BY ORDER OF THE SECRETARY OF THE AIR FORCE

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Flying Operations

AIR FORCE AIRCRAFT DEMONSTRATIONS (A-10, F-15, F-16, F-22)

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This instruction implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, and supports Air Force Instruction (AFI) 11-209, *Participation in Aerial Events*. It provides guidance and procedures for Air Force performance of specific Mission Design Series (MDS) single-ship aircraft demonstrations and mission capabilities demonstrations. It designates Air Combat Command as lead command for the A-10, F-15, F-16, and F-22 aircraft demonstrations. This instruction does not currently apply to Air Force Reserve or Air National Guard Units. Only Major Commands (MAJCOMs), Field Operating Agencies (FOAs), and Direct Reporting Units (DRUs) may supplement this instruction. MAJCOMs, FOAs, and DRUs coordinate their supplements with Headquarters (HQ) Air Combat Command (ACC), Director of Operations (DO), Flight Operations Division (ACC/A3T) prior to publication, and forward one copy to Headquarters (HQ) United

States Air Force (USAF) Total Force Aircrew Management Integration Division (HQ USAF/A3XI) after publication. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional's chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's commander for non-tiered compliance items. See **Attachment 1** for a glossary of references and supporting information. Ensure that all records created, as a result of processes prescribed in this publication, are maintained in accordance with Air Force Manual 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Disposition Schedule located within the Air Force Records Information Management System. 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 Air Force.

(35FW) AFI 11-246V1, Air Force Aircraft Demonstrations, dated 18 Nov 2019, is supplemented as follows. This supplement applies to all Misawa AB personnel involved in activities related to Pacific Air Force's F-16 Demonstration. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, Management of Records, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Additionally, if the publication generates a report(s), alert readers in a statement and cite all applicable Reports Control Numbers in accordance with AFI 33-324. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication; route AF Form 847s from the field through the appropriate functional's chain of command.

SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. This revision now contains tiered waiver authorities.

(35FW) This document has been substantially revised and needs to be completely reviewed. Major changes include. CHANGE: Deleted references to the Heritage Flight Program; CHANGE: Added requirement for each team member to receive official passport; CHANGE: Delegated DEMO schedule coordination to OG/CC; CHANGE: Waive requirement for OG/CC for annual airshow attendance; CHANGE: More clearly defined FW/PA responsibilities for team support; CHANGE: Made DEMO a flight in the OSS; CHANGE: Clarified/Updated MX manning/experience requirements; CHANGE: Added option for formalizing two additional team members from within the OSS – AFE and admin support; CHANGE: Delegated re-currency flight supervision to the safety observer; CHANGE: Streamlined hiring procedures for team members and reduced extraneous paperwork; CHANGE: Deleted AFI-prescribed itemization of uniform issue items. Uniform policies now overseen by team commander; CHANGE: Deleted extraneous verbiage concerning funding of specific examples of DEMO TDY expenses; CHANGE: Deleted

individual training items from AFI. Training now tailored/managed internally via team continuity materials and/or team-developed syllabi.

Chapter 1

OPERATIONAL PROCEDURES

1.1. Introduction. USAF uses single-ship aerial demonstration (demo) to exhibit the capabilities of modern, high-performance USAF aircraft and the degree of skill required to operate and maintain these aircraft. ACC is designated lead command and will establish standard criteria for single-ship aerial demonstrations of the A-10, F-15E, F-16, and F-22 aircraft. MAJCOMs interested in developing future air show programs involving these USAF Mission Design Series (MDS) aircraft are governed by this instruction and approved MAJCOM supplements. This instruction provides specific maneuvers, sequences, and parameters governing the execution of these demonstrations. Other MAJCOMs flying single-ship aerial demonstrations of these MDS aircraft will comply with this instruction. Procedures for team management, selection, training, and scheduling are in accordance with (IAW) applicable MAJCOM supplements. The directives listed in **Attachment 1** provide further procedural guidance in the conduct of these events.

1.2. Terms Explained. Unless otherwise indicated, terms and definitions used in AFI 11-209, AFI 35-105, and this instruction are the same. The term "aerobatic" used in this instruction is as defined in Federal Aviation Administration (FAA) Order 8900.1, Volume 3, Chapter 6, *Flight Standards Information Management System (FSIMS).*

1.3. Waiver Authority. The Air Force Director of Future Operations (A3X) has delegated waiver authority for this instruction to ACC/A3. MAJCOMs must submit waiver requests through appropriate MAJCOM channels.

1.4. Roles and Responsibilities:

1.4.1. **MAJCOM/CC will:**

1.4.1.1. Provide policy for the MAJCOM's single-ship demonstration program IAW this publication.

1.4.1.2. Certify first year single-ship demonstration pilots prior to the beginning of their first air show season. Pacific Air Forces Commander (PACAF/CC) may delegate the certification of first-year single-ship demonstration pilots no lower than Wing Commander (WG/CC). Include certification authority delegation in the MAJCOM supplement to AFI 11-246, Vol 1.

1.4.1.3. Approve single-ship demonstration team maneuvers. This approval may be delegated to MAJCOM/A3.

1.4.2. **MAJCOM/A3 will:**

1.4.2.1. Provide supervisory direction over the single-ship demonstration program.

1.4.2.2. Approve the single-ship demonstration schedule(s) and changes or updates.

1.4.2.3. Approve syllabi for single-ship demonstration aircrew upgrade.

1.4.2.4. Approve modified demo profiles when an air or trade show does not allow the allotted time for a full profile.

1.4.2.5. Approve narration scripts used to describe demonstration maneuvers to the viewing public.

1.4.3. **MAJCOM Aerial Events Office or MAJCOM/A3 designee will:**

1.4.3.1. Submit command-approved single-ship demonstration maneuver package for FAA AFS-800 approval. This package may not conform to all guidance requirements of FAA Order 8900.1, Volume 3, Chapter 6, and requires FAA acceptance. **(T-2)**

1.4.3.2. Coordinate all single-ship demonstrations: Analyze event sites for operational suitability, safety, recruiting value, and availability of demonstration teams. **(T-2)**

1.4.3.2.1. Coordinate Air Operations Squadron (AOS) movements with ACC AOS/ (Plans and Navigation) AOSX and assigned Deputy Commander of Operations (DCO). **(T-2)**

1.4.3.2.2. Secure Dual-Role tanker operations to the maximum extent possible. When not feasible, coordinate Special Assignment Airlift Mission (SAAM) requests with base logistics readiness squadron and air mobility division to ensure passengers and equipment are transported to and from show location. **(T-2)**

1.4.3.3. Develop the single-ship demonstration schedules and updates. **(T-2)**

1.4.3.4. Perform annual review of the MAJCOM supplement to this AFI and unit single-ship demonstration training syllabi. **(T-2)**

1.4.3.5. If applicable, develop an Outside Contiguous United States (OCONUS) event schedule and provide Mission Aerial Support funding for deployments. **(T-2)**

1.4.3.6. Prepare waiver recommendations for ACC/A3 approval. **(T-2)**

1.4.3.7. Provide event sponsors with the Single-Ship Demonstration Team Support Manual to assist them with the necessary preparations. **(T-2)**

1.4.3.8. Visit and evaluate air show environments to ensure support is adequate to minimize distractions and enhance flying safety. **(T-2)**

1.4.3.9. If applicable, maintain the MAJCOM Aerial Events Public web site to include: current single-ship demonstration schedules, Single-Ship Demonstration Team Support Manual, and the scheduling process. **(T-2)**

1.4.3.10. Coordinate initial MAJCOM/CC certification of first year single-ship demonstration pilots IAW **Attachment 5**. **(T-2)**

1.4.3.11. Review demonstration grade sheets and provide comments/feedback when warranted to appropriate wing leadership and demonstration pilots. **(T-2)**

1.4.3.12. Review demonstration ground video of pilot demonstrations. **(T-2)**

1.4.3.13. Develop, review, and modify demo profiles in coordination with the teams, for MAJCOM/CC or MAJCOM/A3 approval as applicable. **(T-2)**

1.4.3.14. Participate in annual International Council of Air Shows Convention. **(T-2)**

1.4.4. **NAF commanders or equivalent will** approve single-ship demonstration prior to MAJCOM/CC's certification for first-year demonstration pilots. **(T-2)**

1.4.5. **Wing commanders or equivalent will:**

1.4.5.1. Select and train demonstration team personnel IAW this instruction. Operations and maintenance group commanders may provide nominations, but the wing commander keeps the final approval authority to provide the necessary oversight of the demonstration program. **(T-2).**

1.4.5.1.1. Ensure mission effective command oversight of all team elements and personnel. **(T-2).**

1.4.5.1.2. Ensure dedicated maintenance support of the demonstration team. **(T-2).**

1.4.5.1.3. Designate responsibility for resource management of all team funding. **(T-2).**

1.4.5.2. Develop and publish a wing supplement or Operating Instruction (OI) to establish roles and responsibilities for support of the single-ship demonstration team. **(T-2).**

1.4.5.3. Forward the upgrading demonstration pilot's grade book per MAJCOM supplement for approval. **(T-2).**

1.4.5.4. Annotate pre-certification of demonstration team (high show) in demonstration pilot's grade book and forward to NAF/CC or equivalent for endorsement. **(T-2).**

1.4.5.5. Annotate re-certification of demonstration team (high show) in demonstration pilot's grade book for second and subsequent year demonstration pilots. **(T-2).**

1.4.5.6. Coordinate with MAJCOM Aerial Events Office on single-ship demonstration schedule. This may be delegated to Operations Group Commander. **(T-2).**

1.4.5.7. Provide a ground video and grade sheet of a current performance for WG/CC re-certified pilots to MAJCOM/A3. **(T-2).**

1.4.5.8. Fund the demonstration team's annual budget per MAJCOM supplement. **(T-2).**

1.4.5.9. Review the grade sheet of every practice and demonstration IAW **paragraph 1.11** of this instruction. **(T-2).** Meet with the demonstration pilot once every 30 days to review the most recent demonstration performance using the grade sheet and Heads-up Display (HUD) data (when available) or ground video. **(T-2).** Once every 90 days this review will use actual HUD data with the grade sheet. Provide the grade sheet of every practice and public demonstration and (upon request by MAJCOM) the ground video tape of all public demonstrations to the MAJCOM Aerial Events Office or MAJCOM/A3 designee, within five (5) work days of each home training event/demonstration or within five work days after returning to home station following deployed demonstrations. **(T-2).** This duty may be delegated to the WG/CV, OG/CC, or OG/CD. If none of these leaders are current and qualified in the demonstration aircraft MDS, the WG/CC may delegate this to a SQ/CC who is current and qualified in the MDS. This delegation is in writing via formal letter or by incorporation within a published wing supplement or OI. **Exception:** Documentation of new demonstration pilot initial training, in black ink, is included in the pilot grade book and forwarded per **paragraph 1.4.5.3** versus this paragraph.

1.4.6. **Operations Group Commander (OG/CC) will :**

1.4.6.1. Provide command oversight of the demonstration team operations element personnel. **(T-2).**

1.4.6.2. Coordinate with MAJCOM Aerial Events Office designee on single-ship demonstration schedule **(T-3)**.

1.4.6.3. Request relief from MAJCOM Aerial Events Office designee if it is determined that an event should not be supported (for safety, Operations Tempo (OPTEMPO), etc.). **(T-2).**

1.4.6.4. Attend at least one off-station show during the demonstration season. **(T-3)**.

1.4.6.5. Provide Stage 2 certification to demonstration pilot IAW **paragraph 2.5.13** of this instruction. **(T-2).**

1.4.6.6. Establish procedures for nominating the "best" qualified demo pilots, narrators, and safety observers to be dedicated to the demonstration team. **(T-2).**

1.4.7. **Maintenance Group Commander (MX Grp/CC) will:**

1.4.7.1. Establish procedures to nominate the best-qualified maintenance personnel to be dedicated to the demonstration team. **(T-2).**

1.4.7.2. Ensure maintenance personnel selected to the air show/demonstration program are dedicated to the demonstration team. **(T-2).**

1.4.7.3. Commander or designee should attend at least one off-station air show during the demonstration season to become familiar with the maintenance personnel impact on the demonstration program. **(T-3)**.

1.4.8. **Demonstration pilots will:**

1.4.8.1. Coordinate demonstration team availability IAW MAJCOM supplements. **(T-2).**

1.4.8.2. Coordinate demonstration team support requirements with event point of contact. **(T-2).**

1.4.8.3. Coordinate with local Air Force recruiter team's availability and ability to support local Air Force recruiting efforts. **(T-2).**

1.4.8.4. Cancel any demonstration when the assigned performance location compromises safety or exceeds aircraft performance capabilities. **(T-3**)

1.4.8.5. Take special care to ensure that no aerobatic maneuvers of any type are performed inside the stipulated FAA crowd restraint zone of 1,500 feet (1,200 feet where approved by FAA). **(T-0)**. In any case where FAA approves closer aerobatic maneuvers (e.g. FAA AFS-800 maneuver package), all maneuvers are flown at or beyond the 500-foot line.

1.4.8.6. For off-station sites, accomplish either a practice demonstration or aerial survey (IAW **Attachment 3**) at the air show site prior to air show demonstration. **(T-2).**

1.4.8.7. Review and grade every practice and demonstration using the HUD tape (if available), ground video, and grade sheet per **paragraph 1.11**; obtain ground safety observer review, and forward to the reviewing officer IAW **paragraph 1.4.5.9** During training, or non-air show season, upgrading demo pilots will place all grade sheets in their grade book and will forward all HUD or ground tapes for wing leadership review. After MAJCOM/CC certification, demo pilots will begin forwarding the grade sheet and the HUD or ground tape IAW **paragraph 1.4.5.9** of this instruction, including those occurring during training/non-air show season in-between the demo pilot's first and second year. **(T-2).**

1.4.9. **Demonstration team ground safety observers will:**

1.4.9.1. Complete safety observer training and documentation per **paragraph 2.5** Training is required for any personnel performing safety observer duties, including wing leadership. **(T-2).**

1.4.9.2. Monitor all practices and demonstrations with maneuvers conducted below 2,000 feet above ground level (AGL). **(T-2).**

1.4.9.3. Maintain two-way radio communication with the demonstration pilot, monitor demonstration pilot altitude and airspeed radio calls, and direct maneuver abort if outside prescribed parameters. **(T-2).**

1.4.9.4. Monitor the demonstration for potential hazards (e.g., flocks of birds, unscheduled aircraft, or weather). **(T-2).**

1.4.9.5. Critique each maneuver and note needed improvements in the performance. However, in no case should critiquing maneuvers take precedence over monitoring the safe accomplishment of maneuvers. **(T-2).**

1.4.9.6. Review the HUD tape or ground video and grade sheet of every practice and demonstration. **(T-2).**

1.5. Requests and Approval.

1.5.1. CONUS civilian locations (including Alaska and Hawaii) desiring an aerial demonstration may submit requests to the Office of the Secretary of Air Force for Public Affairs (SAF/PA). SAF/PA posts events that are eligible for consideration on their website. In the PACOM AOR, civilian locations desiring an aerial demonstration may submit requests to the Office of Assistant Secretary of Defense for Public Affairs (OASD/PA). OASD/PA notifies PACAF of events that are eligible for consideration.

1.5.2. Air Force units may submit a request directly to ACC/A3TA or other MAJCOM teams for consideration.

1.5.3. Requests from other services should be submitted, through command channels, to ACC/A3T or other appropriate MAJCOM office in accordance with applicable directives.

1.6. Scheduling and Policies. Per MAJCOM supplement to this instruction.

1.7. Support Manual. Detailed information on show site pre-show coordination requirements is contained in the MAJCOM Single-Ship Demonstration Team Support Manual. This manual requires annual revision and should be made available to all aerial event coordinators hosting a single-ship demonstration team, via website, e-mail, normal mail, or fax. For example, ACC/A3TA maintains a copy of the current ACC Support Manual on the Air Combat Command Aerial Events website (**https://www.acc.af.mil/Home/Aerial-Events/**).

1.8. Arresting Gear Support. For the F-15E Strike Eagle and F-16 Demonstration teams: Show sites without an arresting gear and with runways less than 8,000 feet must provide temporary arresting gear unless an airfield with suitable arresting gear on a 7,000 feet or greater runway, or a runway with length greater than 10,000 feet is within 80 nautical miles (nm) of the staging location and show site. **(T-2)**. For the F-22 Demonstration team: All show sites (regardless of runway length) must have either a suitable arresting gear (BAK-12 or equivalent) on site or at a 7000 feet or greater runway within 80nm of the staging location and show site**. (T-2)**.

1.9. Reporting.

1.9.1. Any unusual occurrence (In-Flight Emergencies, Aborts or Knock it Off (KIO), weather cancellations, FAA profile violations, or any safety-of-flight-related issue) will be reported by the pilot, narrator, ground safety observer, or NCOIC via phone, or email ASAP to the MAJCOM Aerial Events office. **(T-2)**.

1.9.2. Submit End of Show Summaries and Critiques to MAJCOM Aerial Events not later than (NLT) 1 week after each show IAW the MAJCOM approved format. See sample at **Attachment 2**.

1.10. Recommended Changes.

1.10.1. Forward recommendations for new or modified maneuvers not detailed in this instruction through the WG/CC to the MAJCOM/A3 for concept approval before proceeding with simulator testing and development of detailed parameters and abort procedures. Following MAJCOM/A3 concept approval, new maneuvers will be developed by the demonstration (demo) pilot and evaluated in the simulator prior to flight. **(T-2)**. Demo pilots must obtain WG/CC approval prior to flight testing. **(T-2)**. Document the approval in the grade book. Once parameters have been established and the maneuver has been flown satisfactorily in the simulator, demo pilots will fly and evaluate maneuvers in working airspace greater than 5,000 feet AGL and then again at greater than 2,000 feet AGL. **(T- 2)**. Once safety evaluation has been accomplished in working airspace, demo pilots will fly the maneuver over the airfield at or above 1,000 feet AGL and again at 500 feet AGL, prior to flying the maneuver at maneuver minimums. **(T-2)**. Document all maneuver evaluations on a grade sheet and maintain them in the demo pilot's gradebook. Once the maneuver is perfected in practice, submit a change to this AFI. Demo pilots will not perform new or modified maneuvers in actual demonstrations unless approved by MAJCOM/CC. **(T-2)**.

1.10.2. Each demonstration team may supplement this instruction as necessary. Team organization, maintenance support, selection criteria, and training programs for new pilots are examples of items that may be supplemented. Submit supplements or operating instructions to ACC/A3TA for coordination prior to publication.

1.11. Demonstration Performance Reviews / Grade Sheets.

1.11.1. Record every practice and demonstration at locations with appropriate level of classified storage capability, to include all home station demonstration sorties, on the pilot's HUD tape. Videotape every practice and demonstration involving aerobatics of any kind conducted below 2,000 feet AGL. Do not post video to any public web site until approved by MAJCOM/PA. Debrief each demonstration using these videotapes and HUD when available. Demonstration pilots will use the approved grade sheet to evaluate each flight. **(T-2)**. MAJCOM/CC or A3 may request a videotape and HUD tape for review at any time during the air show season. Demonstration teams will maintain videotapes, and HUD tapes for a minimum of one year. **(T-2)**. Keep performance grade sheets at the unit for the duration of the demo pilot's assignment. Approved grade sheet templates are provided by ACC/A3TA.

1.11.2. Grade each maneuver using a scale of 0 to 4 and average to compute an overall demonstration grade of 0 to 4. Wing reviewers must comment and make recommendations on any maneuver graded zero (0). **(T-2)**. A maneuver grade of 0 should not be automatically considered dangerous unless the manner in which the maneuver was performed created a safety of flight situation. However, if safety is compromised then the overall demonstration is zero (0). Wing reviewers will recommend additional training for any overall demonstration graded zero (0). **(T-2)**. The average grade for a typical air show should be a two (2). Ensure grade sheets reflect altitude and airspeed to the greatest accuracy possible. Use the following grading criteria to establish individual maneuver and overall demonstration grades.

1.11.2.1. To compute the maneuver grade, "X" equals the distance between the target and minimum altitudes. As an example, if the target altitude is 6,000 feet AGL and the minimum altitude is 5,000 feet AGL then "X" equals 1000 feet AGL and 1/2X equals 500 feet AGL. Grade 0 would be given for all altitudes below 5,000 feet; Grade 1 for all altitudes from 5,000 to 5,499 feet AGL; Grade 2 for all altitudes 5,500 to 5,999 feet AGL and above 6,501 feet AGL ; Grade 3 for all altitudes from 6,001 to 6,500 feet AGL; and Grade 4 if altitude equals 6,000 feet AGL. (**Figure 1.1**)

1.11.2.2. GRADE 0 – Altitude below minimum, or airspeed out of limits

1.11.2.3. GRADE 1 – Altitude >1/2X below target, and airspeed within limits

1.11.2.4. GRADE 2 – Altitude <1/2X below target or >1/2X above target, and airspeed within limits

1.11.2.5. GRADE 3 – Altitude <1/2X above target, and airspeed +/- 25 knots of target

1.11.2.6. GRADE 4 – Altitude on target, and airspeed +/- 10 knots of target

1.11.2.7. Airspeed criteria do not apply to the A-10 unless airspeed is below minimum parameter; the maneuver grade is zero.

