircraft may maneuver as necessary to observe performance.

3.11.5. F-117A aircraft may not chase another F-117A in the VFR overhead pattern nor accomplish a chase pick-up pattern, unless waived by the unit commander (OG/CC) for unusual circumstances.

3.11.6. If it becomes necessary for an IP/chase aircraft to assume a close formation (i.e., weather), the lead aircraft will verbally/visually give the signal to assume a fingertip position. If necessary, an IP chase may request fingertip from the lead aircraft. This will be briefed in the pre-flight briefing.

3.11.7. Chase operations are not authorized at night.

3.12. Maneuvering Parameters.

3.12.1. In addition to TO F-117A-1 restrictions, which define the limits of the basic airframe (LBA), and weapons release envelopes, the following limitations will be observed during flight, to include aircraft handling characteristics (AHC) missions:

- No wing fuel, less than 300 lbs left/right fuel imbalance.
- +/- 25 degree of pitch maximum.

- 9.5 degrees AOA maximum.
- 5 Gs maximum.
- Day VFR only.
- Over-the-top maneuvers are prohibited—to include Loop, split-S, and Immelman turns.

3.12.2. To reduce the risks of spatial disorientation, peacetime maneuvering at night is restricted to positive Gs, 60 degree of bank, and +/- 18 degrees of pitch. Negative-G pushovers are limited to actual unusual attitude recoveries.

3.12.3. PAARS practice recoveries are limited to day VMC conditions.

3.12.4. Maneuvering parameters and descriptions for the modified lazy-8 maneuver, chandelle, and aileron roll will be IAW approved phase manuals.

3.13. Ops Checks.

3.13.1. Sufficient ops checks will be accomplished to ensure safe mission accomplishment. Frequency will be increased during tactical maneuvering at high power settings. Ops checks are required:

- During climb or at level-off after takeoff.
- Prior to entering an air-to-surface range, once while on the range if multiple passes are made, and after departing the range.

3.13.2. Minimum items to check are engine instruments, total fuel quantities/balance, oxygen system, and cabin altitude.

3.13.3. Fuel system operation will be carefully monitored throughout the flight. Monitor fuel in each tank to verify that fuel is transferring properly and that fuel distribution is correct.

3.13.4. For chased flights or formation flights, the flight leader will initiate ops checks by radio call or visual signal. Response is required.

3.14. Radio Procedures. Transmit only the information essential for accomplishment of the mission or to promote safety of flight. A "Knock-It-Off" radio call will be made to terminate maneuvering for any reason, particularly when a dangerous situation is developing. This transmission applies to all phases of flight and all types of missions. All participants will acknowledge by repeating the call. (e.g. "Bandit 2, Knock It Off").

3.14.1. All radio checks and channel changes will be initiated by the flight/mission leader and will be acknowledged, in turn, by individual flight members prior to any flight member switching channels.

3.14.2. Radio checks which do not require the transmission of specific data will be acknowledged by individual flight members in turn. Acknowledgment by the individual flight member indicates the appropriate check will be initiated or is in the process of being completed.

3.14.3. If a flight member fails to check in after a reasonable time, the flight leader will attempt contact again. If unsuccessful, the flight leader may direct a member of the flight, or the entire flight, back to previous or prebriefed channel to regain radio contact. The flight leader may also use or direct the use of visual signals to get the missing member on the proper frequency.

3.14.4. In addition to the standard radio procedures outlined in AFM 51-37 (to be AFMAN 11-217), AFI 11-206, specific mission guides, and FLIP publications, pilots will acknowledge understanding the initial ATC clearance.

3.15. Airborne Comm Jamming Procedures.

3.15.1. Comm jam training will only be conducted when briefed, on tactical frequencies, and only in tactical training areas.

3.15.2. An alternate method of establishing communications in the jamming environment will be available (i.e., guard frequency). The alternate frequency will not be jammed.

3.15.3. "SAFETY, SAFETY, SAFETY" will be used to halt jamming until all safety related information has been passed.

3.15.4. Refer to AFI 11-214 for further procedures/requirements.

3.16. Tactical Navigation Procedures.

3.16.1. Tactics will be flown using MCM 3-1 as a reference.

3.16.2. During briefings, emphasis will be placed on tactical navigation flight maneuvering and observation of terrain feature/obstacles along the route of flight. For air-to-surface tactics over water, include specific considerations for over water operations with emphasis on minimum altitudes.

3.16.3. Navigate using a combination of dead reckoning (DR), TACAN, and INS information. If on-board avionics are degraded to such a degree that accurate navigation becomes questionable, the route will be aborted and the pilot will proceed to base/instrument pattern.

3.16.4. Tactical Navigation Minimum Altitudes. A pilot's minimum altitude for tactical navigation will be certified by the unit commander. The minimum altitude for low level flight will be 1000 feet AGL or for 57 WG pilots, as approved in FOT&E tests plans.

3.16.5. The minimum speeds for tactical navigation/maneuvering are 300 KCAS/360 KGS, whichever is higher.

3.16.6. In-flight weather minimums for visual low level training on IR/VR routes or in restricted/warning areas will be IAW FLIP, or 3000 feet and 5 miles, whichever is higher.

3.17. Air Refueling.

3.17.1. Pilots undergoing initial/recurrency training in air refueling will not refuel with a student boom operator.

3.17.2. Whenever possible, night air refueling should be conducted in a non-turbulent air mass.

3.17.3. Minimum in-flight visibility for tanker rejoins is 1 NM.

3.18. Fuel Requirements. The following are definitions and required quantities for F-117 operations.

- **Joker Fuel.** Joker fuel is based on engaged fuel flow and maneuvering time required to extract the aircraft from the engagement. It's the fuel state above Bingo at which separation/bugout/event termination should begin.
- **Bingo Fuel.** Bingo is the fuel required for recovery using preplanned recovery parameters. Plan Bingo at higher airspeeds and fuel flows in hostile airspace and maximum range in friendly airspace. It's the prebriefed fuel state that is required for recovery using prebriefed parameters and arriving with normal recovery fuel as listed below. Bingo and/or critical fuel will be briefed for each SAT mission.
- **Continuation Fuel.** A predetermined fuel state which will allow completion of the planned route and arrive on initial or at the FAF with appropriate recovery fuels. Continuation fuel is a mandatory briefing item.
- **Critical Fuel.** A predetermined fuel for SAT routes, that is required to return to base, by most direct routing at maximum range airspeeds and altitudes. It will be determined from the point furthest from the base of intended landing. This fuel allows for landing with recovery fuels listed below. Critical and/or Bingo fuel will be briefed for each SAT mission.
- **Normal Recovery Fuel—VFR** (see chapter 8 for local restrictions).
 - During single-runway operations, pilots will be on initial or at the FAF for a full stop at the base of intended landing with enough fuel to divert and land at the primary alternate with 2000 pounds.
 - During multiple-runway operations, pilots will be on initial or at the FAF for a full stop landing with a minimum of 2500 pounds.
- **Minimum Fuel.** Declared whenever it becomes apparent that an aircraft will enter initial or start an instrument final approach at the base of intended landing (or alternate, if required), with 2000 pounds or less or one FUEL LOW light illuminated.
- **Emergency Fuel.** Declared whenever it becomes apparent that an aircraft will enter initial or begin an instrument final approach at the base of intended

landing or alternate, if required, with 1500 pounds or less or both FUEL LOW lights illuminated.

3.19. Approaches and Landings.

3.19.1. When the RCR at the base of intended landing is less than 12, land at an alternate, if possible.

3.19.2. For daytime dry runway operations minimum spacing between landing aircraft will be IAW FAA handbook 7110.5 and AFI 10-203 or as directed locally. An F-117A intentional no-chute landing requires 8000 feet separation behind an F-117 chute-assisted landing.

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

3.19.4. All aircraft will clear to the "cold" side of the runway when speed/conditions permit.

3.19.5. Landing over a raised WEB barrier (61QSII) is prohibited.

3.20. Intentional No-Chute (INC) Landings.

3.20.1. INC landings are authorized at all locations. All F-117A pilots must accomplish the local checkout program prior to accomplishing INC landings. The following procedures and restrictions will be adhered to.

- INC minimum runway length is 10,000 feet with a compatible departure-end arrestment system (calculated stopping distance must be less than the distance to the last compatible barrier).
- Maximum internal stores and fuel weight will not exceed 8,000 pounds or as restricted locally.
- Dry runway.
- 8000 feet minimum spacing behind a chuted F-117.
- No trapped fuel (aft CG).

3.20.2. If any doubt exists to the conditions under which an INC landing may be accomplished, the drag chute will be used.

3.20.3. If the aircraft is not slowing, immediately pull the chute and continue braking.

3.20.4. Once a pilot is certified, night INC landings are authorized.

3.21. Drag Chute Jettison.

3.21.1. To avoid possible aircraft damage due to drag chute attachment clevis impact during crosswinds, the aircraft should be cocked into the prevailing wind prior to releasing the chute.

3.21.2. Ground speed should be a minimum of 10 knots when releasing the chute.

3.21.3. Place the power between idle and 70% on both engines.

3.21.4. Allow two seconds for the rudders to center before releasing chute.

3.21.5. If unsure of the prevailing wind conditions due to gusts, the chute may be jettisoned straight ahead, on the downwind side of the runway, with a minimum of 20 knots.

3.22. Overhead Traffic Patterns.

3.22.1. Airspeed will be 300 KCAS and pattern altitude will be as published (minimum of 1,500 feet AGL).

3.22.2. Initiate the break at the approach end unless directed otherwise by local procedures or tower.

3.22.3. Aircraft will be wings level on prior to 300 feet AGL and 1 mile from the touchdown point.

3.23. Low Approaches.

3.23.1. During go-around or low approaches, do not track directly over aircraft on the runway at low altitude, clear to the outside. Remain 500' below traffic pattern altitude until crossing the departure end of the runway unless missed approach/climbout procedures, local procedures, or controller instructions dictate otherwise.

3.23.2. Observe the following minimum altitudes:

- Normal low approaches (Day or night): So that touchdown does not occur.
- Formation low approaches:
 - Day: 100 ft AGL.
 - Night: Night formation approaches will not be flown.
- Chase aircraft during an emergency: 300 ft AGL.
- T-38 IP/SEFE chase aircraft: 50 ft AGL.
- F-117A IP/SEFE chase aircraft: 100 ft AGL.
- See paragraph 7.13 for single engine minimums.

3.24. Closed Traffic Patterns. Minimum airspeed for initiating a closed pattern is 250 KCAS. Initiate the close at the departure end of the runway unless directed otherwise by local procedures or the controlling agency. Fly the pattern to arrive on downwind at 220-250 KCAS.

3.25. Formation Approaches and Landings.

3.25.1. Formation approaches will normally be accomplished from a precision approach. If not, the approach will be accomplished utilizing a published instrument approach or a VFR straight-in approach using the VASI/PAPI, if available. In all cases the rate of descent should be similar to a normal precision approach.

3.25.2. Formation approaches will be led by a qualified flight lead unless an IP or a flight lead qualified squadron supervisor is in the element. The flight lead is responsible for pre-briefing formation approaches.

3.25.3. The wingman should be positioned on the upwind side if the crosswind exceeds 5 knots.

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

3.25.5. Do not accomplish a formation approach when the weather is below the weather category of the most restrictive pilot in the element.

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

3.25.7. Formation landings are prohibited.

3.26. Beacon Out Training. Conduct beacon out training only in restricted/warning areas or specifically designated ATCAA's.

3.26.1. Only MR/MC pilots will participate in beacon out training.

3.26.2. Beacon out training must be thoroughly briefed between participating flight members and will only be accomplished with two aircraft.

3.26.3. The element must have an operable air-to-air TACAN. Only the flight lead's beacon will be turned off and the nav/fuselage lights remaining on bright. The wingman will keep the beacon on and nav/fuselage lights bright.

3.26.4. A minimum vertical separation of a 2000 feet is required between elements practicing beacon-out training in the same airspace.

3.27. Aircraft Surge Launch and Recovery (ASLAR).

3.27.1. ASLAR approaches will be flown single-ship only. Split-up will occur prior to the IAF with ATC assistance or self-separation.

3.27.2. Penetrations will be flown at 300 KCAS.

3.27.3. Slow to 180 KCAS at the "decel" point, using idle power and gear.

3.27.4. Slow to computed final approach speed at the FAS point.

3.27.5. Refer to AFI 11-214, Aircraft Surge Launch and Recovery, for more detailed information.

3.28. Tanker Flyby Pickup Rendezvous.

3.28.1. The flyby pickup rendezvous is designed to rendezvous a fighter force with tankers as expeditiously as possible after takeoff. This procedure may be accomplished using EMCON 1 or 2. The plan will be thoroughly coordinated between all parties as well as steps taken to ensure on-time takeoffs. Figure 3.1 depicts a generalized plan for a flyby pickup.

3.28.2. Each tanker and fighter element will be assigned discrete A/A TACAN frequencies. Both will tune to their frequency five minutes prior to scheduled takeoff. If no DME is received, the tanker will call for brake release by referencing a TACAN station or pre-planned ground point.