1.11.2.8. OVERALL GRADE = Computed average of the maneuver scores.

1.11.2.8.1. 0 = Dangerous performance

1.11.2.8.2. 1 = Safe performance, but trend is low

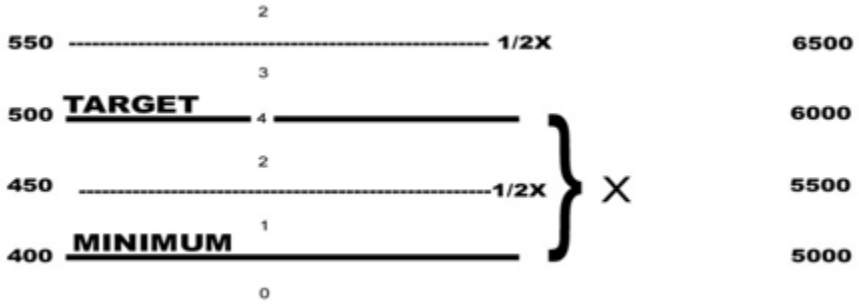
1.11.2.8.3. 2 = Average performance

1.11.2.8.4. 3 = Outstanding performance

1.11.2.8.5. 4 = Perfect performance; no deviations

1.11.3. Refer to **paragraph 1.4.5.9** for wing and HHQ grade sheet and tape review requirements. **NOTE:** (See **Paragraph 1.11.2.1**)

Figure 1.1. Grading Ranges.



1.12. Proficiency Requirements.

1.12.1. Demo Pilots: To maintain currency, each pilot will fly a minimum of one demonstration every 15-calendar days. **(T-2)**. Schedule a practice session or actual demonstration at least once per week during air show season. If the 15-calendar day currency is exceeded, the next demonstration is limited to no-lower-than 1,000 feet AGL target and 900 feet AGL minimum on all maneuvers, and the operations group commander, deputy operations group commander, or WG/CC designee must be present. **(T-2)**. MAJCOMs may determine additional procedures for pilots to regain currency.

1.12.2. Ground Safety Observers: Perform as ground safety observer for a complete maneuver profile at least once every 120 days**.** Non-current safety observers will execute the duties of the safety observer at an official or practice demonstration while under the observation of a certified safety observer. **(T-2)**. Certified safety observer will document this training in the demo team grade book. **(T-2)**.

1.12.3. If an actual abort is not encountered, practice pilot abort procedures during practice demonstrations at least once every 60 days. To meet this currency requirement the safety observer will initiate the abort call at some point during a practice demonstration. **(T-2)**.

1.13. Termination Procedures. Terminate demonstrations involving aerobatics flown below 2,000 feet AGL when:

1.13.1. The safety observer is unable to monitor the safe performance of maneuvers.

1.13.2. Two-way radio communication is lost between the demonstration pilot and safety observer.

1.13.3. Videotaping is lost.

1.13.4. Any time when in the judgment of the pilot or safety observer the safety of the pilot or spectators is compromised.

1.14. Transition During Performance. Each demonstration should be planned to fly a complete high, low, or flat show profile. However, conditions such as a changing ceiling in the show area may require the demonstration pilot to transition between show profiles at certain transition points. Determine frequency of transition between profiles via MAJCOM supplement to this directive.

1.15. Altimeter Procedures. It is essential that each demonstration pilot be able to quickly and accurately assess actual altitude above the ground during any maneuver in the demonstration. To avoid the mental exercise required to subtract an odd-numbered field elevation from the MSL altimeter reading to get above ground altitude, use one of the two procedures described below to "zero the altimeters" Altimeter Field Elevation (QFE). Use these procedures for all practice and actual demonstrations whether flown from takeoff at the show site or takeoff from a deployed location.

1.15.1. **Zero Altimeter Method.** Dial aircraft altimeter until indicator reads "0". Use this method if possible.

1.15.2. **Nearest 1,000 Feet Method** . If it is not possible to zero the altimeter, dial the altimeter to the current altimeter setting for the field, then round up or down to the most appropriate 1,000 feet AGL corrected field elevation (500, round down; 501, round up).

1.16. Communication Procedures. The demonstration pilot and safety observer will operate on a discrete frequency during all practice and official demonstrations. **(T-2)**. This is to minimize third-party radio chatter and stepped on required radio calls during the demonstration. The safety observer will be the only person in direct contact with the demo pilot. **(T-2)**. As such, all other parties coordinate through the safety observer for any information needed regarding the demo pilot or the demonstration. To ensure communications with the appropriate controlling agency (tower or air boss), the safety observer will monitor the appropriate control frequency. **(T-2)**. If the safety observer is engaged in a protracted conversation with the controlling agency that prevents the safety observer from devoting 100% attention to the primary duty of visually and aurally monitoring the demonstration, the safety observer will terminate the demonstration. **(T-2).** Once the situation has been resolved and the safety observer can once again give the demonstration 100% attention, the demonstration may continue.

1.17. Use of Teams for Static Display. The demonstration pilot and narrator/ground safety observer should normally arrive in two aircraft with one to be used as a spare for the demonstration. Do not use the spare aircraft for static display since it negates the purpose of a spare aircraft for the demonstration.

1.18. Disbursement of Demonstration Team Funds. Per MAJCOM supplement.

1.19. Shortened/Modified Demonstrations. On occasion, certain air or trade shows may require that a demonstration pilot fly a shortened or modified show, due to the time constraints applicable to the show. MAJCOMs should consider the level of importance of participating in the show, the anticipated recruiting value, and the complexity involved in shortening a demonstration profile to determine the cost/benefit of attending the show. Further consideration should be given to demo pilot proficiency and experience level. A profile may be **shortened** by removing, or knocking-off the last few maneuvers. A profile may be **modified** by removing maneuvers throughout the profile, but maintaining the sequential flow of the remaining maneuvers. In no case will a demo pilot fly a shortened or modified profile when the request is made upon arrival at the show site. **(T-2)**. A minimum of four weeks' notice is needed from show point of contacts (POCs) for a shortened or

modified profile to be considered, and the show POC then notifies the team of the allotted performance time. The demo pilot then shortens or modifies the profile to fit in the allotted time by removing certain maneuvers, but the maneuvers must flow in the same sequence as the full profile. **(T-2)**. Demo pilots will submit a modified profile through command aerial events to MAJCOM/A3 for approval not later than (NLT) three weeks prior to the show. **(T-2)**. (OCONUS MAJCOM/A3s (PACAF) may delegate the approval authority for modified profiles no lower than WG/CC. Include delegation of approval authority in the MAJCOM supplement to AFI 11-246, Vol. 1.) Demo pilots are required to practice modified profiles at least once within ten working days prior to the show. **(T-2)**. OG/CC or higher will monitor the practice to note safety considerations and listen to the narration. **(T-2)**.

Chapter 2

DEMONSTRATION TEAM PERSONNEL SELECTION AND TRAINING

2.1. General. MAJCOMs will provide team description and location via supplement. A standard team includes two aircraft, one demonstration pilot, a minimum of two narrators, two safety observers, and necessary support personnel. A dedicated ground safety observer is required to deploy with the team. Ground safety observers may not simultaneously perform narration duties. Team selection should consider factors affecting assignment stability such as vulnerability for schools or overseas assignment.

2.2. Demonstration Pilot Selection. New demonstration pilots are normally selected by Wing Commanders in August and enter training no later than September prior to the new pilot's first air show season. Demonstration pilot duty is normally a two-year assignment.

2.3. Narrator/Ground Safety Observer Selection.

2.3.1. The Wing Commander selects narrators. **(T-2).** To reduce the impact on flying operations by minimizing the number of pilots per TDY, consideration should be given to select non-rated officers or NCOs as the narrator. The narrator tour of duty is a minimum of one year.

2.3.2. Ground safety observers must be rated officers current and qualified in the MDS. **(T-2)**. Ground safety observers are selected by wing commanders during training season for upgrade training in preparation for the following air show season. Demo teams will be limited to a maximum of six ground safety observers to ensure sufficient currency and proficiency for each. **(T-2)**. The normal ground safety observer tour of duty is one year. New ground safety observers may be trained during mid-season for permanent change of station (PCS) or deployment reasons if necessary, but the maximum number remains six. Demo pilots will record all ground safety observer names in the demo team grade book. **(T-2)**.

2.4. Support Personnel Selection. Support personnel are selected by the wing commander. **(T-2)**. As new enlisted personnel are assigned to the demonstration teams, it is appropriate to request assignment deferments. However, since Air Force Personnel Center's (AFPC) support and approval of the deferments is directly linked to overseas assignment vulnerability, it is strongly recommended that prospective local candidates be verified by the MAJCOM Airman Assignments Branch before they are firmly hired. A cursory check with AFPC can prevent the WG/CC from hiring people for the team who are extremely vulnerable for PCS.

2.5. Training. Accomplish training according to the guidelines of this instruction and as supplemented.

2.5.1. The Wing commander may alter the training sequence and individual sorties, as necessary, to ensure proficiency and progress. Additional training sorties (TS) may be added as required.

2.5.2. Perform maneuvers and maneuver sequences as described in this AFI. New demonstration pilots will demonstrate proficiency in the high, low, and flat show profiles. **(T-2)**.

2.5.3. New demonstration pilots will receive flight training from a currently qualified demonstration pilot. **(T-2)**. Each new demonstration pilot will receive extensive ground training from their predecessor or a currently qualified demonstration pilot. **(T-2)**.

2.5.4. New demonstration pilots will receive training in aircraft flight control limitations and performance characteristics affecting the demonstration profile. **(T-2)**. New demonstration pilots will receive training on common conditions leading to aborts for each maneuver. **(T-2)**. F-16 demonstration pilots will receive training on the flight control system (FLCS), FLCS limiters and their effect on level flight, and sustaining inverted level flight at <165 knots calibrated airspeed (KCAS). **(T-2)**.

2.5.5. New demonstration pilots and ground safety observers will receive academic and flight training for abort procedures. **(T-2)**. Furthermore, the established abort procedures are standardized by MDS. Demonstration pilots will conduct a minimum of three abort procedures during upgrade sorties TS-5 through TS-11. **(T-2)**.

2.5.6. New demonstration pilots who fly off-station demonstrations will attend a minimum of two air shows with the current demonstration pilot. **(T-2)**. If possible, have the new pilot fly with the current demonstration pilot in each air show practice demonstration (Not applicable (N/A) for A- 10 & F-22).

2.5.7. A-10 and F-22 will use a chase aircraft for TS-3 and TS-4. **(T-2)**. A chase aircraft may be used for missions TS-5 through TS-11, or the instructor may observe from the ground. The minimum altitude for chase aircraft is 1,500 feet AGL.

2.5.8. For F-15E & F-16 the currently qualified demonstration pilot monitoring the training program will observe the first solo training flight from the ground, and may act as the safety observer. **(T-2)**.

2.5.9. Demonstration pilots will accomplish all training in Visual Meteorological Conditions (VMC). Ensure each practice, except TS-3 and TS-4, is over a runway environment. Videotape all training flights below 2,000 feet AGL. **(T-2)**.

2.5.10. Thoroughly train demonstration team film crews. Training should emphasize equipment operation, sound techniques to capture demonstration narration, and techniques to capture the ground environment in the field of view during low altitude maneuvers.

2.5.11. Document training performance in an official grade book and ensure progress is monitored by the wing commander. All training flights will be reviewed by the senior leadership IAW **paragraph 1.4.5.9** **(T-2)**.

2.5.12. Final wing commander review, pre/re-certification of the demonstration crew and ground safety observer will be documented and forwarded by the wing commander IAW paragraph **1.4.5.3** **or** **1.4.5.4** **(T-2)**. First-year pilots who fly demonstrations off-station must accomplish at least one practice flight off home station prior to MAJCOM/CC certification. **(T-2)**.

2.5.13. Stage 1 / Stage 2 Altitude Step-down Process:

2.5.13.1. Definitions: Stage 1: All maneuvers are flown no lower than a target altitude of 500 feet AGL with a minimum altitude of 400 feet AGL. Stage 2: All maneuvers are flown no lower than the target and minimum altitudes described in this AFI.

2.5.13.2. Upgrading pilots who fly demonstrations off-station are required to practice at a minimum of three separate off-station sites at Stage 1 (higher) altitudes prior to the first official public demonstration. **(T-2)**. The intent of this requirement is for all upgrading pilots to gain experience at a minimum of three separate sites in a training environment before stepping down to Stage 2 (lower) altitudes off-station in an actual air show environment. This requirement only affects off-station practices. Ensure all home station practices adhere to the normal altitude step-down procedures set forth in the training syllabus. At overseas locations where this requirement is impractical, all practice demonstrations may be conducted at home station. However, every attempt should be made to satisfy the off-site training requirement before reverting to home field practices only to satisfy syllabus requirements.

2.5.13.2.1. These off-station practices require former demonstration pilot observation and/or supervisor observation (no less than OG/CD or WG/CC designee). **(T-2)**.

2.5.13.2.2. All ground video or HUD recordings and grade sheets for off-station practices require former demonstration pilot and OG/CC or WG/CC designee review. **(T-2)**.

2.5.13.2.3. NAF / MAJCOM/CC certifications may be used for partial fulfillment of this requirement.

2.5.13.3. In order to conduct off station demonstrations at stage 2 minimums, upgrading demo pilot must first accomplish and document IAW **paragraph 2.5.11** the three off-station practices at stage 1 minimums, and have home station certification at stage 2 minimums. **(T-2)**. Demonstration pilot will document this certification in the upgrading pilot's grade book. **(T-2)**.

2.5.14. Ground Safety Observer Training

2.5.14.1. During any capability demonstration, the ground safety observer is responsible to advise the demonstration pilot by radio of any observed or developing unsafe condition. This requires intimate knowledge of required maneuver radio calls, maneuver parameters, and the timing of maneuvers so that safety observer radio calls provide timely correction to an observed or developing deviation from procedure or direction prescribed in this publication. Safety observers will complete a closed-book parameters test for those maneuvers requiring parameter radio calls, corrected to 100 percent by a current demo pilot, prior to performing duties solo. **(T-2)**. Document this training in the demo team grade book.

2.5.14.2. To increase "air show situational awareness" and improve the mutual support with the demo pilot, ground safety observers require a working knowledge of the following subjects: air show airspace; the aerobatic box; show lines; crowd lines; applicable Federal Aviation Regulations (FAR) that require waiver; interaction with the air boss; and air show communication plans. These subjects should be reviewed by upgrading safety observers, and briefed by current demo pilots, using the Safety Observer academics provided by the

MAJCOM. Document this training in the demo team grade book prior to performing duties solo. In addition, it is recommended that at least one ground safety observer per base attend the Air Shows 101 course at International Council of Airshows (ICAS) each year. Ground safety observers are also familiar with all applicable procedures and parameters relevant to MDS in this publication.

2.5.14.3. Upgrading safety observers must complete a two-sortie checkout. **(T-2)**. For the first sortie, the upgrading safety observer will observe a certified ground safety observer during an official or practice high show demonstration. **(T-2)**. For the second sortie, the upgrading ground safety observer will execute the duties of the safety observer at an official or practice high show demonstration while under the observation of a certified safety observer. **(T-2)**. Demonstration pilots will document this training in the demo team grade book. **(T-2)**.

2.6. Training Syllabus.

Table 2.1. Training Syllabus.

Ground Training (GT)-1:
Standard Procedures
Fuel Requirements
Waivers
Aircraft Handling Characteristics
Safety Considerations
G-Awareness
Lessons Learned
Emergency and Abort Procedures
Team Management
Scheduling
All Ground Safety Observer academic topics
GT-2: Low Altitude Training (LOWAT) Academics.
LOWAT Environment
LOWAT Crosscheck
LOWAT and Air show Hazards
Handling Emergency and Abort Procedures
LOWAT effects on aircraft performance
Visual Illusions
Ground Simulator (GS)-1 Training
High and Low Show Profiles
Crosschecking parameters during Maneuver Description
Abort Procedures
Abort Mechanics

High-speed Dive Recoveries
Slow-speed Maneuvering
Recognition and Prevention of Out-of-Control Situations
Emergency Procedures
Training Sortie (TS)-1 (Back seat of a two-seat model; N/A for A-10 & F-22):
Standard ACC Demonstration Profile – High show
Minimum Run and Wet Runway Landing
TS-2 (Back seat of a two-seat model; N/A for A-10 & F-22)
Standard ACC Demonstration Profile – Low show
TS-3 (Front seat of a two-seat model; N/A for A-10 & F-22):
Standard ACC Demonstration Profile – High show
Accomplish above 5,000 feet AGL
Emergency and Maneuver Abort Procedures
TS-4 (Front seat of a two seat model; N/A for A-10 & F-22): Standard ACC Demonstration Profile – Low show
Accomplish above 5,000 feet AGL
Emergency and Maneuver Abort Procedures
TS-5 through TS-11 (Front seat of a two-seat model; N/A for A-10 & F-22):
Standard ACC Demonstration Profiles (upgrading demonstration pilots will demonstrate a safe level of proficiency on both high and low shows prior to solo – N/A for A-10 & F-22). **(T-2).**
Accomplished over a runway, initial minimum altitude is 2,000 feet AGL
Step down from 2,000 feet AGL determined by currently qualified demonstration pilot monitoring the training program
Minimum run and wet runway landing
TS-12 through TS-16 (Solo): A-10 & F-22 pilots will demonstrate a safe level of proficiency on both high and low shows. (T-2).
TS-17 (Solo): Wing/CC high show certification.

Chapter 3

A-10 DEMONSTRATION MANEUVERS

Section 3A—-General Information

3.1. General. Use maneuvers described in this chapter for training and for A-10 aerial demonstrations. The demonstration sequence is designed so each maneuver is normally performed in the same direction with respect to the crowd line. As a result, the show is always oriented the same way from the spectators' point of view. The only exception to this is when wind direction and velocity make it advantageous to change the direction of the gear down pass. In this case, the remaining maneuvers may be flown in the opposite direction, or repositions may be used to fly the remaining maneuvers in the appropriate direction. Abnormal Procedures are written for each maneuver. If the entry conditions are not met for any maneuver, a wings-level pass is flown and the pilot transitions to the next maneuver. Demonstration pilots transmit parameters prior to initiating the descending portion of vertical pull-throughs and Vertical Reposition maneuvers. These calls are made when the pilot reaches apex of the maneuver. The ground safety observer monitors the demonstration pilot altitude and airspeed radio calls and directs an abort when parameter limits are exceeded. Following all maneuvers and before clearing the show line to reposition for the next maneuver, the pilot ensures any descent has been stopped and the aircraft is in a climbing or level attitude with the flight path marker at or above the horizon.

3.2. Aircraft Configuration and Fuel Requirements. The demonstration pilot will **e**nsure aircraft configuration for all demonstrations is clean (no wing pylons or missiles except wingtip smoke winders) and internal fuel. Each demonstration uses approximately 1,000 pounds of fuel. **(T-2)**. Optimum performance is obtained when fuel load is 3,500 pounds; however, the demonstration can be safely accomplished with a higher fuel load as long as the wing tanks are empty. The minimum fuel to start the show is 2,500 pounds.

3.3. Airspeed and G Limits. Fly the A-10 demonstration at max power except when slowing to configure for the gear down pass or slowing to configure for the minimum run landing. The maximum Target G for this demonstration profile is 6.0 Gs. This does not preclude a momentary increase in G for safety considerations.

3.4. Show Line Restrictions. The majority of the A-10 demonstration is flown on the 1,000-foot show line. Maneuvers not conforming to FAA Order 8900.1, Volume 3, Chapter 6, require approval via the FAA AFS-800 Maneuver Package approval process. **(T-0).**

3.5. Airspace and Runway Requirements. Required airspace for the A-10 is 7,000 feet AGL vertically and normally a five-mile radius from show center horizontally. The minimum dimensions of the aerobatic box are 3,000 feet wide, 4,000 feet long, and 7,000 feet AGL (high show). If the FAA has waived a show line to closer than 1,500 feet, the aerobatic box may be less than 3,000 feet wide, provided there is at least 1,200 feet from either the primary or secondary show line. Minimum runway length is 5,000 feet x 75 feet. The demonstration pilot will ensure the runway, taxiway, and parking area are stressed for a 35,000-pound aircraft with single wheel type landing gear. **(T-2).**

3.6. Weather Requirements. Weather PARAMETER LIMITS for the high show profile are a ceiling of at least 5,000 feet AGL, 3 miles ground and 5 miles in-flight visibility with a discernible horizon. The low show profile ceiling is at least 3,500 feet AGL. The flat show profile ceiling is at least 1,500 feet AGL. The ceiling requirements for each maneuver are based on waived airspace (clear of clouds) and require adjustment if using Visual Flight Rules (VFR). Plan maneuvers to maintain VMC throughout the show sequence.

3.7. Demonstration Profiles.

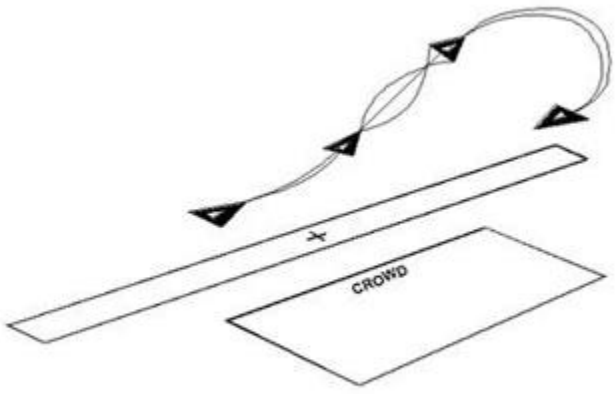
Table 3.1. Demonstration Profiles.