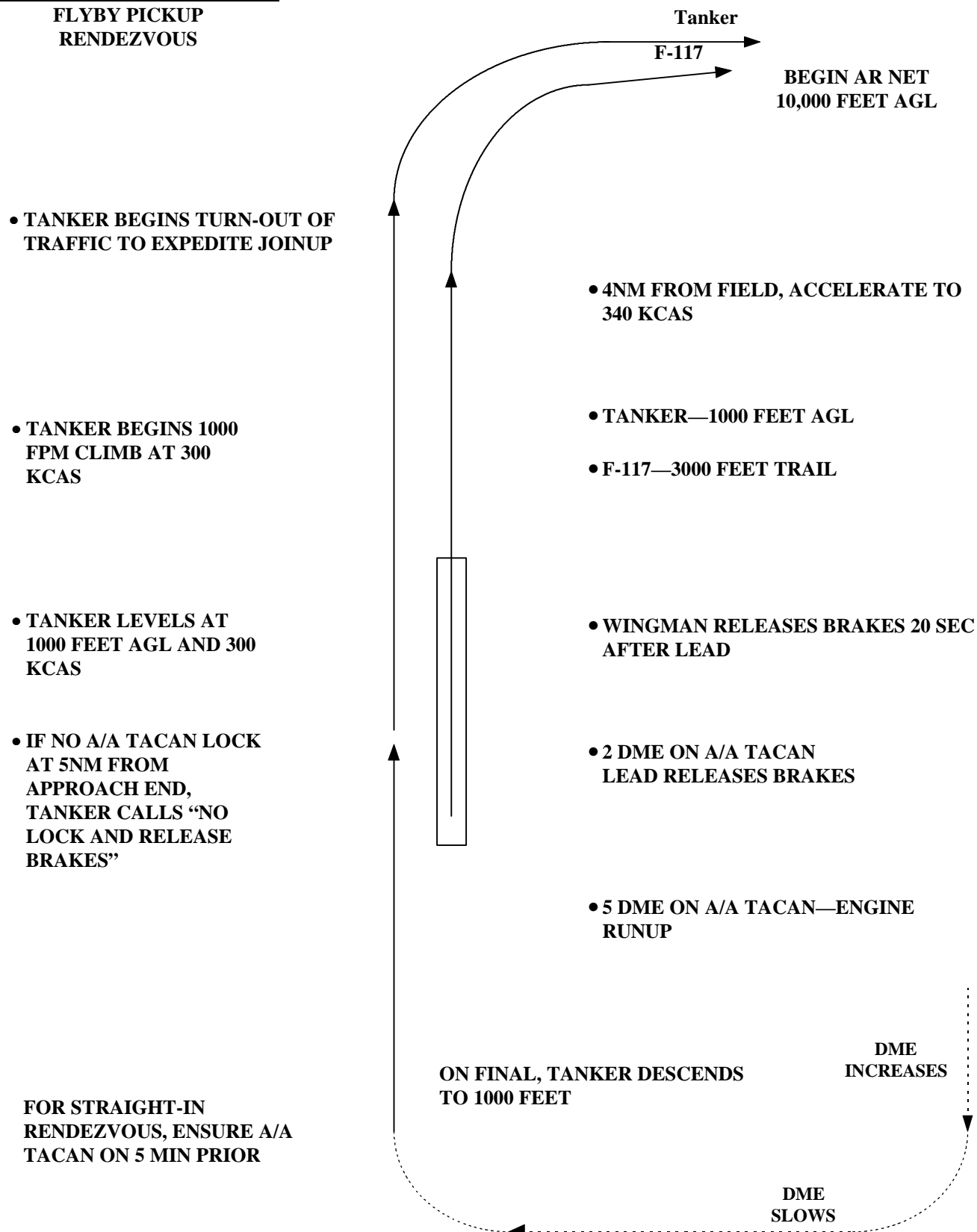
3.28.3. As a guide, each tanker should fly a ground track parallel to the departure runway at 300 KIAS and 1000 ft AGL, offset opposite the direction of turn out of traffic. Fighters will run up engines at 5 DME from tanker and

release brakes at 2 DME. This should place the tanker 3000 ft in front at takeoff.

3.28.4. At the departure end of the runway, the tanker should begin a 1000 FPM climb while maintaining 300 KIAS. A 90 degree turn out of traffic will expedite the rejoin. At night or in IMC, fighters will not begin their turn until 1000 ft AGL and 250 KCAS.

3.28.5. Subsequent tankers in a cell should flyover in five minute intervals to allow succeeding fighter elements to perform takeoff requirements.

Figure 3.1.
FLYBY PICKUP
RENDEZVOUS



Chapter 4

INSTRUMENT PROCEDURES

4.1. Approach Category. The F-117A is designated as an approach category E aircraft. Missed approach airspeed is 200-250 KCAS.

4.2. Practice Instrument Approaches. Pilots may fly instrument approaches other than home base under the following conditions:

- Facility/base operations, at the airfield where instrument practice is planned, should be contacted in advance to preclude conflicts with other local traffic.
- Pilots must plan the mission so as to have adequate fuel to climb to cruising altitude from the last missed approach, cruise to the IAF at home base, divert to a designated alternate, and land with at least 2,000 pounds of fuel remaining.
- Minimum altitude restrictions listed in para 3.23 apply.

4.3. Takeoff and Joinup.

4.3.1. During formation operations, the flight lead will notify the appropriate ATC agency when a VMC joinup cannot be accomplished due to weather conditions or operational requirements and coordinate for an altitude block. Formation trail departures will comply with instructions for a non-standard flight as defined in FLIP. Flight lead should request IFF squawks for in-trail wingmen.

4.3.2. If the weather is below 1500/3, or at night, each aircraft will climb on takeoff heading to 1,000 feet AGL prior to initiating any turns, except when departure instructions specifically preclude compliance.

4.4. Trail Departures. During trail departures, basic instrument flying is the first priority and will not be sacrificed when performing secondary tasks, to include formation positioning. Strictly adhere to the briefed climb speeds, power settings, altitudes, headings and turn points. If task saturation occurs, cease attempts to maintain trail, immediately concentrate on flying the instrument departure and notify the flight lead. Depending on the severity of the saturation/disorientation pilots should consider the use of the Pilot Activated Automatic Recovery System (PAARS) to regain orientation. The following procedures will be adhered to:

- Takeoff spacing will be 20 seconds minimum.
- Maximum flight size in day VMC is four.
- Maximum flight size in day IMC is three.
- Maximum flight size at night is three.
- Regardless of actual weather conditions, the flight lead will execute all climbs in MIL power and pitch as required to maintain 300 KCAS unless otherwise briefed.