High Show
Takeoff
Flat Pass
Vertical 540
Split-S
Double Aileron Roll
Slow Roll
Cuban 8
1/2 Reverse Cuban Eight
Level 360
Gear Down Pass
Pop-Up Strafe Pass
Two Low Angle Strafe Passes
Jink Out
Four-Point Roll
Dedication Pass
Tactical Pitch-Up to Land
Low Show
Takeoff
Flat Pass
Double Aileron Roll
Slow Roll
Cuban 8
Level 360
Gear Down Pass
Pop-Up Strafe Pass

Two Low Angle Strafe Passes
Jink Out
Four-Point Roll
Dedication Pass
Tactical Pitch-Up to Land
Flat Show
Takeoff
Flat Pass
Double Aileron Roll
Slow Roll
Level 360
Gear Down Pass
Pop-Up Strafe Pass
Two Low Angle Strafe Passes
Four Point Roll
Dedication Pass
Tactical Pitch-Up to Land

3.8. Repositioning Turn.

Figure 3.1. A-10 Repositioning Turn.



Repositioning Turn
A-10

Table 3.2. A-10 Repositioning Turn Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed - Knots Calibrated Airspeed (KCAS)	Power Setting	G
Entry	300’	300	MAX	5 to 6
Exit	300’	N/A	N/A	N/A

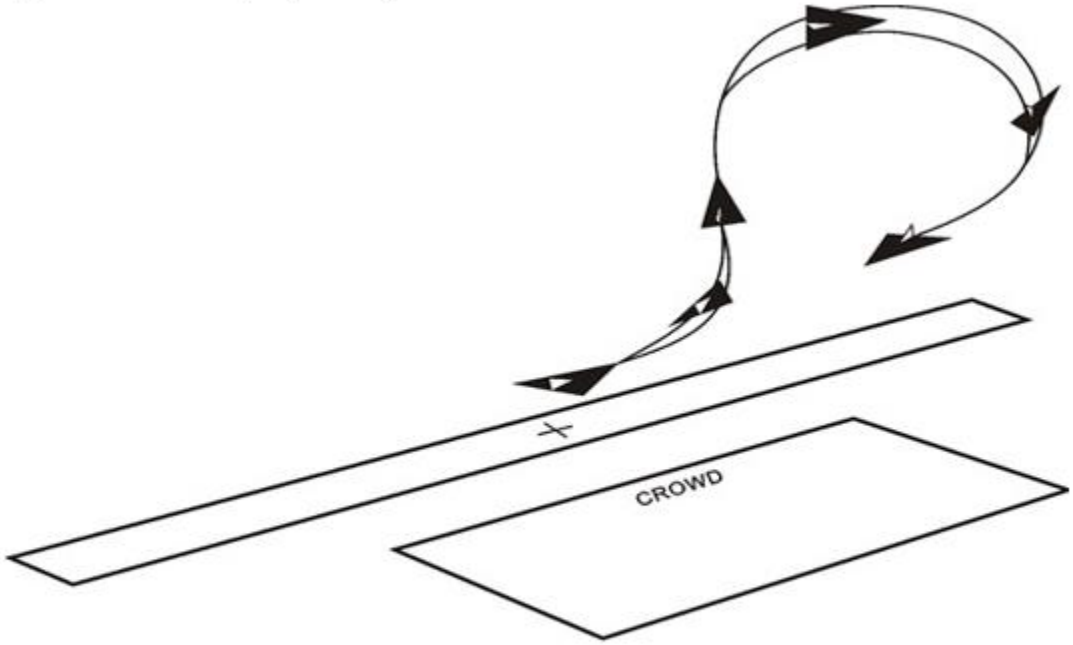
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	200’	120 / N/A	MAX	7.33
Exit **min**	200’	N/A / N/A	N/A	N/A

3.8.1. **Maneuver Description:** The Repositioning Turn uses both horizontal and vertical turning room to change direction at each end of the show line. The vertical plane is used to maintain necessary proximity to the demonstration area. Each turn may differ slightly in order to meet entry TARGET PARAMETERS for the next maneuver and attain the proper show line alignment. To begin the maneuver, turn 15 to 45 degrees away from the crowd (depending on environmental conditions), rollout, and pull to 45 degrees nose high, and then unload. At 1,000 feet AGL minimum, execute a 270-degree aileron roll opposite the show line. Visually acquire the show line and make a descending turn to meet the entry TARGET PARAMETERS for the next maneuver. Repositioning turns may not include added aileron rolls or other accenting maneuvers.

3.8.2. **Abnormal Procedures:** If at any time the minimum altitude, airspeed, or climb angles cannot be achieved or maintained, roll the aircraft to the nearest horizon and recover to wings-level flight.

3.9. High Speed Reposition Maneuver.

Figure 3.2. A-10 High Speed Reposition Maneuver.



High Speed Reposition Maneuver
A-10

Table 3.3. A-10 High Speed Reposition Maneuver Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	330	MAX	5 to 6
Exit	300’	400	MAX	1

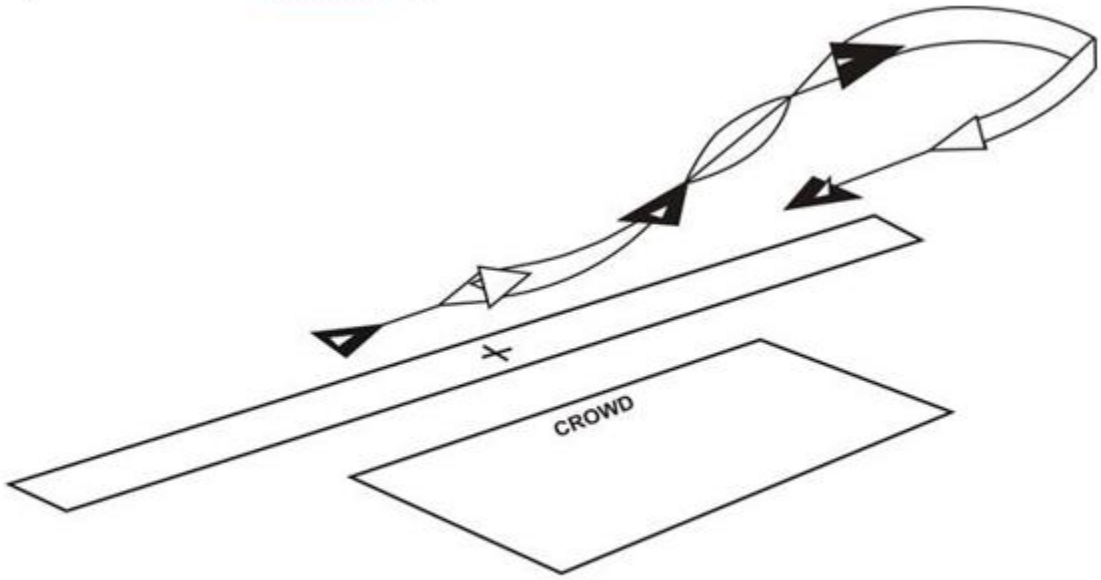
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	400’	290 / Aircraft Limit (AC LMT)	MAX	7.33
Exit **min**	200’	300 / AC LMT	MAX	7.33

3.9.1. **Maneuver Description:** Initiate a 75- to 90-degree bank turn away from the crowd to 45 degrees off the show line. (The maneuver may be flown behind the show line dependent upon the location of the local populace.) Once at the 45-degree turn point, initiate a 5.0 to 6.0-G pull to 45 degrees of climb (55 degrees maximum) and climb out 120 to 150 knots (120 knots minimum). At 3,500 feet AGL, initiate a 45-degree dive (55 degrees maximum) back to the appropriate show line for the next maneuver. Exit from the High Speed Reposition Maneuver by pulling at 1,200 feet AGL using 5.0 to 6.0 Gs to level off at the appropriate entry altitude for the next maneuver.

3.9.2. **Abnormal Procedures:** If at any time the minimum altitude, airspeed, or climb angles cannot be achieved or maintained, roll the aircraft to the nearest horizon and recover to wings-level flight.

3.10. Flat Wifferdill Reposition Maneuver. The Flat Wifferdill Maneuver turn is a combination horizontal and shallow vertical turn used to change direction at each end of the show line. The Flat Wifferdill Maneuver turn uses less altitude than a normal Repositioning Maneuver. It requires a larger cut and tends to be looser and flatter than a normal Repositioning Maneuver. The target G for this maneuver is 3 to 5 Gs. Each turn may differ slightly so that airspeed/altitude parameters for the next maneuver are established in the Flat Wifferdill. The entry "cut" turn for the Flat Wifferdill is made to ensure no show line or crowd line penetration.

Figure 3.3. A-10 Flat Wifferdill Reposition Maneuver.

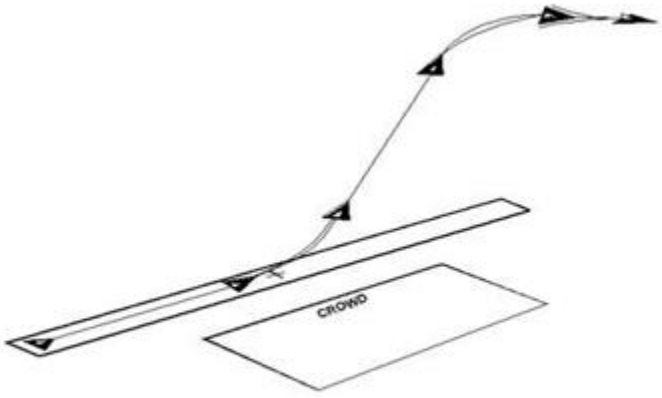


Flat Wifferdill Maneuver
A-10

Section 3B—-High Profile

3.11. Takeoff.

Figure 3.4. A-10 Takeoff.



Takeoff
A-10

Table 3.4. A-10 Takeoff Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	30’	200	MAX	3-4
Exit	N/A	N/A	N/A	N/A

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	20’	175 / N/A	MAX	7.33
Exit	N/A	N/A / N/A	N/A	N/A

3.11.1. **Maneuver Description:** Accomplish a normal takeoff with 7-degree flaps. The rotation airspeed is 110 knots and should be accomplished using a smooth, continuous pull to obtain the normal takeoff attitude. Raise the gear with a positive rate of climb and retract the flaps once the gear is up and the gear horn is out. After gear and flap retraction, level off at 30 feet AGL and accelerate to a minimum of 175 knots. At show center or the end of the runway, with a minimum of 175 knots, pull up 30 to 45 degrees nose high using 3.0 to 4.0 Gs or the steady stall warning tone. Turn 15 to 45 degrees away from the crowd and continue climb out.

3.11.2. **Abnormal Procedures:** Use caution when taking off from short runways, runways at high-density altitudes, or wet runways. Takeoff and landing data (TOLD) is critical and requires careful computation at each show site. Do not fly if refusal speed is less than continuation speed. During the climb out, if the aircraft stalls or the airspeed falls below 110 knots (whichever occurs first), unload and accelerate to break the stall and/or increase airspeed to a minimum of 110 knots. Climb out can then be continued.

3.12. Flat Pass.

Figure 3.5. A-10 Flat Pass.

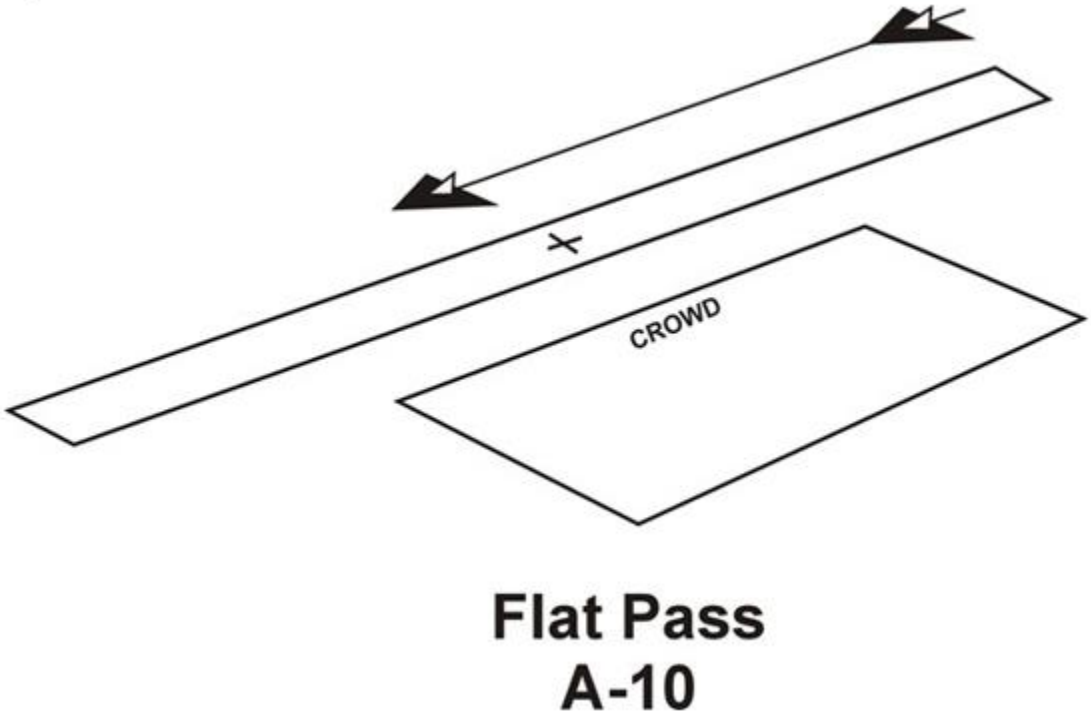


Table 3.5. A-10 Flat Pass Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	300’	325	MAX	5-6
Exit	300’	325	MAX	1

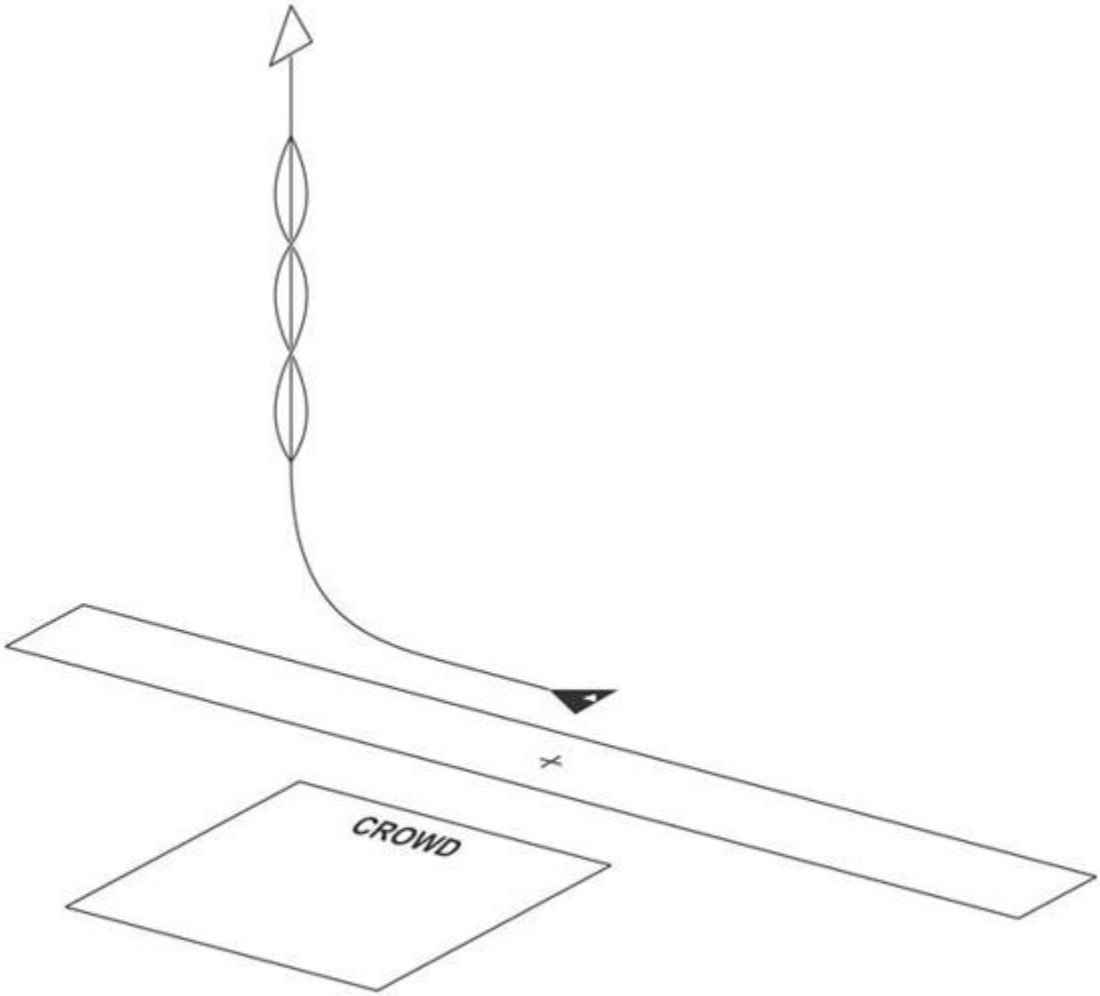
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	200’	200 / AC LMT	MAX	N/A
Exit **min**	200’	200 / AC LMT	MAX	N/A

3.12.1. **Maneuver Description:** The Flat Pass is a maneuver used alone or in combination with a Wifferdill/Reposition for the purposes of displaying the aircraft or orienting the subsequent demonstration maneuver in the approved direction relative to the crowd line. It may be flown in either direction at any time during the demonstration sequence if required. It should be flown wings-level down the 500-foot show line at 300 feet AGL.

3.12.2. **Abnormal Procedures:** If any problems are encountered, the demo pilot should begin an immediate climbing turn away from the crowd.

3.13. Vertical 540.

Figure 3.6. A-10 Vertical 540.



Vertical 540
A-10

Table 3.6. A-10 Vertical 540 Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	≥ 500’	325	MAX	1
Exit	≥ 5,000’	140	MAX	1

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	300 / N/A	MAX	N/A
Exit **min**	3,500’	110 / N/A	MAX	N/A

3.13.1. **Maneuver Description:** After completion of the Flat Pass and on the 1,000-foot show line, pull up to 90 degrees nose-high using 5.0 to 6.0 Gs, unload, and execute a 540-degree roll. Once the roll is complete, pull the aircraft gently over onto its back and roll upright at no less than 110 knots. Drive straight ahead and attain target entry parameters for the next maneuver.

3.13.2. **Abnormal Procedures:** Vary the angle of climb for wind, weather, and aerobatic-box considerations. If at any time during the maneuver it appears the maneuver is not attaining the prescribed altitude or airspeed minimums over the top, abort the maneuver by performing a nose-high recovery IAW tech order procedure.

3.14. Split-S.

Figure 3.7. A-10 Split-S.

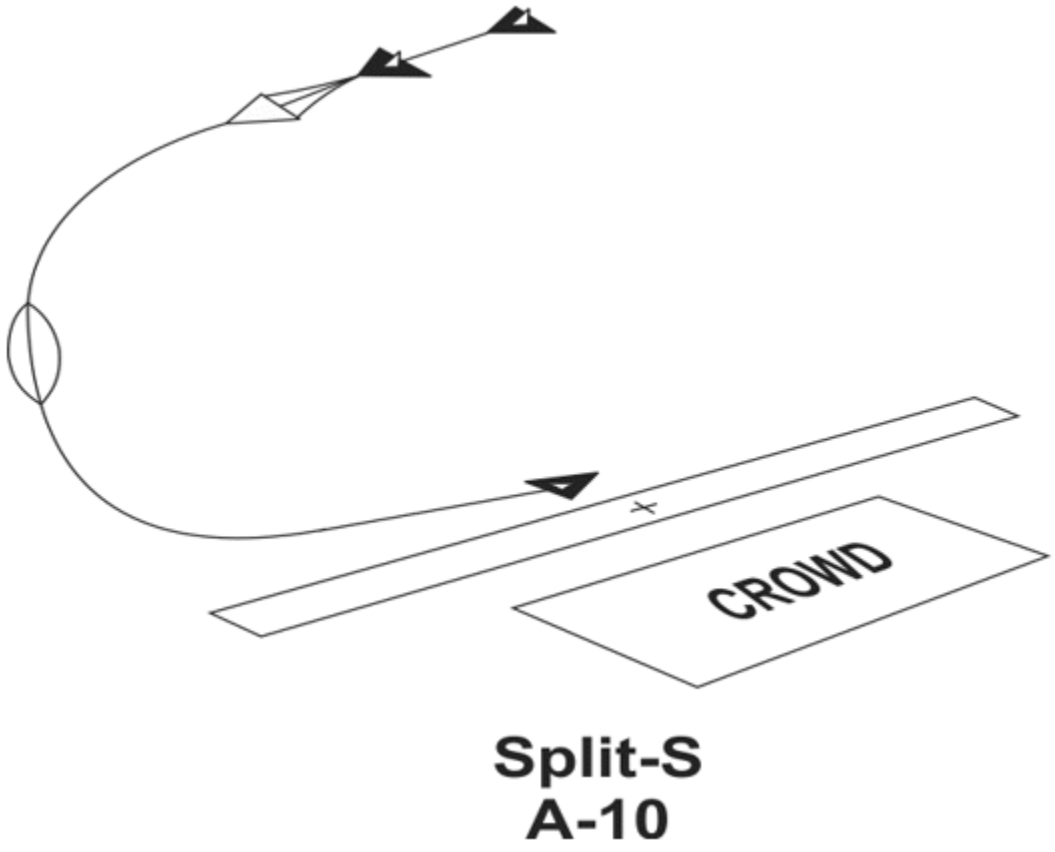


Table 3.7. A-10 Split-S Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	≥5,500’	180	MAX	1
90 deg nose low	≥ 3,000’	250		
Exit	≥ 500’	A/R	MAX	1
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	4,500’	120 / 250	MAX	N/A
90 deg nose low	2,500’	N/A / 375		
Exit **min**	400’	N/A / N/A	As Required A/R	N/A

3.14.1. Maneuver Description: (High Show only) On the 1,000-foot show line, after reaching the planned entry parameters of 5,500 feet AGL, perform an unloaded roll to inverted and perform an aggressive 90-degree pull to vertical. At 90 degrees nose-low execute a maximum rate unloaded 360-degree roll to be complete by 3,000 feet AGL. Continue an aggressive pull to no greater than 45 degrees nose-low. Once recovery above the minimum altitude for the follow-on maneuver is assured, vary the G-loading and dive angle as necessary to meet the entry parameters for the next maneuver. As a technique, passing approximately 1,200 feet AGL begin a 5 to 6-G pull to level off at 500 feet AGL.

3.14.2. **Abnormal Procedures:** If the entry parameters are not met, the pilot transitions to a wings-level flat pass or performs a slice-back as appropriate. If 5,500 feet AGL is not met, do not attempt the 360-degree roll on the down line and perform a traditional Split-S. Do not attempt to pull down from the inverted apex below 4,500 feet AGL or with more than 250 KIAS. If at any time, before reaching the 45 degrees nose-low position, the aircraft exceeds 375 knots, reduce the throttles and open the speed brakes to slow the aircraft to approximately 350 knots. If any other altitude, airspeed, or dive angle restrictions cannot be met, immediately execute a nose-low recovery by reducing the throttles to idle, opening the speed brakes, and rolling the aircraft upright to the nearest horizon.

3.15. Double Aileron Roll.

Figure 3.8. A-10 Double Aileron Roll.

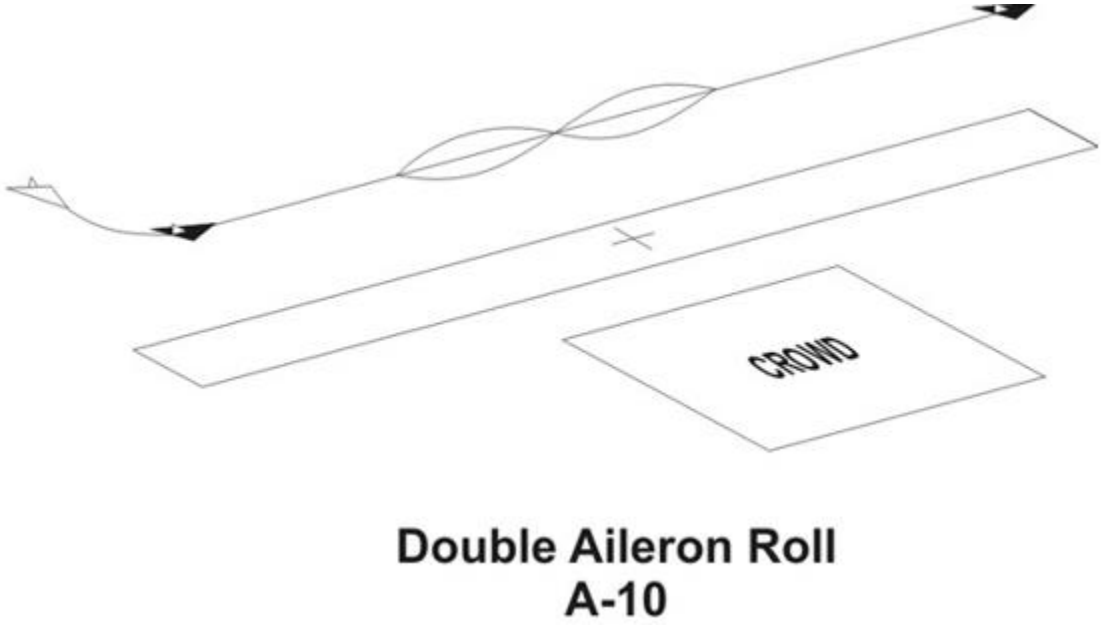


Table 3.8. A-10 Double Aileron Roll Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	325	MAX	2-3
Exit	500’	325	MAX	1

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	280 / N/A	MAX	N/A
Exit **min**	400’	270 / N/A	MAX	N/A

3.15.1. **Maneuver Description:** Enter the double aileron roll from wings-level flight at 500 feet AGL on the 1,000-foot show line. At 3,000 feet prior to show center, initiate a smooth 5 to 9-degree climb. As show center approaches the mid-point of the corner panel, unload the aircraft to 0 G and execute two 360-degree aileron rolls in either direction.

3.15.2. **Abnormal Procedures:** Abort the maneuver if at any time the nose falls more than 8 degrees below the horizon or the nose drops below the horizon prior to the beginning of the second roll. Aborting the maneuver is accomplished by rolling towards the nearest horizon to wings-level and climbing to ensure recovery at or above minimum altitude is achieved. Excessive nose drop is most likely to occur during the second half of the roll due to insufficient negative stick pressure, and a decrease in airspeed resulting in less control surface effectiveness.

3.16. Slow Roll.

Figure 3.9. A-10 Slow Roll.

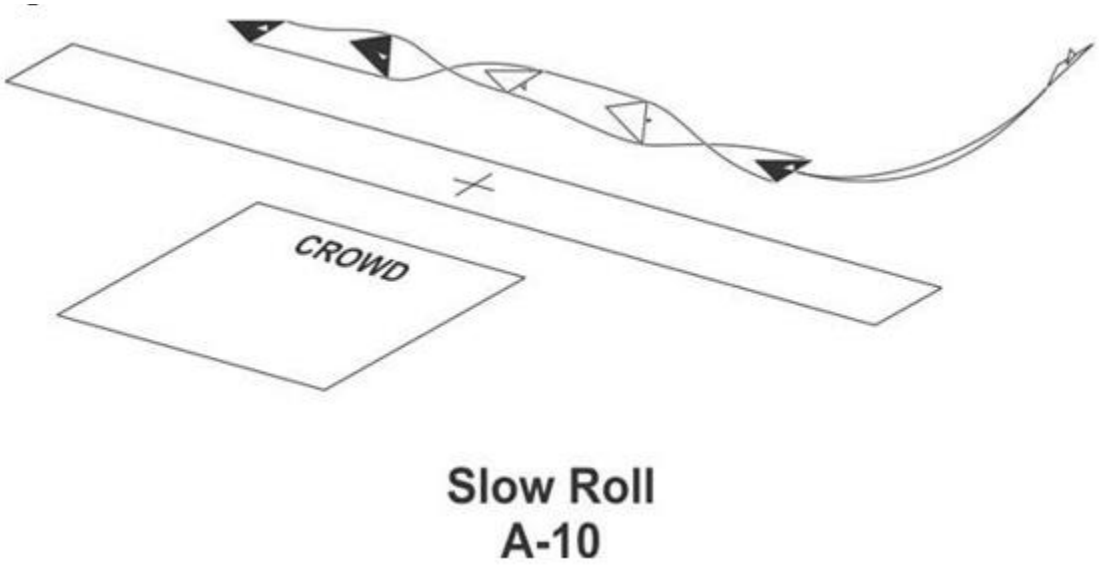


Table 3.9. A-10 Slow Roll Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	325	MAX	+1 to -1
Exit	500’	325	MAX	1

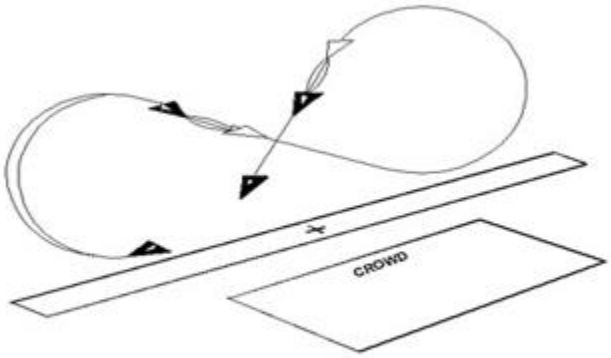
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	280 / N/A	MAX	N/A
Exit **min**	400’	270 / N/A	MAX	N/A

3.16.1. **Maneuver Description:** Position the aircraft on the 1,000-foot show line at 500 feet AGL and 325 knots using a reposition maneuver. Approximately 2,000 feet prior to show center, initiate an 8 to10-degree nose-high climb and begin an 8-second coordinated roll to the left. Top rudder should be applied approaching 90 degrees, and then slowly fed out as forward stick pressure is applied to reach -1 G inverted flight at the 180-degree point. Left rudder is slowly fed in through the 270-degree point and slowly fed out to reach upright 1 G flight at 500 feet AGL. Dive angle during the exit should not exceed 8 degrees.

3.16.2. **Abnormal Procedures:** Abort the maneuver if at any time the nose falls more than 8 degrees below the horizon or the nose drops below the horizon prior to the inverted point. Aborting the maneuver is accomplished by rolling towards the nearest horizon to wings-level and climbing to ensure recovery at or above minimum altitude is achieved. Excessive nose drop is most likely to occur during the second half of the roll due to insufficient negative stick pressure, and a decrease in airspeed resulting in less control surface effectiveness.

3.17. Cuban 8.

Figure 3.10. A-10 Cuban 8.



Cuban Eight
A-10

Table 3.10. A-10 Cuban 8 Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	325	MAX	6
APEX	≥ 3,500’	180	MAX	2-4
Exit	500’	325	MAX	6

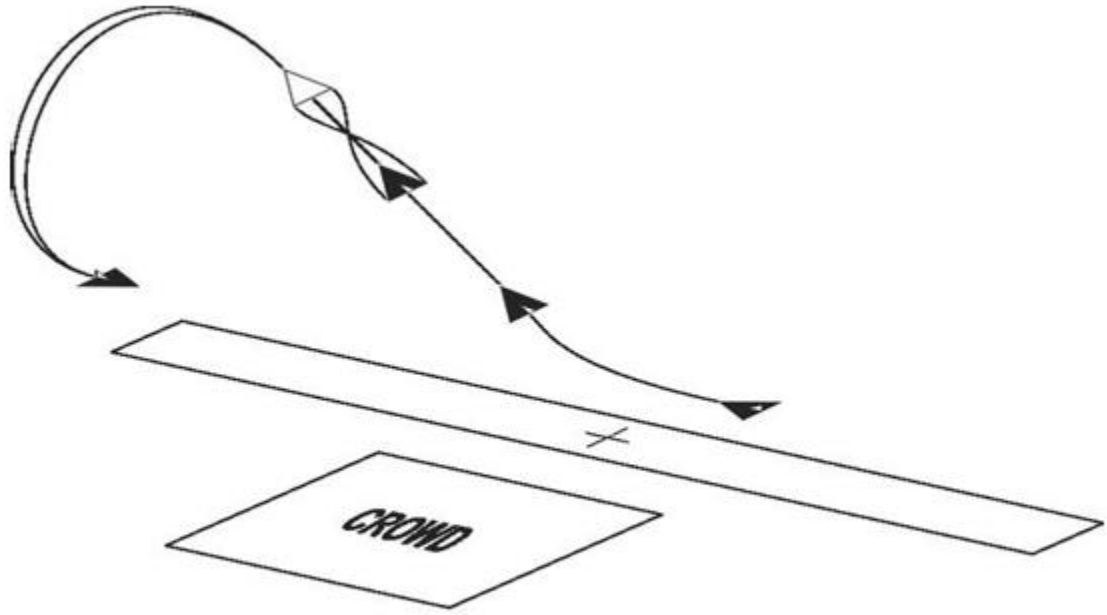
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	**min** 400’	270 / AC LMT	MAX	7.33
APEX	**min** 3,000’	120 / AC LMT	MAX	N/A
Exit	**min** 400’	275 / AC LMT	MAX	7.33

3.17.1. **Maneuver Description:** On the 1,000-foot show line, with wings level and 500 feet AGL begin a smooth 6.0-G pull not to exceed the steady stall warning tone. Minimum apex altitude is 3,000 feet AGL with a minimum of 120 knots. Continue the pull until the aircraft is 45 degrees nose-low inverted (55 degrees maximum). Due to winds, it may be necessary to use more or less than 45 degrees nose-low in order to maintain show center orientation. The typical range is between 30 to 55 degrees nose-low. Do not exceed 55 degrees nose-low. At or above 3,000 feet AGL execute a 2-point hesitation roll on the 45-degree down line. Roll wings-level from the 90-degree hesitation point at or above 2,000 feet AGL. The 90-degree hesitation point requires top rudder to maintain the 45-degree down line and zero G to maintain the show line (G may be varied to adjust to the show line). As a technique, passing approximately 1,200 feet AGL, begin a 5 to 6.0-G pull to level off at 500 feet AGL. Normal apex altitude is 3,500 to 5,000 feet AGL depending upon environmental conditions. The second half is completed in the opposite direction.

3.17.2. **Abnormal Procedures:** If at any time during the maneuver it appears you may not attain the prescribed altitude or airspeed over the top, abort the maneuver by performing an unloaded roll to a wings-level position. Furthermore, if more than 45 degrees nose-low inverted is necessary due to winds, add 100 feet for every degree steep to roll-out and pull-out altitudes. If more than 55 degrees nose-low, roll out immediately. If unable to reach 45 degrees nose-low at or above 3,000 feet AGL on either half of the Cuban 8, execute a maximum rate 180-degree roll to wings-level at 2,500 feet AGL and execute recovery as described above.

3.18. ½ Reverse Cuban 8.

Figure 3.11. A-10 ½ Reverse Cuban 8.



½ Reverse Cuban Eight
A-10

Table 3.11. A-10 ½ Reverse Cuban 8 Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	≥ 500'	325	MAX	1
Apex	> 5,000'	180		
90 deg nose low	> 3,000'	250		
Exit	≥ 500'	A/R	MAX	1

PARAMETER		LIMITS			
Altitude AGL			Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	**min**	400'	300	MAX	N/A
Apex	**min**	4,500'	120 / 250		
90 deg nose low	**min**	2,500'	N/A / 375		
Exit	**min**	400'	N/A / N/A	A/R	N/A

3.18.1. **Maneuver Description:** (High Show Only) On the 1,000-foot show line, with wings level and 500 feet AGL or greater begin a smooth wings-level 6.0-G pull (not to exceed the steady stall warning tone) to a 40 to 70-degree nose-high attitude. At a minimum of 3,000 feet AGL, perform an unloaded 180-degree aileron roll to achieve an inverted climbing attitude. Initiate a smooth pull to the horizon to achieve a wings-level inverted position at 5,000 feet AGL. Continue the pull through the vertical, using 2.0-4.0 Gs, to 135 degrees of turn (45 degrees nose-low). Once recovery above the minimum altitude for the follow-on maneuver is assured, vary the G-loading and dive angle as necessary to meet the entry parameters for the next maneuver. As a technique, passing approximately 1,200 feet AGL begin a 5 to 6-G pull to level off at 500 feet AGL. The ½ Reverse Cuban 8 may be flown as a vertical reposition maneuver to change direction at either end of the show line.

3.18.2. **Abnormal Procedures:** If the entry parameters are not met, the pilot transitions to a wings-level flat pass or performs a slice-back as appropriate. Do not attempt to pull down from the inverted apex below 4,500 feet AGL or with more than 250 KIAS. If at any time, before reaching the 45 degrees nose-low position, the aircraft exceeds 375 knots, reduce the throttles and open the speed brakes to slow the aircraft to approximately 350 knots. If any other altitude, airspeed, or dive angle restrictions cannot be met, immediately execute a nose-low recovery by reducing the throttles to idle, opening the speed brakes, and rolling the aircraft upright to the nearest horizon.

3.19. Level 360.

Figure 3.12. A-10 Level 360.

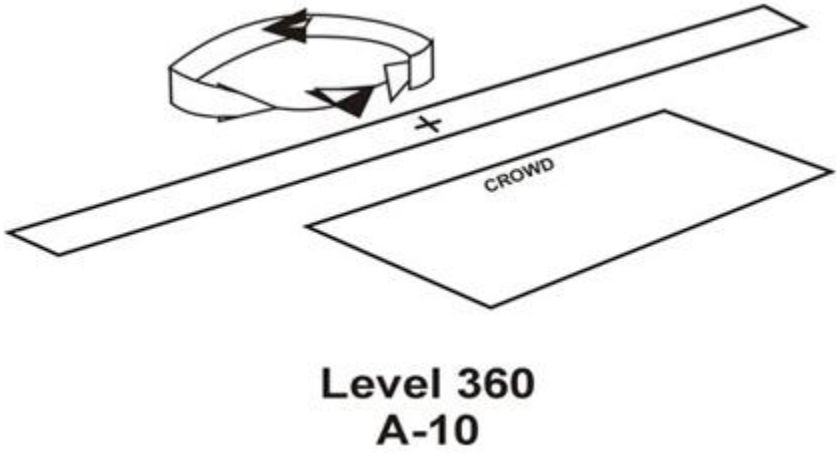


Table 3.12. A-10 Level 360 Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	325	MAX	6
Exit	500’	250	MAX	6

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	300 / N/A	MAX	7.33
Exit **min**	400’	240 / N/A	MAX	7.33

3.19.1. **Maneuver Description:** Position the aircraft on the 1,000-foot show line at 500 feet AGL and 325 knots. At show center, turn away from the crowd using approximately 85 degrees of bank. Begin the turn with a smooth G-onset-rate to maintain 6.0 Gs or the steady stall warning horn whichever occurs first. G-loading and airspeed bleed-off rate vary with density altitude. Maintain a minimum of 240 knots. The first 180 degrees of turn should be accomplished with a 1 ¾-degree nose-up attitude and the last 180 should be accomplished with a 1 ¾-degree nose-down attitude to make the turn appear level to the crowd. Vary the bank angle and pitch to arrive at level flight at the completion of 360 degrees of turn and to ensure

the maneuver is finished above the entry altitude. Ensure surface winds are taken into consideration in order to center this maneuver and to avoid overshooting the show line. Continue the turn past 360 degrees as required (usually 30 to 45 additional degrees of turn depending on winds) in order to transition to the reposition maneuver used to set up for the Gear Down pass.

3.19.2. **Abnormal Procedures:** If the minimum entry parameters are not met, the pilot transitions to a wings-level flat pass. If during any portion of the maneuver it becomes apparent the aircraft is descending below 400 feet AGL or airspeed decays below 240 knots, abort the maneuver by rolling wings-level and climbing to 500 feet AGL. If necessary, adjust G as required (no lower than 240 knots) to avoid overshooting the show line.

3.20. Gear Down Pass.

Figure 3.13. A-10 Gear Down Pass.

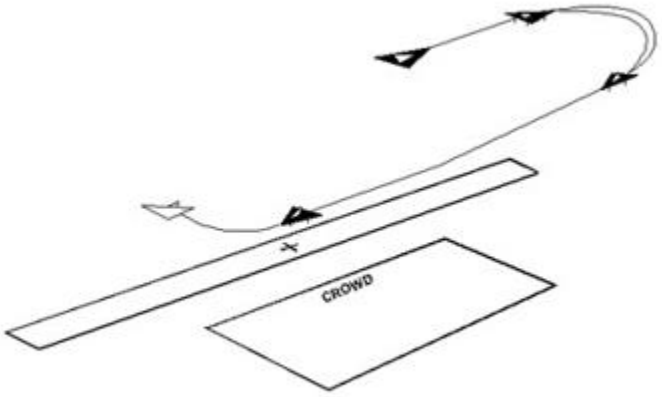


Table 3.13. A-10 Gear Down Pass Parameters.

TARGET		PARAMETERS		
	Altitude AGL	Airspeed KCAS	Power Setting	G
Entry	300’	120	A/R	1
Exit	300’	120	A/R	1

PARAMETER		LIMITS		
	Altitude AGL	Airspeed KCAS	Power Setting	G
		MIN/MAX		
Entry	200’	110 / 200	A/R	N/A
Exit	200’	110 / 200	A/R	N/A

3.20.1. **Maneuver Description:** After completion of the Level 360, initiate a turn toward the 500-foot show line and begin slowing the aircraft below 200 knots with full speed brakes. Upon reaching the base position for the 500-foot show line and below 200 knots, configure the aircraft with gear, full flaps, and 40% speed brakes and begin a descent down to 300 feet AGL. Continue slowing the aircraft to 120 knots (110 knots minimum) while flying down the 500-foot show line. When passing the last of the crowd, select max power, close the speed brakes, raise the gear, and bring the flaps to seven degrees while maintaining between level flight and a slight climb. Passing 150 knots raise the flaps to zero degrees. While level to slightly climbing, turn away from the show line to set up for the Pop-Up Strafe Pass using 30 degrees of bank (45 degrees maximum).

3.20.2. **Abnormal Procedures:** If the minimum altitude or airspeed cannot be maintained, or the aircraft stalls, abort the maneuver by selecting max power, closing the speed brakes, and setting the flaps to MVR. If still sinking, consider engaging the fuel flows to override.

3.21. Pop-Up Strafe Pass.

Figure 3.14. A-10 Pop-Up Strafe Pass.