- Bank angle will be 30 degrees unless otherwise briefed.
- Until the wingman calls visual, emission option permitting, the lead will call altitude at each 5000 feet and starting and stopping turns with new rollout heading, until level off or rejoined.
- When all flight members reach cruise altitude, and cleared to maintain a block altitude by ATC, the lead will accelerate to the briefed airspeed.

4.5. Formation Breakup. Formation breakup should not be accomplished in IMC. However, if unavoidable, breakup will be accomplished in straight and level flight. Prior to a weather breakup, the flight lead will confirm that the wingman has good nav aids and transmit attitude, airspeed, altitude, and altimeter setting. The altimeter setting will be acknowledged by the wingman.

4.6. Use of the Head Up Display (HUD). The HUD may be used as an additional instrument reference in night/IMC conditions. It will not be used as the sole instrument in these conditions. The HUD will not be used to recover from an unusual attitude or when executing lost wingman procedures except when no other reference is available.

4.7. Pilot Activated Automatic Recovery System (PAARS). PAARS must be considered as an available tool if the pilot encounters a spatially disorienting situation. The use of PAARS can greatly aid a pilot in the recovery of an aircraft under these conditions. The PAARS is not a spin recovery nor a ground avoidance system.

4.8. Simulated Instrument Flight.

4.8.1. Simulated instrument flight requires a qualified safety observer in a chase aircraft.

4.8.2. A chase aircraft is required in order to log simulated instrument flight in the F-117A. This does not preclude flying multiple instrument approaches in VMC without a chase; however, in this case the primary emphasis will be on the "see and avoid" concept.

4.9. Flight in Precipitation/Icing.

4.9.1. To the maximum extent possible, pilots will avoid penetration of weather or precipitation, particularly within 2,000 ft of the freezing level. If precipitation cannot be avoided, pilots should reduce airspeed to at or below 300 KCAS, and select FLIR to the standby (stowed) position.

4.9.2. If there are suspected icing conditions during flight, pilots will turn engine antiice on and follow appropriate checklist for icing lights (MDI and/or annunciator). After landing, pilots will make an info write-up for an ice fod inspection.

Chapter 5

AIR TO AIR WEAPONS EMPLOYMENT

N/A for the F-117A

Chapter 6

AIR TO SURFACE WEAPONS EMPLOYMENT

6.1. General. References: MCM 3-1, TO 1F-117A-34-1, and TO F-117-25-10 are the primary references for weapons employment theory, planning, techniques, and analysis. ACCI 11-F117A, Vol 1 contains qualification and scoring criteria. AFI 11-214 contains operating and training procedures. AFI 13-212, Volumes 1, 2, and 3 (old AFR 50-46) contains specific range procedures.

6.2. Weather Minimums.

6.2.1. Refer to AFI 11-214.

6.2.2. The ceiling will be at least 500 feet above the highest portion of the pattern flown. In no case will the ceiling be lower than 2,000 feet AGL for day and no lower than 2,500 feet AGL for night.

6.3. Training Rules (TR).

6.3.1. Refer to AFI 11-214. Additionally, the following guidelines will apply to all F-117A operations:

- When planned navigation routes conflict, a 1,000 feet minimum altitude differential is required between converging aircraft.
- Minimum spacing required between aircraft attacking the same target is limited to applicable fuzing and frag envelopes.
- Minimum altitude for level night weapons delivery is MSA.
- All attacks will be accomplished “trap up.”
- Laser ON and IRADS panel to IR/LSR (FLIR or DLIR) will not be selected until on the assigned range and ready/cleared to release.
- A functional DLIR Laser is required to release an LGB. An LGB will not be released unless laser ranging (LR) or track ranging (TR) is indicated on the SD. If pilots have a normal DLIR Laser indication (no DLIR alerts) of CF or AF on the SD, release may be consented.
- Flight/mission leads/single-ship pilots will ensure the target is certified for lasing and there is no possibility another aircraft might underfly the lasing aircraft.

6.4. Live Ordnance Procedures. Refer to AFI 11-214. Additionally, the following TRs will apply to all F-117A operations:

- Lasers and stations with actual ordnance will not be activated/selected when attacking targets occupied by personnel (i.e., cultural).
- Minimum altitude for all range operations will be determined by fuzing and fragmentation envelopes or MSA, whichever is higher.
- Live ordnance stations will not be selected until on the range and ready for delivery. The MASTER ARM switch

will not be placed in ARM unless there is an intent to expend that ordnance IAW range procedures.

- Aircraft will avoid populated areas when carrying live heavyweight ordnance. Attacks on cultural targets are prohibited with live heavyweight ordnance on board.
- Drop only on authorized live, laseable targets IAW appropriate range supplements.

6.5. Off-Range Simulated Weapons Employment.

6.5.1. Prior to performing a simulated attack on a cultural/off-range target, pilots will ensure the following switches are set as listed below.

- Master Arm—As required.
- Laser Mode Select Switch—Off.
- IRADS Mode Select Switches—IR (FLIR—standby, if DLIR only).
- Fuze Arming Option—As required.

6.5.2. Full cockpit switchology is approved off range provided the aircraft has two empty weapons bays (empty SUUs not authorized) and the Laser is OFF with the IRADS panel set to IR/IR. The normal configuration for this operation is the Bomb Rack Simulator (BRS) (20R898) or Bomb Rack Sensing Switch Cover (Sim Plug) in each weapons bay.

6.5.3. Off-range simulated weapons employment will not be conducted with hung ordnance aboard the aircraft.

6.5.4. Pilots will not simulate weapons release when expendable training ordnance is aboard the aircraft (i.e., the pickle button will not be used).

6.6. Exercise Participation/Stealth Restrictions. The following are restrictions placed on F-117A participation in exercises and stealth procedures.

- The F-117A will not be “stealthed” up in any peacetime evaluation or exercise. Stealth procedures will not be discussed with non-briefed personnel. All F-117A aircraft will be equipped with RCS enhancers.
- The F-117A will employ/enter the threat area only during the hours of darkness.
- The F-117A will be considered a non-player for all air-to-ground and air-to-air threats and associated RADAR’s.
- F-117A pilots will not make any threat reaction maneuvers.
- F-117A pilots will comply with all other training rules/spins to include external lighting, IFF squawks and altitudes.
- Waiver authority to these restrictions rests with the OG/CC but must be IAW the Senior Rebel Classification Guide.

Chapter 7

ABNORMAL OPERATING PROCEDURES

7.1. General. This chapter contains procedures to follow when other than normal operations occur. They do not, however, replace or supersede procedures contained in the flight manual or the use of sound judgment.