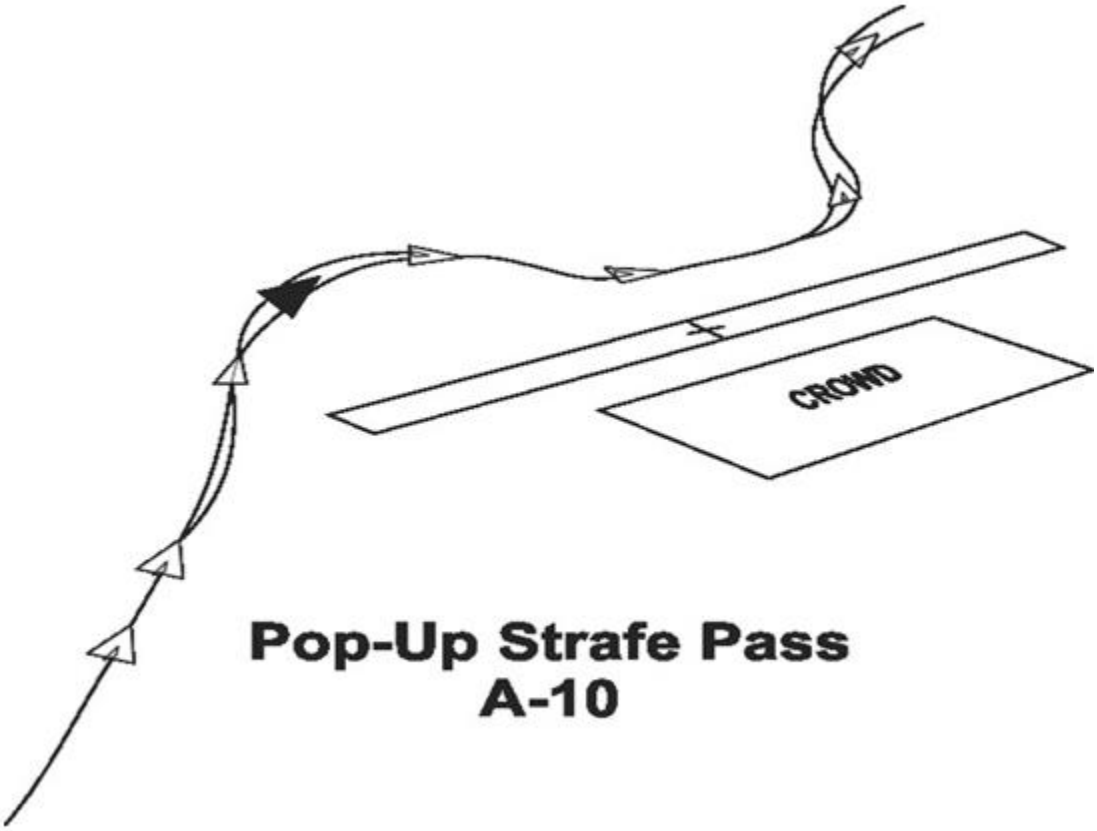


Table 3.14. A-10 Pop-Up Strafe Pass Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300’	325	MAX	1 (6 for Pull Up)
Apex (Flat) 1,500’ (1,000’)	225	MAX	2-4
Exit (Pyro) 200’ (400’)	290	MAX	6

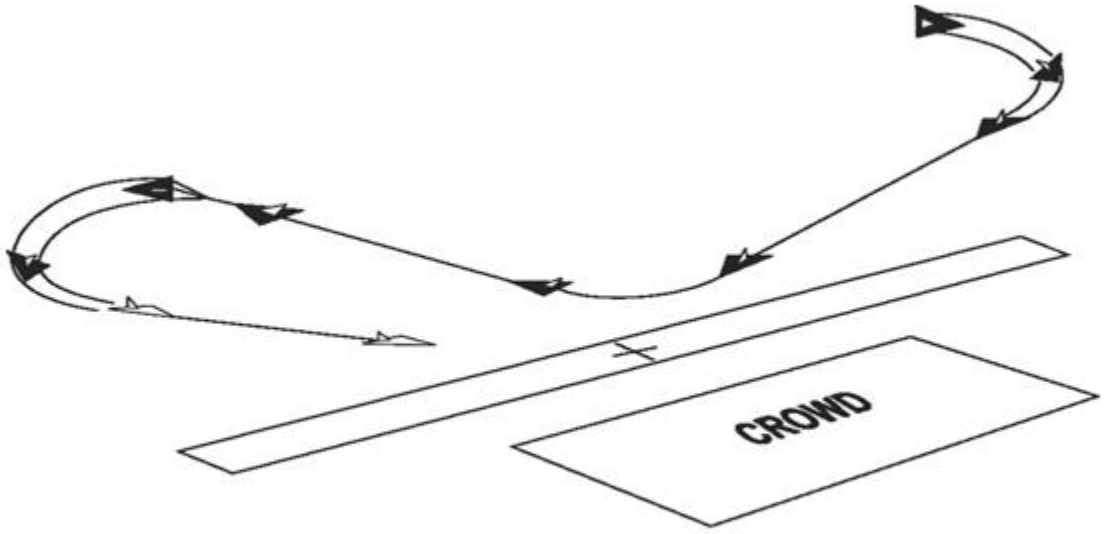
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry 200’	250 / AC LMT	MAX	7.33
Apex 1,000’	120 / AC LMT	MAX	N/A
Exit (Pyro) 100’ (300’)	250 / AC LMT	MAX	7.33

3.21.1. **Maneuver Description:** After passing the show line corner marker, turn 30-60 degrees away from the aerobatic container in order to reposition to a pull-up point from behind the show line. As a technique, with show center coordinates as the active steer point, drive outbound, 45 degrees off the show line (wind dependent). At 2nm from show center, use a flat Wifferdill maneuver to head back toward the corner marker with the #2 needle 20 degrees off heading at 2nm inbound. Maintain that initial heading and use a 6-G pull-up to 45 degrees nose-high upon reaching 1.3nm. The show center target area should be visually acquired during the Wifferdill reposition. If unable, the above technique should place the aim point just behind the canopy bow and just above the canopy rail during the 45-degree pop. Align the aircraft to approach the preplanned strafe target/point from an appropriate angle. This angle normally ranges from 10 – 30 degrees off the 500-foot show line depending on the location of the crowd line and winds. Do not allow a vector towards the crowd! Ensure the aircraft vector, if extended to infinity, does not penetrate the crowd line. The dive angle is normally 10 – 30 (5 – 15 Flat) degrees nose-low depending on winds. The optimum dive angle is 25 (10 Flat) degrees. Do not exceed 30 (15 Flat) degrees. Recovery should be initiated at 650 feet AGL using a max performance pull in order to bottom out at or above 200 feet AGL. Be very careful not to over-G the aircraft during this pull. A minimum of 250 knots is required to make this corner. After recovering to level flight, accomplish a reposition maneuver to set up for the next strafe pass. Use the 500-foot show line at show center as a reference point for setting up each strafe pass. Do not cross the 500-foot show line. Depending on winds, this may require aiming 100 – 300 feet outside the 500-foot line away from the crowd.

3.21.2. **Abnormal Procedures:** If at any time the dive angle exceeds 30 (15 Flat) degrees, either abort the pass and fly through straight and level or shift the aim point longer and parallel to the show line until the dive angle is 30 (15 Flat) degrees or less. Check airspeed at 1,000 feet AGL. If it is not at least 230 knots, abort the pass and fly through straight and level.

3.22. Two Low Angle Strafe Passes.

Figure 3.15. A-10 Two Low Angle Strafe Passes.



Two Low Angle Strafe Passes
A-10

Table 3.15. A-10 Two Low Angle Strafe Passes Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry (Flat)	1,500’ (1,000’)	225	MAX	1
Exit (Pyro)	200’ (400’)	290	MAX	6

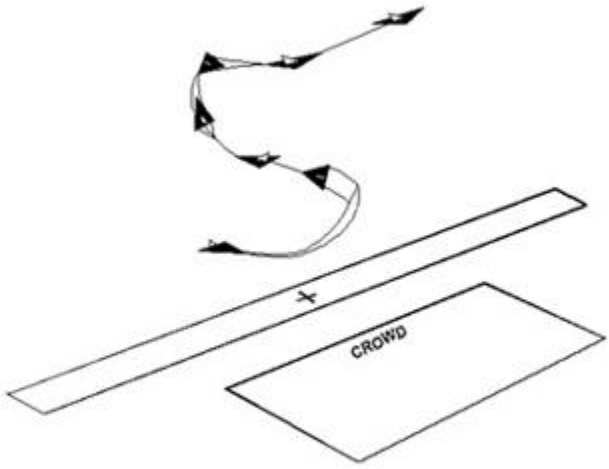
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	1,000’	200 / AC LMT	MAX	N/A
Exit (Pyro)	100’ (300’)	250 / AC LMT	MAX	7.33

3.22.1. **Maneuver Description:** After performing a reposition maneuver, align the aircraft to approach the preplanned strafe target/point from an appropriate angle. This angle normally ranges from 10 – 30 degrees off the 500-foot show line depending on the location of the crowd line and winds. Do not allow a vector towards the crowd! Ensure the aircraft vector, if extended to infinity, does not penetrate the crowd line. The dive angle is normally 10 – 30 (5 – 15 Flat) degrees nose-low depending on winds. The optimum dive angle is 25 (10 Flat) degrees. Do not exceed 30 (15 Flat) degrees. Recovery should be initiated at 650 feet AGL using a max performance pull in order to bottom out at or above 200 feet AGL. Be very careful not to over-G the aircraft during this pull. A minimum of 250 knots is required to make this corner. After recovering to level flight, accomplish a reposition maneuver to set up for the next strafe pass. Use the 500-foot show line at show center as a reference point for setting up each strafe pass. Do not cross the 500-foot show line. Depending on winds, this may require aiming 100 – 300 feet outside the 500-foot line away from the crowd. Following the last strafe pass, transition to the Jink-Out maneuver.

3.22.2. **Abnormal Procedures:** If at any time the dive angle exceeds 30 (15 Flat) degrees, either abort the pass and fly through straight and level or shift the aim point longer and parallel to the show line until the dive angle is 30 (15 Flat) degrees or less. Check airspeed at 1,000 feet AGL. If it is not at least 230 knots, abort the pass and fly through straight and level.

3.23. Jink-Out Maneuver.

Figure 3.16. A-10 Jink-Out.



Jink-Out
A-10

Table 3.16. A-10 Jink-Out Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	200’	290	MAX	5 to 6
Over the Top (OTT)	≥2,000’	200	MAX	4

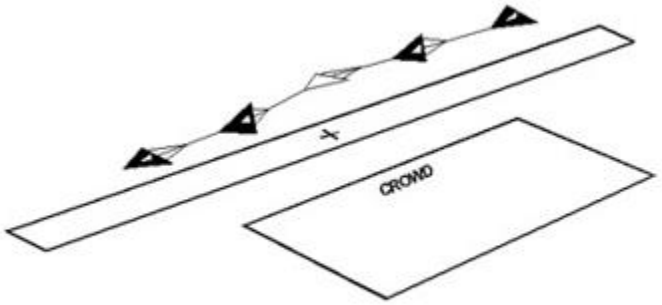
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	100’	200 / AC LMT	MAX	7.33
OTT	1,900’	120 / AC LMT	MAX	N/A

3.23.1. **Maneuver Description:** Upon completion of the last strafe pass and level at the 200-foot target altitude, a 75 to 90-degree bank 5.0 to 6.0-G turn is initiated away from the crowd to complete a 100 to 135-degree turn to be at or beyond the 1,000-foot show line. At the completion of this 100 to 135-degree turn, pull 3.0 to 5.0 Gs up to 40 degrees (55 degrees maximum). Once pitch degree is achieved, maintain climb to 2,000 feet AGL, then roll inverted and pull to 30 degrees nose-low (40 degrees maximum). Hold till 1,200 feet AGL, then roll to the nearest horizon and level-off at 500 feet AGL. The goal of this maneuver is to show the Jink-Out in front of show center and be at the 1,000-foot line. In order for this to occur, the 100 to 135 degrees of turn is accomplished at a target of 4.0 Gs.

3.23.2. **Abnormal Procedures:** If at any time during the maneuver any altitude or climb/dive angle cannot be maintained, abort by rolling wings-level and climbing away from the crowd line.

3.24. Four-Point Roll.

Figure 3.17. A-10 Four-Point Roll.



Four - Point Roll
A-10

Table 3.17. A-10 Four-Point Roll Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	325	MAX	+1 to -1
Exit	500’	325	MAX	1

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	280 / AC LMT	MAX	N/A
Exit **min**	400’	270 / AC LMT	MAX	N/A

3.24.1. **Maneuver Description:** Enter the Four-Point roll on the 1,000-foot show line at 500 feet AGL and 325 knots. 2,000 feet prior to show center, pull the nose 3 to 5 degrees nose-high, establish a climb, and unload. A cadence four-point roll to the left is then performed by pausing momentarily at the 90-degree, 180-degree, 270-degree, and 360-degree points. The pace of the cadence should ensure the aircraft is at the 180-degree point over show center. In order to facilitate sharp transitions between each 90 degrees of roll, momentarily fan the speed brakes and unload the aircraft to 0 Gs at the initiation of each roll. Be sure to close the speed brakes upon completion of the roll to avoid any unnecessary loss of airspeed. The 90-degree and 270-degree points require top rudder to maintain level flight and zero G to maintain the show line. The 180-degree point requires 1 negative G in order to maintain level flight. This is accomplished using the horizon, not the G-meter.

3.24.2. **Abnormal Procedures:** If at any time during the Four-Point Roll, the nose falls more than five degrees below the horizon, abort by rolling towards the nearest horizon and a wings-level position, then continue down the show line. This would most likely occur during the 3rd point (270 degrees) due to a decrease in airspeed, which results in less rudder effectiveness.

3.25. Dedication Pass. The intent of this maneuver is to pay tribute to our war fighters. It is to be flown before the Tactical Pitch-Up to Land during the High, Low, and Flat Show profiles.

Figure 3.18. A-10 Dedication Pass.

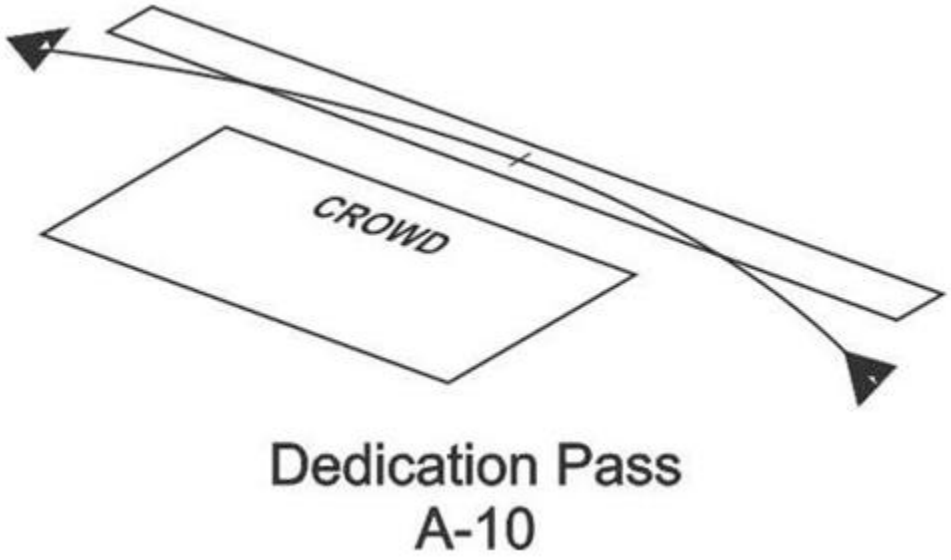


Table 3.18. A-10 Dedication Pass Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300’	325	MAX	1 to 3
Exit 300’	325	MAX	4 to 6

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 200’	250 / A/C Limits	MAX	7.33
Exit **min** 200’	250 / A/C Limits	IDLE to MAX	7.33

3.25.1. **Maneuver Description:** The maneuver is flown beyond the 500-foot line. After performing the Four-Point Roll or Strafe Passes, execute a reposition maneuver on the crowd side to arrive behind and offset the crowd. Fly the approach from behind the line, approximately 2 miles from show center, with an approximate 30-degree dive angle and a 45-degree cut (bank angle 75 to 90 degrees) to the show line, remaining beyond 500 feet from the crowd at all times. Upon reaching a point 500 feet from the corner of the crowd and 300 feet AGL, roll the aircraft into a level arcing pass using a bank of 75 to 90 degrees. Use top rudder if necessary to maintain altitude. Optimum profile of the aircraft is achieved at approximately 80 degrees of bank. Use caution not to over bank the aircraft and allow the aircraft to lose altitude while banking. In order to maintain 500 feet from the crowd at each corner, ensure the flight path at show center extends beyond 500 feet. Continue the arc beyond the opposite crowd corner, roll out of bank, and continue a maximum 45-degree climb to set up for the Tactical Pitch-Up to Landing.

3.25.2. **Abnormal Procedures:** Abort the maneuver if at any time the aircraft comes closer than 500 feet to the crowd line or its lateral limits, an excessive dive angle or sink rate develops, entry parameters are not met, or the aircraft descends below 200 feet AGL. Abort the maneuver by rolling the aircraft wings-level and flying away from the crowd.

3.26. Tactical Pitch-Up to Land.

Figure 3.19. A-10 Tactical Pitch-up to Land.

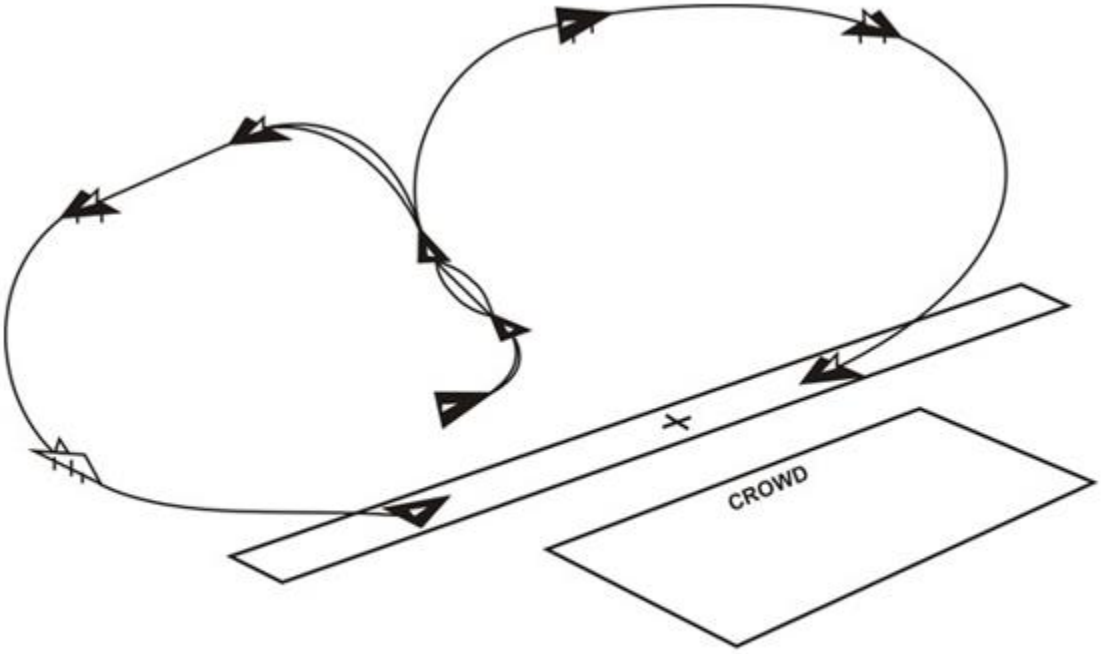


Table 3.19. A-10 Tactical Pitch-Up to Land Parameters.

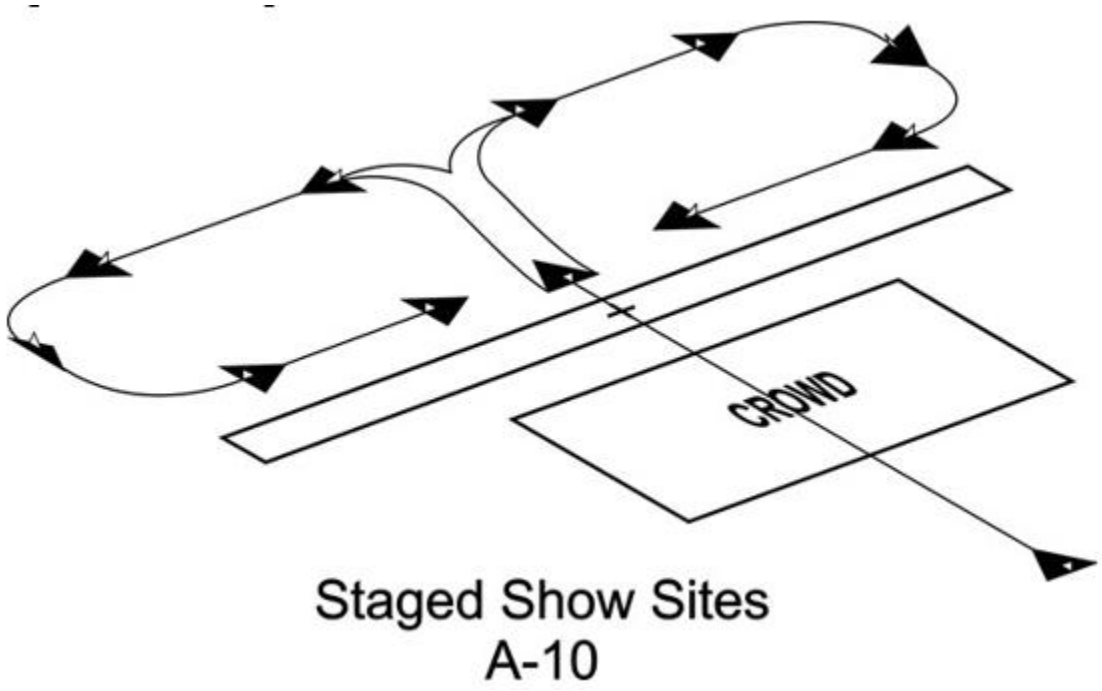
TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300'	325	MAX	1
Pitch-up 300'	350	MAX	5-6
Exit ≥1,000'	180	A/R	N/A
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry **min** 200'	200 / AC LMT	MAX	N/A
Pitch-up 200'	200 / N/A	MAX	7.33
Exit 1,000'	135 / N/A	A/R	N/A

3.26.1. **Maneuver Description:** Reposition the aircraft to level off at 300 feet AGL, on the 500-foot show line at 325 knots (200 knots minimum). Roll into 75 to 90 degrees of bank to turn 90 degrees away from the crowd line. Once pointed away from the crowd, pull 5.0 to 6.0 Gs to 40 degrees nose-high to achieve 1,000 feet AGL minimum. At 1,000 feet AGL minimum execute a non-acrobatic 270-degree roll and pull toward the perch point of the landing runway. Begin slowing the aircraft and configure for landing with gear, full flaps, and 40% speed brakes. Fly a normal base to final (no slower than 135 knots final turn). On final, continue slowing to 120 knots (110 minimum) to touchdown. After touchdown, perform a minimum run landing by lowering the nose, opening the speed brakes full, and initiating full anti-skid braking bringing the aircraft to a complete stop. Plan to do the minimum run landing to stop at show center. This is accomplished by planning your touchdown point 2,000 feet prior to show center. Do not land 2,000 feet prior to show center if, at the point of touchdown, there is less than 5,000 feet of usable runway remaining. In this case, plan your touchdown normally in the first 500 feet of runway. **Option**: If a Heritage Flight is to be performed immediately following completion of the demonstration, this maneuver may be deleted and a Flat Pass may be substituted. If not deleted, conduct a wings-level low approach or wings-level pass and proceed to rejoin with Heritage Flight aircraft using pre-briefed procedures.

3.26.2. **Abnormal Procedures:** If airspeeds, altitudes, or stall warning indications are experienced with the stick shaker, execute a Go-Around to recover the aircraft. Once the Go-Around is completed, the pilot then turns out to downwind (away from the crowd) and sets up for a normal straight-in to full stop.

3.27. Staged Show Sites. When demonstration aircraft takeoff from other than the air show site, ensure fuel planning includes the fuel required flying to and from the show site, and any holding time required. The pilot may enter the show from behind the crowd at a minimum of 1,000 ft AGL as depicted in **Figure 3.18**, or via a Flat Pass maneuver down the show line, and complete the show as described in this chapter. Upon completion of the Dedication Pass and clearing the crowd, turn out behind the crowd and return to the staging airport. Pilots should plan to fly a full demonstration, but may cut the profile short as required to maintain suitable enroute return fuel.

Figure 3.20. A-10 Staged Show Sites.



Chapter 4

F-15E DEMONSTRATION MANEUVERS

Section 4A—General Information

4.1. General. Use maneuvers described in this chapter for training and for F-15E aerial demonstrations. The demonstration sequence is designed so each maneuver is normally flown in the same direction with respect to the crowd line with the following exceptions: The Maximum Performance Takeoff Inverted, Flat Pass, the first Split-S, and the aileron roll preceding the tactical pitch to landing. As a result, the show is always oriented the same way from the spectators' point of view. Abnormal procedures are written for each maneuver. If the entry conditions are not met for any maneuver, a wings-level pass is flown and the pilot transitions to the next maneuver. Demonstration pilots transmit parameters prior to initiating the descending portion of vertical pull-throughs for the Split-S and Vertical Reposition Maneuvers. These calls are made when the pilot reaches apex of the maneuver. Ground safety observer and the WSO monitor demonstration pilot altitude and airspeed radio calls and direct an abort when parameter limits are exceeded. Following all maneuvers and before clearing the show line to reposition for the next maneuver, the pilot ensures any descent has been stopped and the aircraft is in a climbing or level attitude with the flight path marker at or above the horizon.

4.2. Aircraft Configuration and Fuel Requirements. The demonstration pilot will ensure aircraft configuration for all demonstrations is clean with Conformal Fuel Tanks (CFTs), no wing pylons on stations 2 and 8, no LANTIRN pods, no external fuel tanks, and no travel pods. **(T-2)**. Fuel considerations include: divert requirements, cable availability, temperature, and density altitude. Normal minimum fuel for takeoff is:

4.2.1. Staged Show: 16,500 pounds

4.2.2. High Show: 14,000 pounds

4.2.3. Low Show: 13,000 pounds

4.3. Airspeed and G Limits. Demonstration pilots may not exceed 0.94 Mach. The maximum target G for this demonstration is 7.5 Gs. This does not preclude a momentary increase in G for safety considerations.

4.4. Show line Restrictions. The majority of the F-15E demonstration is flown on the 1,500-foot (1,200 feet if approved by the FAA) show line. Maneuvers not conforming to FAA Order 8900.1, Volume 3, Chapter 6, require approval via the FAA AFS-800 Maneuver Package approval process. **(T-0)**.

4.5. Airspace and Runway Requirements. Required airspace for the F-15E is 15,000 feet AGL and normally a five-mile radius from show center horizontally. The minimum dimensions of the aerobatic box are 3,000 feet wide, 6,000 feet long, and 15,000 feet AGL (high show). If the FAA has waived a show line to closer than 1,500 feet, the aerobatic box may be less than 3,000 feet wide, provided there is at least 1,200 feet from either the primary or secondary show line. Minimum runway length is 7,000 feet x 75 feet. Ensure the runway, taxiway, and parking area are stressed for a 62,000-pound aircraft with single wheel type landing gear. If needed, on a case-by-case basis, the absolute minimum weight allowable is 52,000-pounds with no CFT gas.

4.6. Weather Requirements. Weather PARAMETER LIMITS for the high profile are a ceiling of at least 5,000 feet AGL, three miles ground and five miles in-flight visibility with a discernible horizon. The low show profile ceiling is at least 2,500 feet AGL. The flat show profile ceiling is at least 1,500 feet AGL. The ceiling requirements for each maneuver are based on waived airspace (clear of clouds) and require adjustment if using VFR rules. Plan maneuvers to maintain VMC throughout the show sequence.

4.7. High Density Altitude Demonstrations. For high-density altitude shows, PARAMETER LIMITS must be adjusted accordingly. You must add 500 feet to APEX altitudes for each 2,000 feet of altitude above 3,000 feet MSL and 10 knots to airspeeds. For example, if the show site altitude is 5,000 feet MSL, add 500 feet to the baseline target and 10 knots to the airspeed. If the show site altitude is 7,000 feet MSL, add 1,000 feet to the baseline target and 20 knots to the airspeed.

4.8. Demonstration Maneuver Profiles.

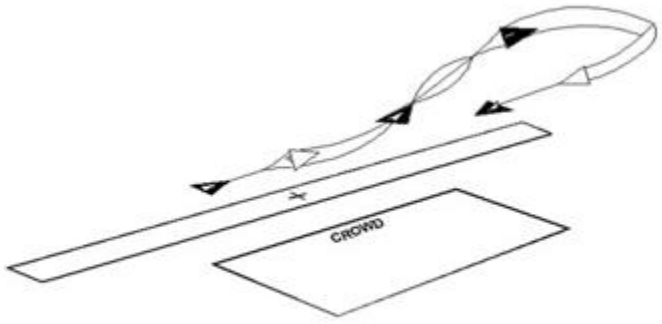
Table 4.1. Demonstration Maneuver Profiles.

High Show
Maximum Performance Takeoff Inverted
Flat Pass
High-G Turn
Triple Aileron Roll
Four-Point Roll
Cuban 8
Low Angle Strafe Pass
Low Altitude High Drag (LAHD) Bomb Pass
SAM Weave
Dedication Pass
Knife Edge Pass
Maximum Performance Climb with Rolls
Spiral Descent
Tactical Pitch-Up to Landing
Low Show
Maximum Performance Takeoff Inverted
Flat Pass
High-G Turn
Triple Aileron Roll

Four-Point Roll
Level 8
Low Angle Strafe Pass
LAHD Bomb Pass
SAM Weave
Dedication Pass
Knife Edge Pass
Tactical Pitch-Up to Landing
Flat Show
Maximum Performance Takeoff Inverted
Flat Pass
High-G Turn
Triple Aileron Roll
Four-Point Roll
Level 8
Dedication Pass
Knife Edge Pass
Tactical Pitch-Up to Landing

4.9. Reposition Maneuvers. Reposition maneuvers may be flown in either direction at any time during the demonstration sequence as required. Repositioning turns may not include added aileron rolls or other accenting maneuvers.

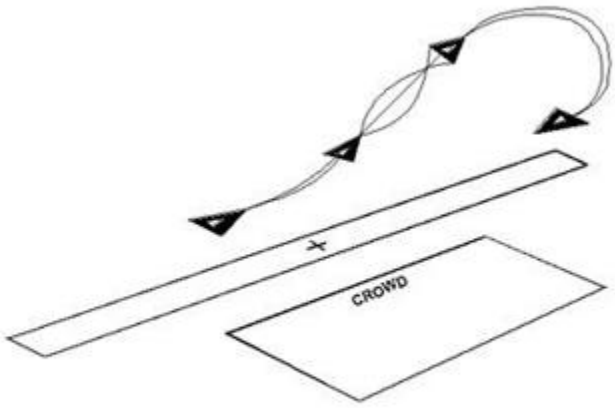
Figure 4.1. F-15E Flat Wifferdill Reposition Maneuver.



Flat Wifferdill Reposition Maneuver
F-15E

4.9.1. **Flat Wifferdill Reposition Maneuver.** The Flat Wifferdill Maneuver turn is a combination horizontal and shallow vertical turn used to change direction at each end of the show line when performing the low profile. The Flat Wifferdill Maneuver turn uses less altitude than a normal Wifferdill. It requires a larger cut and tends to be looser and flatter than a normal Wifferdill. 270-degree turn reversal may be made while the aircraft is climbing. The target G for this maneuver is 6.5 to 7.0 Gs. Each turn may differ slightly so that airspeed/altitude parameters for the next maneuver are established in the flat Wifferdill. The entry "cut" turn for the flat Wifferdill is typically made away from the crowd. However if local conditions dictate, the turn may be made toward the crowd side, provided the aircraft is beyond the corner marker (500 feet past the edge of the crowd) to ensure no show line or crowd line penetration.

Figure 4.2. F-15E Wifferdill Reposition Maneuver.



4.9.2. **Wifferdill Reposition Maneuver.** The Wifferdill turn is a combination horizontal and vertical turn used to change direction at each end of the show line. Use of the vertical plane maintains the necessary proximity to the demonstration team. Each turn may differ slightly so that airspeed/altitude parameters for the next maneuver are established in the Wifferdill. As the aircraft departs the show line, maneuver in the horizontal and vertical plane to reposition for the next maneuver. The target G for this maneuver is 6.5 to 7.0 Gs. A 270-degree turn reversal is made while still climbing. During the last half of the Wifferdill, while descending, the turn is adjusted to establish the proper show line entry. The entry "cut" turn for the Wifferdill is typically made away from the crowd. However if local conditions dictate, the turn may be made toward the crowd side, provided the aircraft is beyond the corner marker (500 feet past the edge of the crowd) to ensure no show line or crowd line penetration.

Figure 4.3. F-15E Vertical Reposition Maneuver.

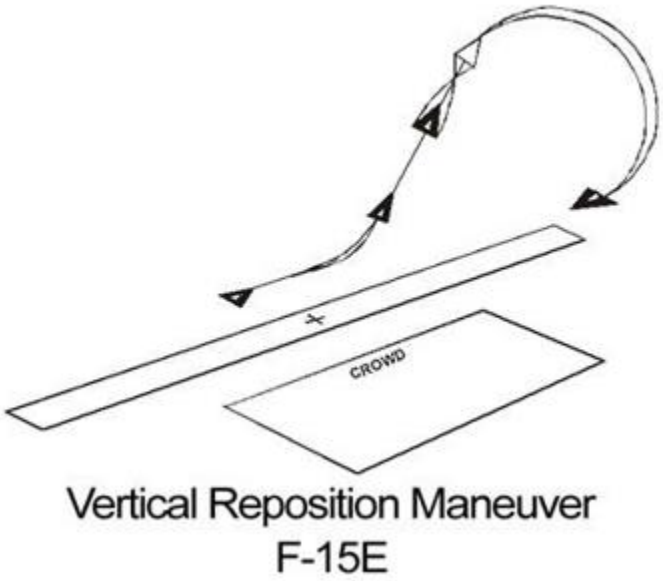


Table 4.2. F-15E Vertical Reposition Maneuver Parameters.

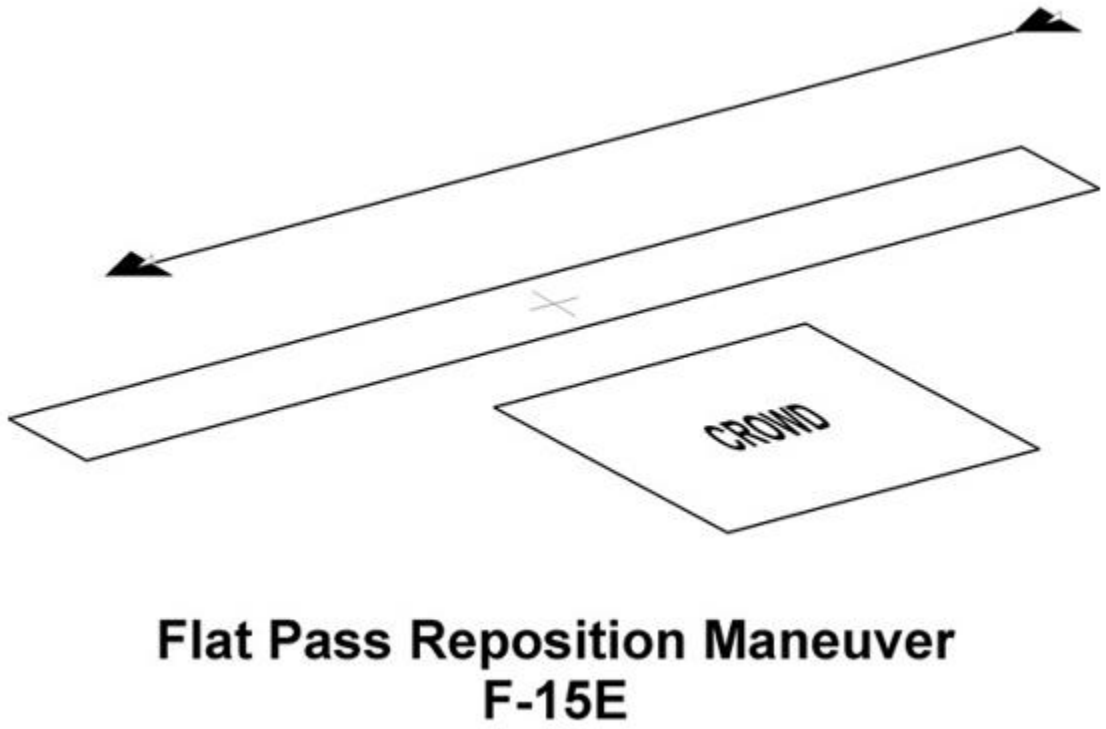
TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry A/R	.92M	MIL to MAX	6.5 to 7.0
Apex ≥5,500'	350	MIL to MAX	3 to 5
90 degrees nose low ≥4,500'	350	A/R	N/A
Exit 500'	A/R	A/R	1

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry min 200'	350 / .94M	A/R	8
Apex 5,000'	300 / 400	A/R	8
90 degrees nose low 4,000'	300 / 425	A/R	N/A
Exit min 400'	A/R / A/R	A/R	3-5

4.9.3. **Vertical Reposition Maneuver:** The Vertical Reposition Maneuver may be flown to change direction at each end of the 1,500-foot show line. Upon passing show center or at the completion of the previous maneuver with a minimum of 350 knots, begin a straight-ahead climb using 6.5 to 7.0 Gs to put the aircraft in a 40 to 55-degree nose-high attitude. At a minimum of 4,500 feet AGL, perform an unloaded 180-degree roll to achieve an inverted climbing attitude. Initiate a smooth pull to the horizon to achieve a wings-level inverted position at or above 5,500 feet AGL. Continue the pull in maximum power though the vertical, using 3.0-5.0 Gs to 135 degrees of turn (45 degrees nose-low). As the nose drops below the horizon and the airfield environment is reacquired, correct as necessary to complete the Vertical Reposition Maneuver down the show line. On a standard day, at 90 degrees nose-low, airspeed should be between 300 to 400 knots and altitude greater than 4,000 feet AGL. At 135 degrees, backpressure is relaxed and the aircraft smoothly flown to be in level flight at 500 feet AGL for the next maneuver. Aircraft power should be modulated through the vertical to achieve the desired airspeed upon rollout for the next maneuver.

4.9.4. **Abnormal Procedures:** If not within the target airspeed window, adjust pitch attitude during climb to achieve desired airspeed. If below minimum apex altitude, maintain an inverted climb until reaching minimum apex altitude. If you are below 4,000 feet AGL and over 400 knots prior to achieving 90 degrees nose-low, execute emergency dive recovery procedures. If at any time during the maneuver it appears that the aircraft cannot attain the prescribed altitude/airspeed parameter limits, abort the maneuver. Reposition the aircraft for follow-on maneuvering.

Figure 4.4. F-15E Flat Pass Reposition Maneuver.

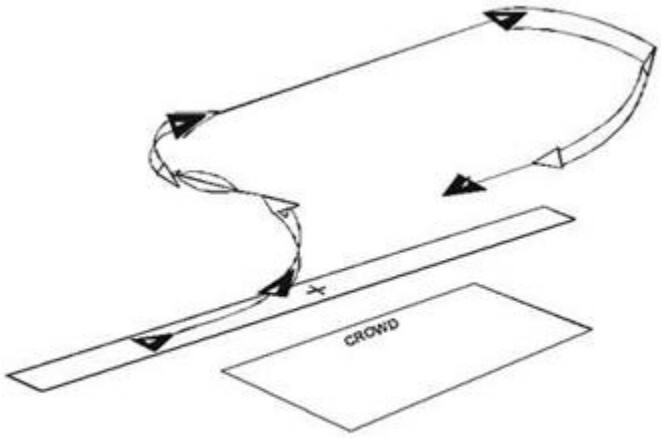


4.9.5. **Flat Pass Reposition Maneuver.** The flat pass is a repositioning maneuver used alone or in combination with a Wifferdill for the primary purpose of orienting the subsequent demonstration maneuver in the approved direction relative to the crowd line. It should be flown IAW **paragraph 4.11**

Section 4B—-High Profile

4.10. Maximum Performance Takeoff Inverted.

Figure 4.5. F-15E Maximum Performance Takeoff Inverted.



Maximum Performance T/O-Inverted
F-15E

Table 4.3. F-15E Maximum Performance Takeoff Inverted Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 0’	190	MAX	23-25 Angle-of Attack (AOA)
Exit 1,000’	250	MAX	1

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 0’	180 / N/A	MAX	N/A
Exit 800’	225 / 350	MAX	N/A

4.10.1. **Maneuver Description:** The takeoff is performed with flaps and in full afterburner. At 190 knots, execute a smooth, but brisk aft-pull of the stick to achieve takeoff rotation. After a positive rate of climb is established, retract the gear and flaps and rotate the nose to achieve a 23 to 25-unit Angle-of-Attack (AOA) climb (max AOA 30 units). Smoothly roll and pull away from the crowd to a wings-level inverted position with afterburners pointing directly at the crowd. Hold inverted flight for approximately five seconds, accelerate to 250 to 400 knots, and then perform a 270-degree right turn to position for the Flat Pass. Minimum airspeed in the climb is 190 knots; minimum altitude inverted is 800 feet AGL. **Option:** From inverted flight, roll 180 degrees to a wings-level upright position. Delay for approximately 3-5 seconds, and then perform a right 270-degree roll to position for the Four-Point Roll.

4.10.2. **Abnormal Procedures:** If the show profile takeoff is interrupted by an aircraft malfunction, make a normal takeoff, or if conditions warrant, abort the takeoff. **Note:** The Max Performance Takeoff/Inverted may be flown in either direction. A normal takeoff may be flown in place of the Max Performance Takeoff (Climb and Inverted) if required. Reasons include, but are not limited to: weather (ceiling, visibility, winds) and field conditions (rising terrain, high density altitudes, etc.). If flying the normal takeoff to accomplish a weather check before starting the actual profile, start the show from a staged position.

4.11. Flat Pass.

Figure 4.6. F-15E Flat Pass.