7.1.1. No aircraft will be accepted for flight with a malfunction which is addressed in the emergency/abnormal procedures section of the flight manual until appropriate corrective actions have been accomplished.

7.1.2. Aircraft will not be taxied with malfunctions that affect the nose wheel steering, brake systems or with generator malfunctions/failures.

7.1.3. Once a malfunctioning system is isolated, that system will not be used again unless its use in a degraded mode is essential for recovery. If the fault is corrected/reset, and current in-flight procedures allow, the flight may be continued. Do not conduct in-flight troubleshooting after flight manual emergency procedures are completed.

7.1.4. Pilots experiencing in-flight emergencies will be switched over to a single frequency approach channel as soon as practical.

7.2. Ground Aborts.

7.2.1. When a flight member aborts prior to takeoff, the flight leader will realign the flight positions to maintain a numerical callsign sequence. Flight leaders will advise the appropriate command agencies of such changes.

7.2.2. Wingmen in a flight of two or more aircraft with only one designated flight lead in the formation must sympathetically abort or proceed to the pre-briefed single ship mission should the flight lead abort. FTU students who have not completed their initial qualification check must always be accompanied by a chase aircraft occupied by an F-117A IP.

7.2.3. Pilots who do not take off with the flight may join the flight at a briefed rendezvous point prior to a tactical event, or may fly a briefed single ship alternate mission. If a joinup is to be accomplished in a restricted area or MOA, all events will be terminated until the joining aircraft has achieved the desired position.

7.3. Takeoff Aborts.

7.3.1. Prior to flight, takeoff data will be reviewed and understood. Particular emphasis should be placed on takeoff and abort factors during abnormal situations such as short/wet runways and heavy gross weights.

7.3.2. If an abort occurs during takeoff roll, clear to the appropriate side of the runway as expeditiously as possible. If this is not feasible because of possible cable engagement, clear straight ahead. As soon as possible, give call sign and state intentions. The phrase "Cable,

Cable, Cable" will be used to indicate a departure-end cable arrestment. The phrase "Barrier, Barrier, Barrier" will be used to indicate a web-type barrier engagement or to direct tower to raise the web barrier.

7.3.3. Anytime hot brakes are suspected, a ground emergency will be declared, the aircraft taxied to the designated hot brake area, and hot brake procedures performed.

7.3.4. If a takeoff abort is necessary, the pilot will lower the tailhook if there is any doubt about the ability to stop on the remaining runway. This decision will be based on the cable/barrier compatibility, runway length, aircraft speed, weather conditions, braking conditions, and aircraft gross weight.

7.3.5. An aircraft that aborts above 100 knots will be checked for hot brakes.

7.3.5. Pilots will ensure the integrity of their brake system prior to passing the last compatible barrier.

7.4. Takeoff Continued With Loss Of Engine.

7.4.1. If takeoff is continued, the pilot's primary concern should be attaining single engine climb (SEC) speed, and maintaining AOA less than 10 degrees. Altitude permitting, this can best be accomplished by minimizing positive pitch and commencing fuel dump when ability to maintain aircraft control permits.

7.4.2. The decision to jettison live or inert ordnance should be made based on the pilot's assessment of the relative risk of possible weapons frag damage to the aircraft and danger to personnel and equipment on the ground versus the potential gain of reduced gross weight. If terrain impact appears imminent, the pilot should consider immediate ejection rather than a last ditch attempt to save the aircraft through ordnance jettison.

7.5. Air Aborts.

7.5.1. If an air abort occurs after takeoff, all aircraft will maintain their original numerical callsign.

7.5.2. The pilot of the aborting aircraft will advise the flight leader or controlling agency (if single ship) of the conditions necessitating the abort, intentions, and assistance required.

7.5.2.1. The mission will be aborted, regardless of apparent damage or subsequent normal operation, for any of the following:

- Birdstrike.
- Over-G.
- Flight Control System Anomalies (this does not include a single FCS light that resets IAW flight manual procedures providing the light does not repeat for similar maneuvers).

- Engine flameout/stagnation.

7.5.3. All anomalies will be reported during maintenance debriefing.

7.5.4. If possible, pilots will dump fuel above 5,000 ft AGL. Pilots will annotate in the forms and advise maintenance whenever fuel is dumped.

7.6. Radio Failure.

7.6.1. Pilots experiencing radio failure will comply with procedures outlined in FLIP, AFI 11-206, this regulation, and local directives.

7.6.2. If the NORDO aircraft intends to make an arresting gear engagement, the pilot will fly a straight-in approach flashing the landing light on final to signal the tower.

7.7. Severe Weather Penetration. Flight through severe weather should not be attempted. However, if unavoidable, prior to penetration, flights will break up into single ships and recover with separate clearances. Airspeed should be reduced to 300 KCAS or less. Refer to TO F-117A-1 for specific procedures for flying in severe weather or icing.

7.8. Lost Wingman Procedures.

7.8.1. In any lost wingman situation, immediate separation of aircraft is essential. Upon losing sight of the leader, or if unable to maintain formation due to spatial disorientation, the wingman will simultaneously execute the applicable lost wingman procedures while transitioning to instruments. Refer to paragraph 7.8 for specific spatial disorientation considerations. Smooth application of control inputs is imperative to minimize disorienting effects. Once lost wingman procedures have been executed, permission to rejoin the flight must be obtained from the flight lead. These procedures also apply to chase aircraft.

- Wings Level Flight. In wings level flight (climb, descent, straight and level), simultaneously inform the leader and turn away using 15 degrees of bank for 15 seconds, then resume heading and obtain a separate clearance.
- Turns.
 - Outside the Turn. Reverse the direction of the turn using 15 degrees of bank for 15 seconds and inform the leader. Continue straight ahead to ensure separation prior to resuming the turn. Obtain a separate clearance.
 - Inside the Turn. Momentarily reduce power to ensure nose/tail separation, and inform the flight leader to roll out of the turn. Maintain angle of bank to ensure lateral separation and obtain a separate clearance. The leader may resume turn only when separation is ensured.
- Precision/Non-Precision Final. The wingman will momentarily turn away to ensure clearance, inform

lead, and commence the published missed approach procedure while obtaining a separate clearance from approach control.

- Missed Approach. The wingman will momentarily turn away to ensure clearance, inform lead, and continue the published or assigned missed approach procedure while climbing to 500 feet above missed approach altitude. Obtain a separate clearance from approach control.

7.8.2. Flight Lead Responsibility. The flight leader should acknowledge the lost wingman's radio call and transmit flight parameters, actions, and/or intentions as appropriate. Care must be taken to observe published terrain clearance limits.

7.8.3. NORDO Aircraft. If a wingman becomes separated and any aircraft experiences radio failure, the aircraft with the operational radio will obtain a separate clearance. The NORDO aircraft will set IFF/SIF IAW FLIP radio out procedures, or local directives.