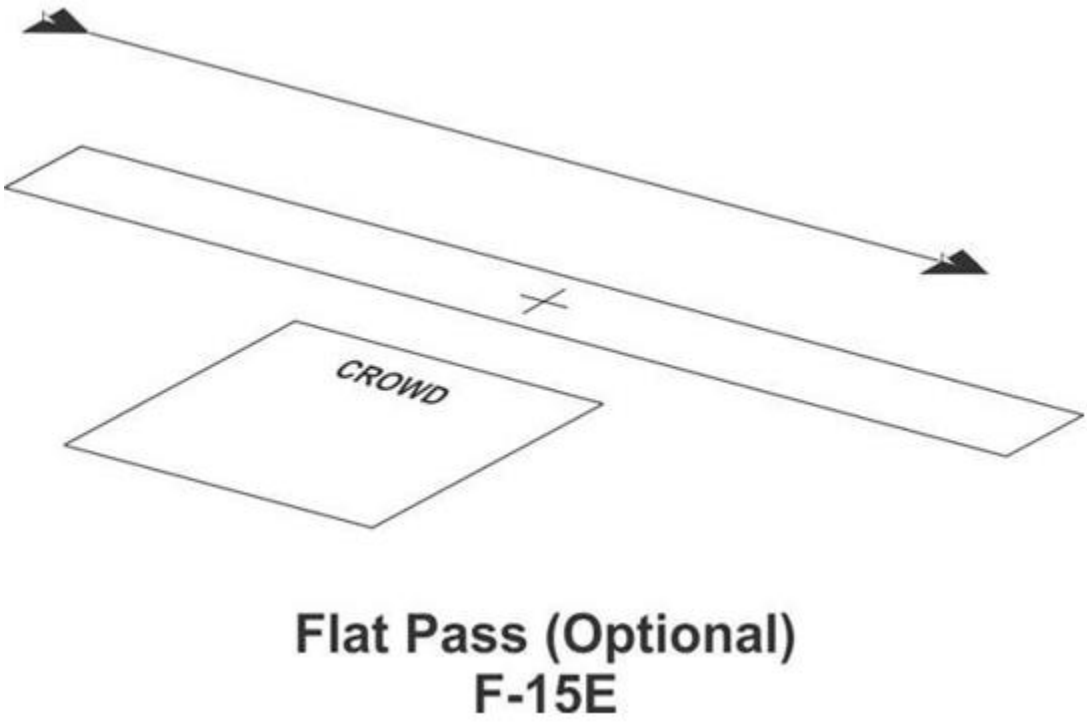


Table 4.4. F-15E Flat Pass Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	300’	.92M	MAX	1
Exit	300’	.92M	IDLE to MAX	1

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	**min** 200’	N/A / .94M	A/R	N/A
Exit	**min** 200’	N/A / .94M	A/R	N/A

4.11.1. **Maneuver Description:** This Flat Pass may be flown to orient the aircraft for the High-G Turn. The Flat Pass may be flown on the 1,500-foot show line at 300 feet AGL in maximum power, so as to target 0.92 Mach.

4.11.2. **Abnormal Procedures:** Deselect afterburner before exceeding 0.94 Mach.

4.12. High-G Turn (Right to Left).

Figure 4.7. F-15E High-G Turn.

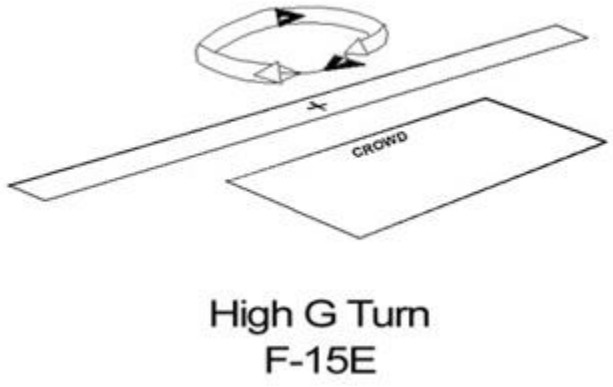


Table 4.5. F-15E High-G Turn Parameters.

TARGET PARAMETERS			
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500’	450	MAX	7.5
Exit 500’	350	MAX	2 to 4

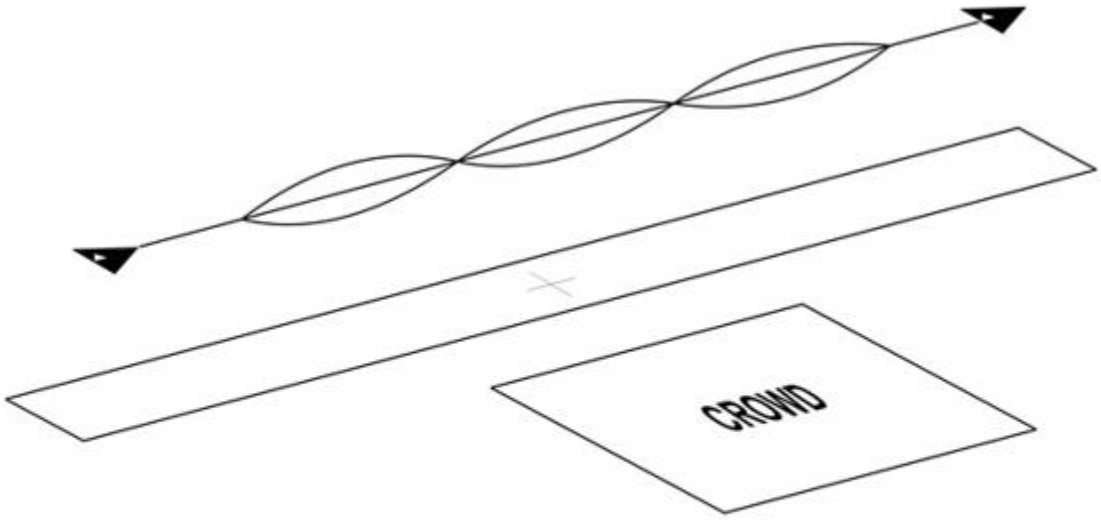
PARAMETER LIMITS			
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry min 400’	400 / 500	MAX	9
Exit min 400’	300 / 425	MAX	9

4.12.1. **Maneuver Description:** Beyond the 1,500-foot show line and approximately 3,000 feet prior to show center, select full AB and accelerate to approximately 450 knots. At show center, turn away from the crowd using approximately 75 to 85 degrees of bank. Begin the turn with a smooth G-onset-rate to maintain airspeed at approximately 350 knots and 7.5 Gs. G-loading and airspeed bleed-off rate vary with density altitude. The first 180 degrees of turn should be accomplished with a 1 ¾ degree nose-up attitude and the last 180 degrees of turn should be accomplished with a 1 ¾ degree nose-down attitude to make the turn appear level to the crowd. Vary the bank angle and pitch to arrive at level flight at the completion of 360 degrees of turn and to ensure the maneuver is finished on or beyond the 1,500-foot show line and above the entry altitude. Ensure surface winds are taken into consideration in order to center this maneuver on show center and to avoid overshooting the show line.

4.12.2. **Abnormal Procedures:** If the minimum entry parameters are not met, the pilot transitions to a wings-level flat pass. If during any portion of the maneuver it becomes apparent the aircraft is descending below 400 feet AGL or airspeed decays below 300 knots, abort the maneuver by rolling wings-level and climbing to 500 feet AGL. If necessary, adjust power and G as required (no lower than 300 knots) to avoid overshooting the show line.

4.13. Triple Aileron Roll (Left to Right).

Figure 4.8. F-15E Triple Aileron Roll (Left to Right).



Triple Aileron Roll
F-15E

Table 4.6. F-15E Triple Aileron Roll Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	425	80% to MIL	2 to 4
Exit	500’	425	80% to MIL	1

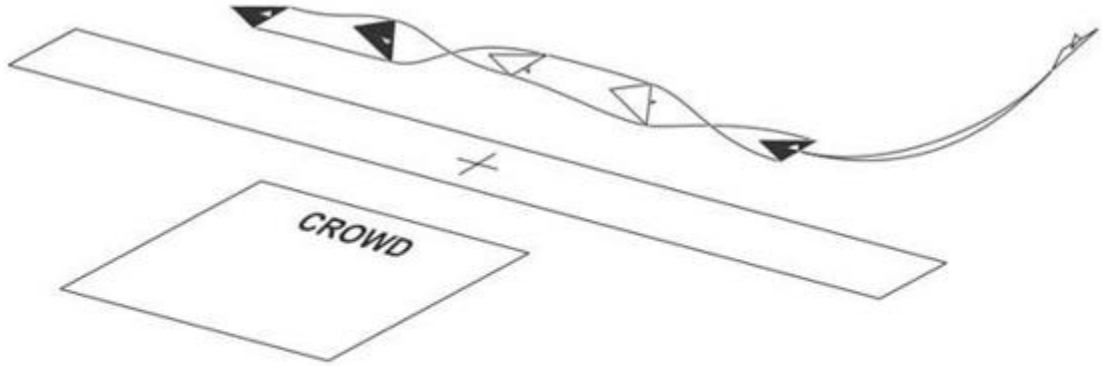
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	375 / 475	80% to MIL	N/A
Exit **min**	400’	375 / 475	80% to MIL	N/A

4.13.1. **Maneuver Description:** At 4,000 feet prior to show center on the 1,500-foot show line with 425 knots and a minimum of 500 feet AGL, raise the nose eight degrees, establish a climb, and relax stick pressure. Apply full left-stick pressure to perform a maximum of three consecutive unloaded aileron rolls. As the second roll is completed, it is important to ensure the aircraft has gained altitude and the nose is still above the horizon. At the completion of the third roll, roll out and reposition for the Four-Point Roll.

4.13.2. **Abnormal Procedures:** If starting parameters are not achieved, abort maneuver and transition to a flat pass. If the nose drops below level inverted on the second roll or roll-coupling occurs (to exceed approximately 2.5 G) immediately roll wings-level and climb to minimum altitude.

4.14. Four Point Roll (Right to Left).

Figure 4.9. F-15E Four Point Roll.



Four-Point Roll
F-15E

Table 4.7. F-15E Four-Point Roll Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Nominal Power Setting	G
Entry 500’	425	80% to MIL	1 to 3
Exit 500’	425	80% to MIL	1

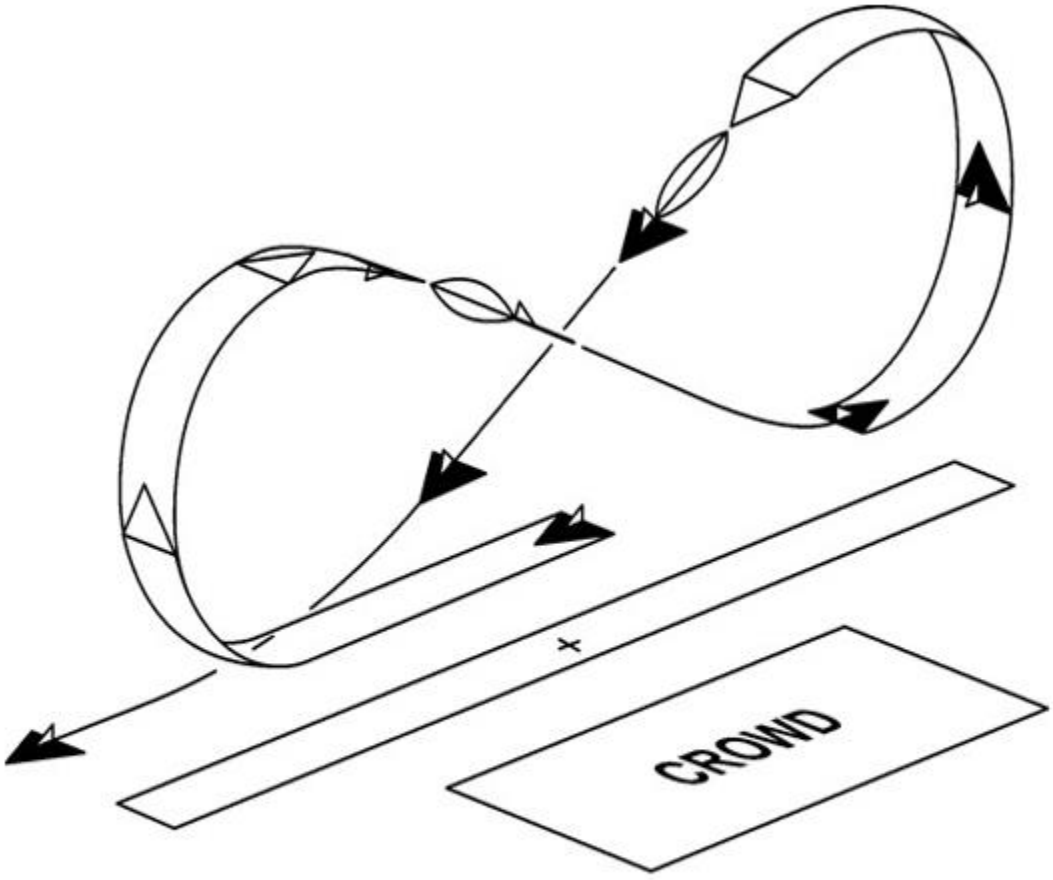
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry min 400’	375 / 475	80% to MIL	N/A
Exit min 400’	375 / 475	80% to MIL	N/A

4.14.1. **Maneuver Description:** At 4,000 feet prior to show center on the 1,500-foot show line, smoothly pull the nose to five degrees up, establish a climb, and relax stick pressure. A cadenced four-point roll to the left is then performed by pausing momentarily at the 90- degree, 180-degree, 270-degree, and 360-degree points. Move the stick briskly, causing a left roll and an immediate stop at each point when pressure is released. The pace of the cadence should ensure the aircraft is at the 180-degree point over show center.

4.14.2. **Abnormal Procedures:** If starting parameter limits are not achieved, abort maneuver and transition to a flat pass. During the maneuver, if the nose is below the horizon at the 180-degree inverted point, abort the maneuver by rolling to wings-level.

4.15. Cuban 8 (Right to Left).

Figure 4.10. F-15E Cuban 8.



Cuban Eight
F-15E

Table 4.8. F-15E Cuban 8 Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500'	400	MAX	25 AOA
Apex	≥4,500	175	IDLE-MIL	1 to 2
Exit	500'	400	MIL-MAX	3 to 5
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400'	350 / 450	MAX	6
Apex	4,000	150 / 250	IDLE-MAX	4
Exit **min**	400'	325 / 450	MAX	6

4.15.1. **Maneuver Description:** Following the Four-Point Roll, reposition the aircraft and descend to fly wings-level down the 1,500-foot show line at 500 feet AGL and 400 knots. Approximately 3,000 feet past show center, begin a brisk but smooth wings-level pull to approximately 25-units AOA. Normal apex altitude is above 4,500 feet AGL. At apex altitude, reduce power. Airspeed should be 150-250 knots. The pull is held until the nose passes through 125-140 degrees of pitch where the backpressure is eased to maintain a constant nose track of 25-45 degrees nose-low inverted. The 25 to 45-degree nose-low inverted attitude is held until approximately 3,000 feet AGL and airspeed should be approximately 300 knots. At 3,000 feet AGL, advance throttles to military (MIL) and perform an unloaded roll to wings-level upright. Roll the aircraft as necessary to maintain proper alignment along the show line (wind correction). Gradually increase back-stick pressure to ensure aircraft does not descend below 500 AGL. At no later than 1,200 feet AGL initiate full afterburner and begin a brisk but smooth wings-level pull to approximately 25-unit AOA. The second half is completed in the opposite direction using the procedures described earlier.

4.15.2. **Abnormal Procedures:** If either or both afterburners fail to light abort maneuver by decreasing pitch attitude to level flight and investigate malfunction. If apex airspeed is less than 175 knots, decrease back-stick pressure and accelerate to target airspeed before reducing throttles and pulling nose through horizon. If desired pitch attitude is exceeded while inverted, roll upright and set desired pitch angle and continue maneuver. If less than 2,500 feet AGL while inverted, initiate an immediate roll and pull to wings-level. If at any time it becomes apparent that the maneuver is going to be completed inside the show line (poor wind correction, improper alignment), abort the maneuver and set up for the next pass.

4.16. Low Angle Strafe Pass (Left to Right).

Figure 4.11. F-15E Low Angle Strafe Pass.

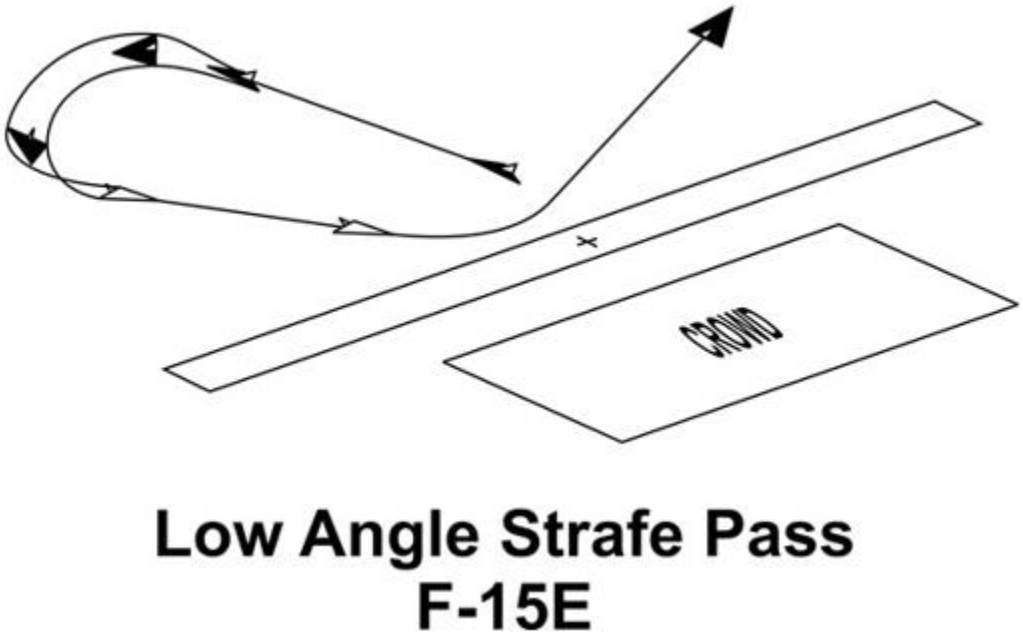


Table 4.9. F-15E Low Angle Strafe Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	≥2,000’	350	80% to MIL	1 to 2
Exit	400’	400	80% to MIL	5

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	**min** 1,500’	300 / 400	MAX	N/A
Exit	**min** 300’	350 / 450	MAX	9

4.16.1. **Maneuver Description:** After performing a reposition maneuver, align the aircraft to fly down the 1,500-foot line. At 6,000 feet from show center roll and pull to a 20-degree dive angle. The dive angle is normally 10 – 25 degrees nose-low depending on winds. The optimum dive angle is 20 degrees. Do not exceed 25 degrees. Recovery should be initiated at 1,000 - 800 feet AGL using a max performance pull in order to bottom out at or above 300 feet AGL. Be careful not to over-G the aircraft during this pull. In order to make this corner, you need to obtain a minimum of 400 knots. After recovering to level flight, accomplish a reposition maneuver to set up for the LAHD Bomb Pass. Use the 1,500-foot show line at show center as a reference point, and offset the pyro area at least 150 feet.

4.16.2. **Abnormal Procedures:** If entry parameter limits are not met, abort the maneuver and perform a wings-level pass. If at any time the dive angle exceeds 25 degrees, either abort the pass and fly through straight and level or shift the aim point longer and parallel to the show line until the dive angle is 25 degrees or less. Check airspeed at 1,500 feet AGL. If it is not at least 375 knots, abort the pass and fly through straight and level.

4.17. LAHD Bomb Pass (Right to Left).

Figure 4.12. F-15E LAHD Bomb Pass.

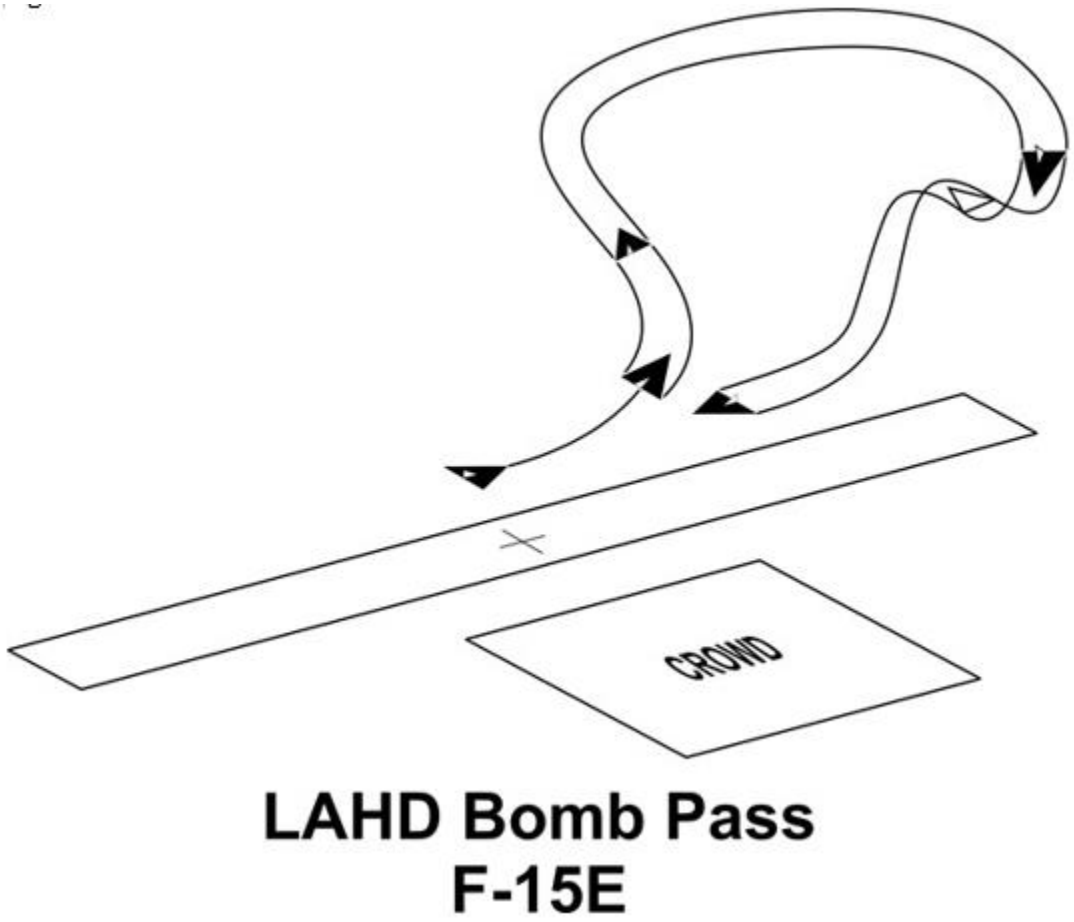


Table 4.10. F-15E LAHD Bomb Pass Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry (Pull up)	500’	400 at pull-up	80% to MIL	2-4
Exit	400’	400	80% to MIL	5

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry (Pull up) **min**	400’	325 / 450	MAX	6
Exit **min**	300’	350 / 450	MAX	9

4.17.1. **Maneuver Description:** After performing the Low Angle Strafe Pass, continue straight and level to approximately 3,000 feet past show center, then begin a 40 to 50-degree turn away from the crowd starting a slight climb to apex around 1,000 feet AGL accelerating to approximately 450 knots. At approximately 2.5 miles from show center, make a flat turn and pull to a point to begin a run-in at 500 feet AGL and 20-30 degrees off the show line. Align the aircraft to fly slightly offset the preplanned bombing target/point, away from the crowd. Do not allow a vector towards the crowd! At approximately 1.3 miles from the target, pull up to 20-40 degrees nose-high. Passing approximately 1,500 feet AGL and approaching the run-in on the 500-foot show line, roll-in on the target. The dive angle is normally 10 – 25 degrees nose-low depending on winds. The optimum dive angle is 20 degrees. Do not exceed 25 degrees. Recovery should be initiated at 1,000 feet AGL using a max performance pull in order to bottom out at or above 400 feet AGL. Be careful not to over-G the aircraft during this pull. In order to make this corner, you need to obtain a minimum of 400 knots. Use the 500-foot show line at show center as a reference point, and offset the pyro area at least 150 feet. After recovering to level flight, accomplish a reposition maneuver to set up for the SAM Weave.