7.8.4. Tanker In Formation. IAW appropriate refueling directives/manuals.

7.9. Spatial Disorientation (SD).

7.9.1. Conditions which prevent a clear visual horizon or increase pilot tasking are conducive to SD. When SD symptoms are detected, the following steps will be taken until symptoms abate:

- Execute lost wingman procedures, if appropriate.
- Concentrate on flying basic instruments with frequent reference to the attitude indicator. Use heads down instruments. Defer nonessential cockpit tasks.
- If symptoms persist, bring aircraft to straight and level flight with reference to the attitude indicator, conditions permitting. Maintain straight and level flight, terrain permitting, until symptoms abate. Maximize the use of autopilot to include Pilot Activated Automatic Recovery System (PAARS), if applicable.
- If necessary, declare an emergency and advise ATC.

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

7.10. Armament System Malfunctions.

7.10.1. Inadvertent Release. If an inadvertent release occurs:

- Record switch positions at the time of release and provide to armament and safety personnel.
- Record the impact point, if possible.

- Check armament switches safe and do not attempt further release in any mode. Treat remaining stores as hung ordnance.
- If remaining stores present a carriage/landing hazard, attempt jettison in a suitable area.

7.10.2. Failure to Release. If failure to release occurs:

- Recheck switch operations and make an additional attempt to expend, time permitting. If no release occurs, do not make another attempt to expend.
- If hung ordnance remains on the aircraft, follow the appropriate hung ordnance procedure.
- Stores jettison will be accomplished IAW T.O. F-117A-34-CL-1.

7.10.4. Hung Ordnance Recovery. If hung ordnance is confirmed or suspected:

- Declare an emergency (except for BDU 33).
- Fly a hung ordnance pattern.
- When practical, advise tower of condition, intentions, and request dearming crews. Upon landing, proceed to dearm and inform the dearming crew so the condition or the ordnance can be checked/secured.
- Overhead patterns and practice low approaches will not be flown with hung ordnance. Overhead patterns and practice low approaches may be flown with unexpended ordnance if normal post-release indications are present.

7.10.5. A no-spot BDU-33 release attempt does not require a hung ordnance pattern if the bay doors are closed and normal release and post release indications are present.

7.11. Unintentional No-Chute Landings.

7.11.1. If the drag chute fails to deploy on a dry runway, pilots will check the airspeed approaching the 5,000 ft remaining point.

- If greater than 155 KIAS, lower the hook and call "Barrier, Barrier, Barrier/Cable, Cable Cable", and continue max braking. Release brakes approaching the barrier to effect a successful engagement. If the cable is missed, reapply max braking and continue to steer to middle of the runway. Expect a brake fire. Barrier engagement may hinder the possibility of ground egress.
- If less than 135 KCAS, max braking should stop the aircraft prior to the end of the runway

7.11.2. After any unintentional no-chute landing, suspect hot brakes.

7.11.3. If chute fails to deploy on a wet runway, begin max braking. If a cable engagement appears imminent, call for the cable and/or barrier and lower the hook. Approaching the cable, release brakes to effect a

successful engagement. If cable is missed, reapply max braking and anticipate a barrier engagement, if available.

7.11.4. Anytime hot brakes are suspected, declare a ground emergency and taxi to the designated hot brake area.

7.11.5. If a pilot is notified that the aircraft has hot brakes while in a hangar or hangar area, immediately taxi to the appropriate hot brake area, turn into the wind, and wait for fire response personnel for further direction.

7.12. Post Arresting Gear Engagement Procedures.

7.12.1. Do not shutdown the engine unless fire or other conditions dictate, or directed to do so by the arresting crew and/or emergency response personnel.

7.12.2. Do not taxi until directed to do so by the arresting gear crew and/or emergency response personnel.

7.12.3. Use an increase of power to control aircraft rollback after the cable has been stretched. DO NOT use wheel brakes.

7.13. In-flight Practice of Emergency Procedures.

7.13.1. Simulated Emergency Procedure Definition. Any procedure that produces an effect which closely parallels the actual emergency.

7.13.2. Aborted Takeoff Practice. All practice and/or training related to aborted takeoffs will be accomplished in the flight simulator, or (if simulator is unavailable) a static aircraft.

7.13.3. Simulated emergency procedures will be performed IAW AFI 11-206; AFI 11-F117A, Vol 1; T.O.s; phase manuals; and this instruction, as supplemented.

7.13.4. Simulated in-flight loss of both engines is prohibited. In-flight practice airtasks or engine shutdowns are also prohibited, except as required for functional check flights.

7.13.5. Simulated single engine procedures:

- For simulated single engine approach and landing operations, pilots will adhere to flight manual prescribed airspeed and AOA parameters.
- The EPU will not be activated.
- During night operations, go-arounds will be initiated at or above 300 ft AGL using both engines.
- Simulated single engine landings are prohibited at night.
- For day operations planned go-around will be initiated no lower than 100 ft AGL (two engine) or 300 ft AGL (single engine).

7.14. Search and Rescue (SARCAP) Procedures. In the event an aircraft is lost in flight, actions must begin to locate possible survivors and initiate rescue efforts. It is imperative that all flight members aggressively pursue location and rescue downed personnel even though they

seem uninjured. Many downed aircrews initially suffer shock or have delayed reactions to ejection injuries. The following procedures are by no means complete and should be adjusted to meet each unique search and rescue situation.

- Squawk. Immediately terminate maneuvering using appropriate Knock-It-Off procedures. Establish a SARCAP commander. IFF should be placed to EMER to alert ATC/GCI of the emergency situation.
- Talk. Communicate the emergency situation and aircraft/flight intentions immediately to applicable control agencies. Use GUARD frequency if necessary.
- Mark. Mark the last known position of survivor/crash site using any means available. TACAN/INS position, ATC/GCI positioning, or ground references should be used to identify the immediate area for subsequent rescue efforts.
- Separate. Remain above the last observed parachute altitudes until position of all possible survivors is determined. Deconflict other aircraft assisting in the

SARCAP by altitude to preclude midair collision. Establish high/low CAPs as necessary to facilitate communication with other agencies.

- Bingo. Revise BINGO fuels or recovery bases as required to maintain maximum SARCAP coverage over survivors/crash site. Do not overfly BINGO fuel. Relinquish SARCAP operation to designated rescue forces upon their arrival.

7.15. Recoveries Without a Transponder (IFF).

7.15.1. Due to the F-117's low air traffic control radar observability without IFF, pilots will immediately notify controlling agencies if the IFF is inoperative, and provide accurate position reports to controlling agencies for separation from other traffic.

7.15.2. If radar vectors are required for an approach, pilots will slow to 250 KCAS when within approximately 25 DME of the field and lower the landing gear to enhance the radar return for RAPCON.

7.16. Critical Action Procedures. Specific Critical Action Procedures are contained in T.O. 1F-117A-1.

Chapter 8

LOCAL OPERATING PROCEDURES

8.1. General. This chapter is reserved for unit local operating procedures. Procedures herein will not be less restrictive than those contained elsewhere in this regulation, nor is this chapter intended to be a single source document for procedures contained in other directives or regulations. Unnecessary repetition of guidance provided in other established directives should be avoided; however, reference to those directives is acceptable when it serves to facilitate location of information necessary for local operating procedures.

8.2. Review. A copy of this chapter will be forwarded to HQ ACC/DOTV and 12 AF/OV (57 WG forward only to ACC) for review. Returned comments and required changes will be provided to units as appropriate. This procedure need not delay distribution.

8.3. Format. The local chapter will be organized in the following format and will include, but is not limited to, the following:

- Section A. Introduction.
- Section B. General Policy.

- Section C. Ground Operations.
- Section D. Flying Operations.
- Section E. Weapons Employment.
- Section F. Abnormal Procedures.
- Attachments (Illustrations).

8-4. Content. This chapter will include procedures for the following, if applicable:

- Command and Control.
- Fuel Requirements and Bingo Fuels.
- Divert Instructions.
- Jettison Areas (IFR/VFR).
- Controlled Bailout Areas.
- Local Weather Procedures.
- Low Level Route Abort Procedures.
- Approved Alternate Missions.
- Unit Standards (Optional).

JOHN M. LOH
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1. BRIEFING GUIDE—GENERAL

1.1. MISSION PREPARATION

- Time hack
- EP/threat of the day
- Mission objective(s)
- Mission overview
- Mission data card
- G-Awareness
- Fuels required
 - Joker
 - Bingo
 - Critical fuel
 - Continuation fuel
- Environmental conditions
 - Weather
 - Sunrise/sunset (if applicable)
 - Moon illumination (if applicable)
 - Contrail levels
- NOTAMs
- Personal equipment
- FCIF/pubs/maps
- SIIs—ACC, NAF, 49 FW

1.2. GROUND PROCEDURES

- Pre-flight of aircraft/weapons
- Ground crew briefing (when applicable)
 - Act only on pilot's instructions
 - Ground emergency procedures

- Hand signals
- Aircraft danger areas
- Check-in
- Taxi/marshalling/arming
- Spare procedures

1.3. TAKEOFF

- Runway lineup
- Takeoff interval
- Trail departure
- Abort
- Landing immediately after takeoff

1.4. DEPARTURE

- Join-up
- Formation
- Ops checks

1.5. SPECIFIC MISSION BRIEFING

- Instrument/navigation/transition
- Air refueling
- Tactical navigation
- Air-to-surface weapons employment
- Air combat training/security
- Recovery/landing
- Mission debriefing

2. BRIEFING GUIDE—INSTRUMENT/NAVIGATION/TRANSITION

2.1. CLIMB

- Instrument departure
 - Power setting/airspeed
 - Routing (SID, radar vectors, etc.)
- Level off
- Formation

2.2. CRUISE

- Enroute
- Cruise data
- Nav aids
- Fuel awareness/ops checks

2.3. AREA

- Airspace restrictions/area orientation
- Instructor responsibilities (if applicable)
- Maneuvers/G-awareness/ops checks/fuel awareness
- Airwork
- Departure
 - Routing
 - Joker
 - Bingo

2.4. APPROACHES

- Holding/penetration
- Missed approach/climb out

2.5. SPECIAL SUBJECTS

- Alternate mission
- Emergency/alternate airfields
- Spatial disorientation/unusual attitudes
- Hazards associated with human factors (i.e., Channelized attention, complacency, task saturation/prioritization)
- Low altitude ejection
- Lost wingman
- Aircraft lighting considerations

3. BRIEFING GUIDE—AIR REFUELING

3.1. GENERAL

- Tanker call sign(s),
- Receiver assignments
- Refueling tracks(s)
 - Altitude
 - Airspeed
- Radio frequencies
- ARIPs, ARCPs, ARTCs

3.2. BUDDY PROCEDURES

- Departure
- Join-up

3.3. EN ROUTE

- Route of flight
- Formation
- Ops checks

3.4. RENDEZVOUS

- Type rendezvous
- Holding procedures/formation
- Ground radar assistance
- Tanker identification - A/A tacan/ground radar/visual
- Wingman/deputy lead responsibilities
- Receiver formation/join-up procedures
- Rendezvous overrun

3.5. REFUELING

- Checklist procedures
- Radio calls
- Refueling order

- Techniques
- Radio silent procedures (visual signals)
 - Visual signals
 - Emcon
- Fuel off-load
- Abort points/abort bases
- Drop-off procedures
- Wake turbulence

3.6. REJOIN AND EXIT

- Formation
- Clearance

3.7. EMERGENCY PROCEDURES

- Breakaway procedures
- Systems malfunctions
- Damaged receptacle

3.8. IMC/NIGHT CONSIDERATIONS (if applicable)

- Lost wingman procedures
- En route
- On the tanker
- Aircraft lighting

3.7. SPECIAL SUBJECTS

- Alternate mission
- Spatial disorientation
- Hazards associated with human factors (i.e., Channelized attention, complacency, task saturation/prioritization).

4. BRIEFING GUIDE—COMBAT EMPLOYMENT

4.1. TIME HACK

4.2. OBJECTIVES

4.3. OVERVIEW

- Ground operations
- Takeoff/departure/route
- Update points
- Ingress
- RTB
- Approaches/diverts

4.4. SCENARIO/INTEL

- Theater of operations
- Political borders checks
- FLOT/FSCL
- Safe areas/contact procedures
- Stealth lines/fence checks
- Roe—collateral/no collateral
- Support assets/locations

4.5. WEATHER/NOTAMS

- Homeplate/alternate
- Enroute
- Target area
 - Altimeter/cloud bases
 - D-value/winds
 - Moon rise/illumination
 - Absolute humidity
- NOTAMS

4.6. MISSION DATA CARD

- Callsign/times/TOLD
- Mission number
- Tanker info
- Joker
- Bingo/Critical
- Continuation fuel
- Asset information

4.7. GROUND OPERATIONS

- Pre-step
 - Sanatize
 - Vest/gun/glint tape
 - E&E maps/firefly
 - Form 70/photos
 - EDTM
 - Flashlights
- Preflight cockpit
 - Irads cooling
 - EDTM loading/faults
 - INS coords
 - SMD (weapons/laser codes/bit checks)
- Preflight aircraft
 - RAM/butter/bubbles

- Forms
- Platty bricks
- Inert bottle
- KY-58 fill
- Preflight weapons
 - WLP (laser codes, bomb code)
 - Bombs (guidance pkg, laser)
- Taxi
 - Time/comm procedures
 - Route
 - EOR check IRADs/INS/SMD
- Takeoff/departure
 - Heavyweight jettison
 - Aborts/engine failure plan
 - Departure procedures
 - NLT time/ make-up time/plan

4.8. INGRESS ROUTING

- Continuation/bingo fuels
- Altitudes/MEA's
- Sensor update points
- Turns (hand fly vs. Autopilot)
- Stealth line, GO/NO-GO
- Lights/inert point
- Threats
- Route changes IRD
- Timing/make up

4.9. TARGET AREA

- Attack plan
- Pacing/switchology
- Polarity changes
- IRADs crosscheck
 - ALG
 - Grey scales
- Threat locations/times

4.10. TARGETS

- Acquisition plan/imagery
- TGT descriptions
- Offsets
- Weapons
 - Effects
 - Dlvry parameters
 - TOF/LDT/ALDT
 - DLIR look time
 - Simultaneous effects
 - Release ROE
- No sight plan
- WX backup plan
- Threat reaction

4.11. EGRESS

- Routing

- Contingencies
- Armament safety check
- Destealth/fence-out
- IFF line
- Antennas (radios/IFF)
- Inflight report
- AWACS/JSTARS/ABCCC
- Divert/wounded bird
- Jettison

4.12. RTB

- Safe passage procedures
- Inst approach
- Hung bomb procedures

4.13. CONTINGENCIES

- Wx avoidance
 - TM wide
 - Anti-ice
- Systems malfunction
- Early/late tot
- Emergency divert
- Dump targets

4.14. MISSION RECAP

4.15. PEACETIME ADDENDUM

- Actual route/weapons
- Range/times
- Training rules
- Instructional briefing
- Flight briefing

5. BRIEFING GUIDE—AIR-TO-SURFACE WEAPONS EMPLOYMENT

5.1. RANGE INFORMATION

- Target/range description
- Restrictions
- Range entry/holding
- Radio procedures
- Formation
- Sequence of events
- Pattern procedures

5.3. EMPLOYMENT PROCEDURES/TECHNIQUES

- Switch positions
 - Arming
 - Displays
- Final
 - Airspeed
 - Sight picture/corrections/aim-point
 - Release parameters
 - Release indications
 - Recovery procedures

5.4. SPECIAL SUBJECTS

- Error analysis
- Training rules/special operating instructions/procedures
- Fouls
- Minimum altitudes
- Maneuvering limitations
 - Aircraft
 - Stores (carriage/release)
- Target fixation
- Time to ground impact
 - Wings level
 - Over bank with G loading
- Hazards associated with human factors (i.e., Channelized attention, complacency, task saturation/prioritization).

5.5. NIGHT PROCEDURES (IF APPLICABLE)

- Aircraft lighting
- Radio calls
- Target id/range lighting
- Night spacing techniques
- Instrument crosscheck/disorientation

5.6. OVER WATER RANGE OPERATIONS

- Employment techniques
 - Depth perception/reduced visual cues
 - Distance/altitude estimation
- Special considerations
 - Adjusted minimum altitudes
 - Training rules/special operating procedures

5.7. RANGE DEPARTURE/RECOVERY

- Armament safety checks
- Rejoin
- Battle damage/bomb check
- Hung ordnance
- Inadvertent release

6. BRIEFING GUIDE—AIR COMBAT TRAINING/EXERCISES

6.1 SECURITY

- Normal mission procedures
- Emergency recoveries
- Divert
- Bailout

6.2. RECOVERY/LANDING

- Rejoin
- Battle damage/bomb check (if applicable)
- Flight break-up (if applicable)
- Contingency routing
 - Hung/unexpended ordnance (if applicable)
 - Weapons/aircraft malfunction (if applicable)
- Pattern and landing
- After landing/de-arm

6.3. SPECIAL SUBJECTS

- Instructor responsibilities
- Chase procedures
- IFF procedures
- Radar/visual search responsibilities/midair collision avoidance
- Dissimilar formations
- Terrain avoidance
 - Departure/enroute/recovery
 - Use of radar altimeters
- Bird strike procedures/use of visor(s)
- Hazards associated with human factors (i.e., Channelized attention, complacency task saturation/prioritization).
- Visual illusions/perceptions
- Spatial disorientation/unusual attitudes
- Lost wingman
- Radio inoperative
- SARCAP
- Recall procedures
- SIIs
- G-Awareness

7. BRIEFING GUIDE—LOW LEVEL NAVIGATION

7.1. General

- Route/Clearance/Restrictions
- Flight Responsibilities
 - Navigation
 - Visual Search
- Entry/Spacing/Holding/Initial Altitude (MSA)

7.2. Route Procedures

- Stealth Check/Fence Check
- Formation/Turns
- Low-Level Navigation
 - Dead Reckoning
 - Use of Nav Aids
 - Use of INS
 - Visual Procedures
 - Updates
 - Timing
 - Fuel Awareness
 - Terrain Avoidance/Following
 - Leg Altitudes
 - Obstacles
- Threat Reactions/Avoidance

7.3. Emergencies

- Aircraft Malfunctions
- Route Abort Procedures/ATC Frequencies

7.4. TRs/Special Operating Instructions

7.5. Alternate Mission

- Type Mission
- Mission Objectives

7.6. Special Subjects

- Airspace Restrictions
- OPs Checks
- Fuel Awareness/Consumption Rates
- Maneuvering Limits
 - Airspeed
 - Gs
 - Recognition/Prevention/Recovery from Out of Control
- Time to Ground Impact
 - Wings Level
 - Over Bank/G-Loading
- Night Considerations

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

8. BRIEFING GUIDE—MISSION DEBRIEFING

8.1. GROUND PROCEDURES

8.2. TAKEOFF, JOIN-UP, DEPARTURE

8.3. EN ROUTE PROCEDURES

8.4. RECOVERY/LANDING/AFTER LANDING

8.5. GENERAL

- Radio procedures
- Flight discipline/effectiveness
- General areas for improvement

8.6. SPECIFIC MISSION ACCOMPLISHMENT/ANALYSIS

- Mission reconstruction
- Mission support (fac, gci, helicopters, etc.)
- Vtr/film assessment (if applicable)
- Learning objectives achieved
- Lesson(s) learned
- Recommendations for improvement

8.7. COMMENTS/QUESTIONS