4.17.2. **Abnormal Procedures:** If entry parameter limits are not met, abort the maneuver and perform a wings-level pass. If at any time the dive angle exceeds 25 degrees, either abort the pass and fly through straight and level or shift the aim point longer and parallel to the show line until the dive angle is 25 degrees or less. Check airspeed at 1,500 feet AGL. If it is not at least 375 knots, abort the pass and fly through straight and level.

4.18. SAM Weave.

Figure 4.13. F-15E SAM Weave.

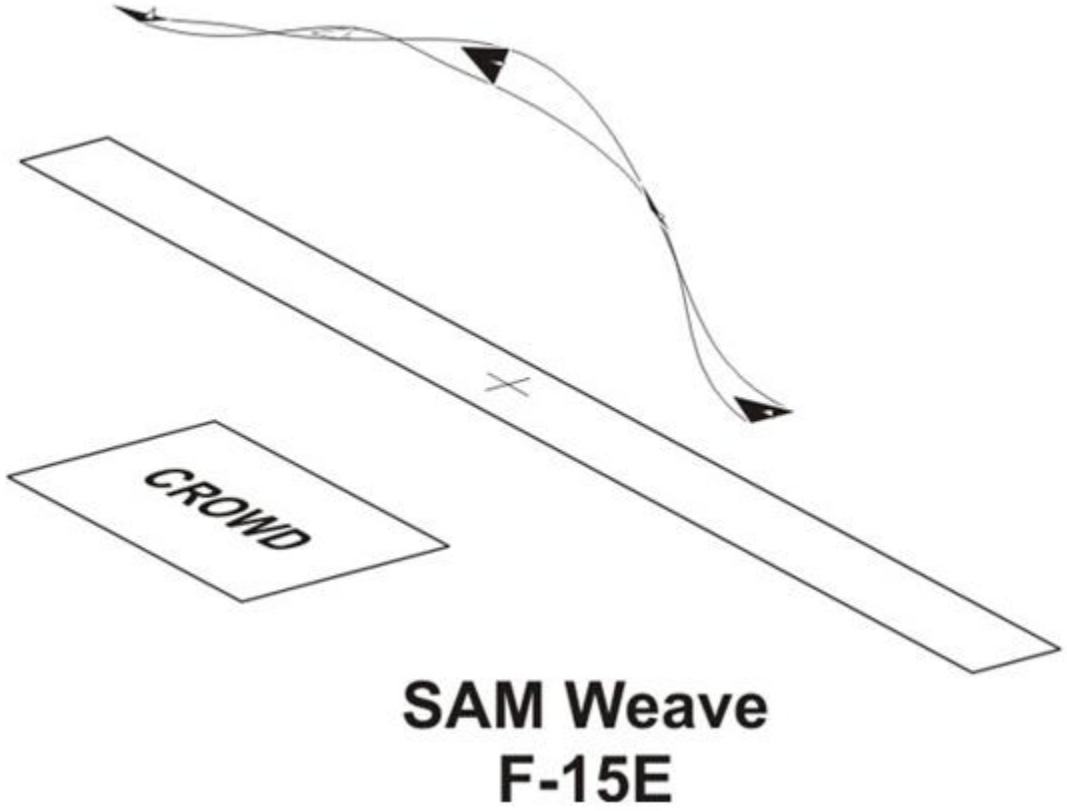


Table 4.11. F-15E SAM Weave Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	400’	400	80% to MAX	5-6
Exit	500’	400	80% to MAX	5-6

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	300’	350 / 450	MAX	2
Exit min	400’	300 / 450	MAX	9

4.18.1. **Maneuver Description:** After performing the LAHD Bomb Pass recovery to level flight, begin a right 30 to 70-degree turn away from the crowd ensuring a slight climb away from the ground. The bank angle should be approximately 70-90 degrees ensuring you are at or above 500 feet AGL and beyond the 1,500 feet show line at the end of the turn. Rapidly unload the jet and roll left 135 degrees and use a max performance pull into the oblique 10-20 degrees nose-high. Then rapidly unload and roll the jet 180 degrees to the right and perform a maximum pull to 10-20 degrees nose-low into the oblique. Once reaching 10-20 degrees nose-low, rapidly unload, and roll upright to pull up into a normal reposition for the Dedication Pass.

4.18.2. **Abnormal Procedures:** If entry parameter limits are not met, abort the maneuver and perform a normal reposition maneuver. If at any time the dive angle exceeds 25 degrees nose-low, immediately transition to a level pull to the reposition maneuver. At no time should airspeed drop below 300 knots or should the jet be lower than 400 feet AGL. If the airspeed drops below 300 knots in the climb, accelerate uphill prior to pull down.

4.19. Dedication Pass.

Figure 4.14. F-15E Dedication Pass (Left to Right).

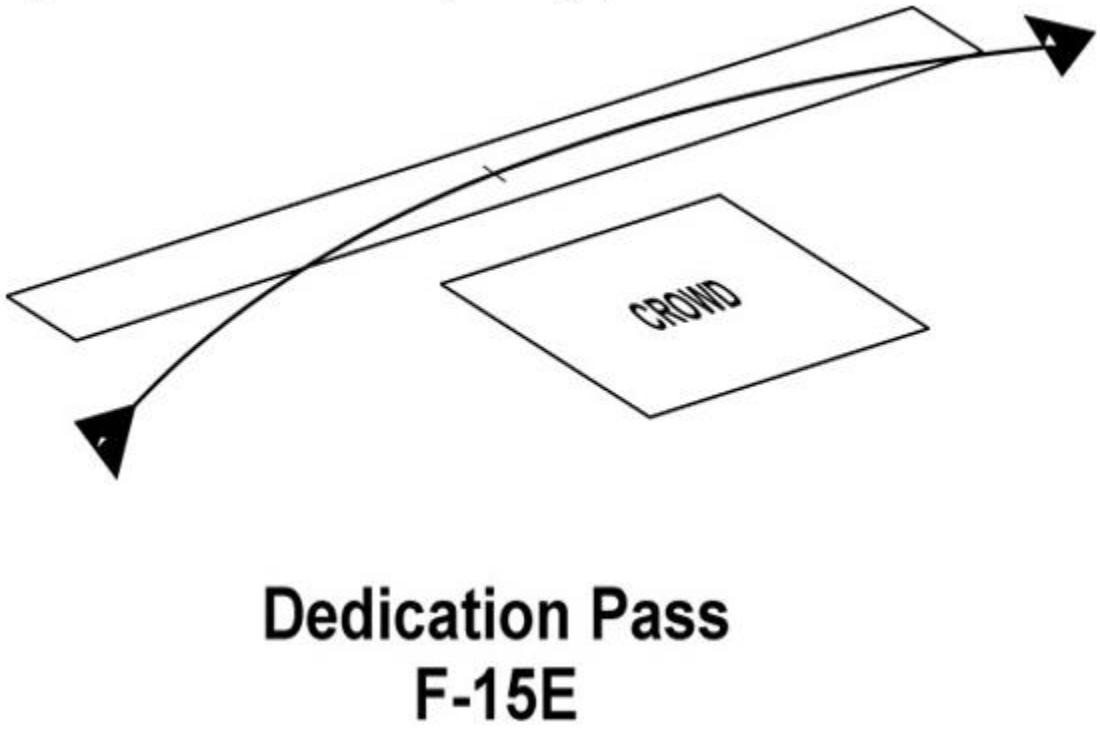


Table 4.12. F-15E Dedication Pass Parameters.

TARGET PARAMETERS			
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300’	.85M	MIL	1 to 3
Exit 300’	.85M	IDLE to MIL	4 to 6

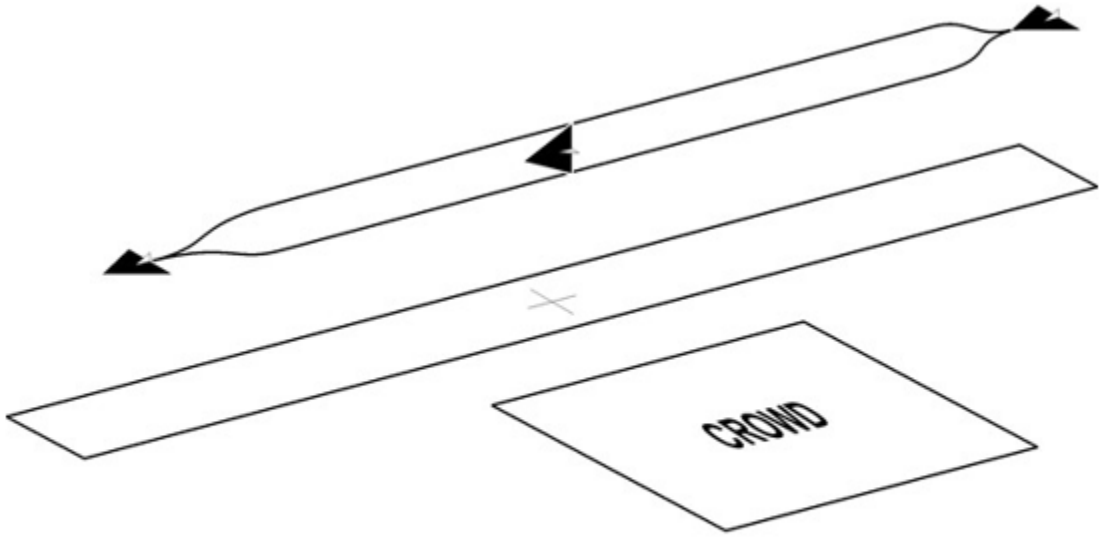
PARAMETER LIMITS			
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 200’	.6M / .94M	MIL	9
Exit **min** 200’	.6M / .94M	IDLE to MIL	9

4.19.1. **Maneuver Description:** The maneuver is flown beyond the 500-foot line. Following the Sam Weave (high or low show), or Level 8 (flat show), attain a safe airspeed and reposition the aircraft to arrive behind and offset the crowd. Fly the approach from behind the line, approximately 2 miles from show center, with an approximate 30 degree dive angle and a 45 degree cut (bank angle 75 to 90 degrees) to the show line, remaining beyond 500 feet from the crowd at all times. Upon reaching a point 500 feet from the corner of the crowd and 300 feet AGL, roll the aircraft into a level arcing pass using a bank of 75 to 90 degrees. Use top rudder if necessary to maintain altitude. Select mil power until passing the show line or until a target airspeed of .85M is anticipated. Use varying pressure altitudes and temperatures to determine when to deselect afterburner to ensure the target airspeed is attained at show center and the max airspeed is not exceeded. Ensure military power is selected prior to entering the arcing pass and through the exit of the maneuver. Do not use afterburner during the arcing pass. Optimum profile of the aircraft is achieved at approximately 80 degrees of bank. Use caution not to over-bank the aircraft and allow the aircraft to lose altitude while banking. In order to maintain 500 feet from the crowd at each corner, ensure the flight path at show center extends beyond 500 feet. Continue the arc beyond the opposite crowd corner, reduce power as required, roll out of bank, and continue a maximum 45-degree climb to set up for the Knife Edge Pass.

4.19.2. **Abnormal Procedures:** Abort the maneuver if at any time the aircraft comes closer than 500 feet to the crowd line or its lateral limits, an excessive dive angle or sink rate develops, entry parameters are not met, or the aircraft descends below 200 feet AGL. Abort the maneuver by rolling the aircraft wings-level and flying away from the crowd.

4.20. Knife Edge Pass.

Figure 4.15. F-15E Knife Edge Pass (Right to Left).



Knife Edge Pass
F-15E

Table 4.13. F-15E Knife Edge Pass Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	400	MAX	1 to 3
Exit	500’	500	80% to MAX	1 to 3

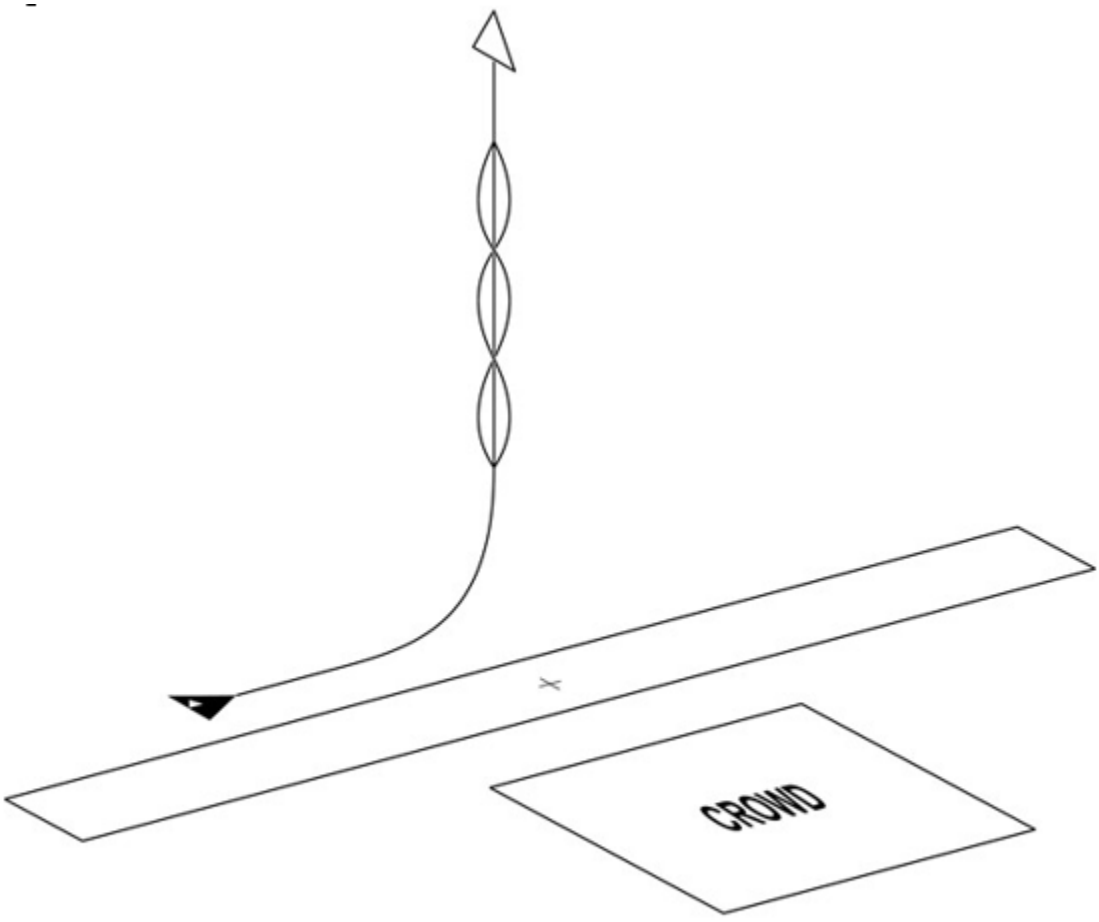
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	350 / 450	MAX	4
Exit **min**	400’	400 / 600	80% to MAX	4

4.20.1. **Maneuver Description:** Enter the 1,500-foot show line at 500 feet AGL and 400 knots. At 8,000 to 6,000 feet AGL prior to show center, raise the nose three to five degrees, establish a climb, and apply stick pressure to roll 90 degrees toward the crowd. The aircraft is held in this position until 8,000 to 6,000 feet past show center. Top rudder is applied to help hold the nose above the horizon so the full maneuver can be accomplished. Forward stick pressure is applied to keep the aircraft on the show line and to maintain level flight.

4.20.2. **Abnormal Procedures:** If entry parameters are not met, abort the maneuver, make a flat pass, and reposition for the next maneuver. If the nose falls below level flight (zero degrees pitch in the HUD) or if the aircraft descends below 400 feet AGL, abort the maneuver.

4.21. F-15E Maximum Performance Climb with Rolls (Left to Right).

Figure 4.16. F-15E Maximum Performance Climb with Rolls.



Maximum Performance Climb With Rolls
F-15E

Table 4.14. F-15E Maximum Performance Climb with Rolls Parameters.

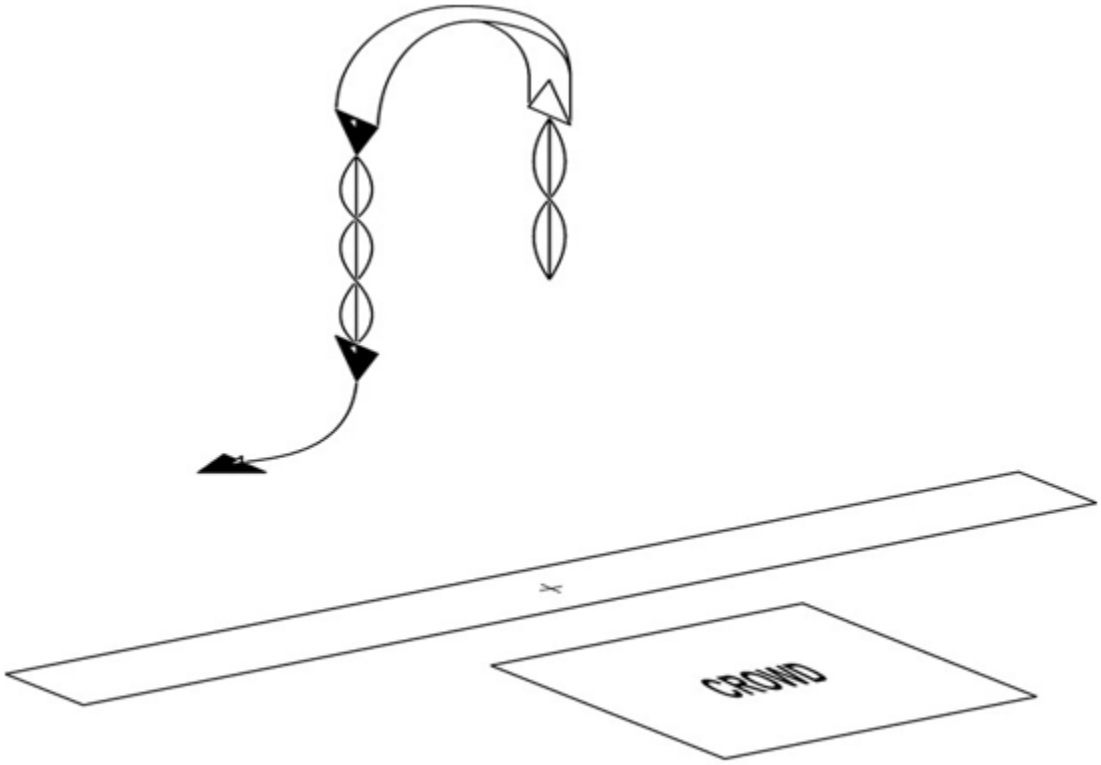
TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	300’	500	MAX	5-6
Exit	NTEWA	175	80% to MAX	2 to 5
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	200’	450 / 550	MAX	8
Exit **min**	10,000’	125 / 250	80% to MIL	6

4.21.1. **Maneuver Description:** Approach show center on the 1,500-foot show line, wings-level at 500 knots and 300 feet AGL. At 3,500 feet prior to show center select full afterburner and initiate a 6 to 7.5-G wings-level pull to arrive at show center with 90 degrees of pitch. The pull should be made so the aircraft is vertical at show center. When the aircraft is vertical, perform high-rate unloaded aileron rolls until reaching a minimum of 250 knots or 3,000 feet AGL below waivered airspace. Stop the aileron rolls and execute a vertical recovery by smoothly pulling the nose to the nearest horizon. Deselect afterburner and modulate power as necessary to set up for the spiral descent.

4.21.2. **Abnormal Procedures:** If entry parameters are not met at 3,000 feet prior to show center, delay until entry parameters are met. If entry parameters are not met prior to 2,000 feet past show center, abort the maneuver and reposition for the next pass. If the airspeed decreases below 150 knots in the climb, initiate a vertical recovery

4.22. Spiral Descent.

Figure 4.17. F-15E Spiral Descent.



Spiral Descent
F-15E

Table 4.15. F-15E Spiral Descent Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry NTEWA	175	IDLE	1 to 2
Exit 6,000’	400	IDLE	3 to 7

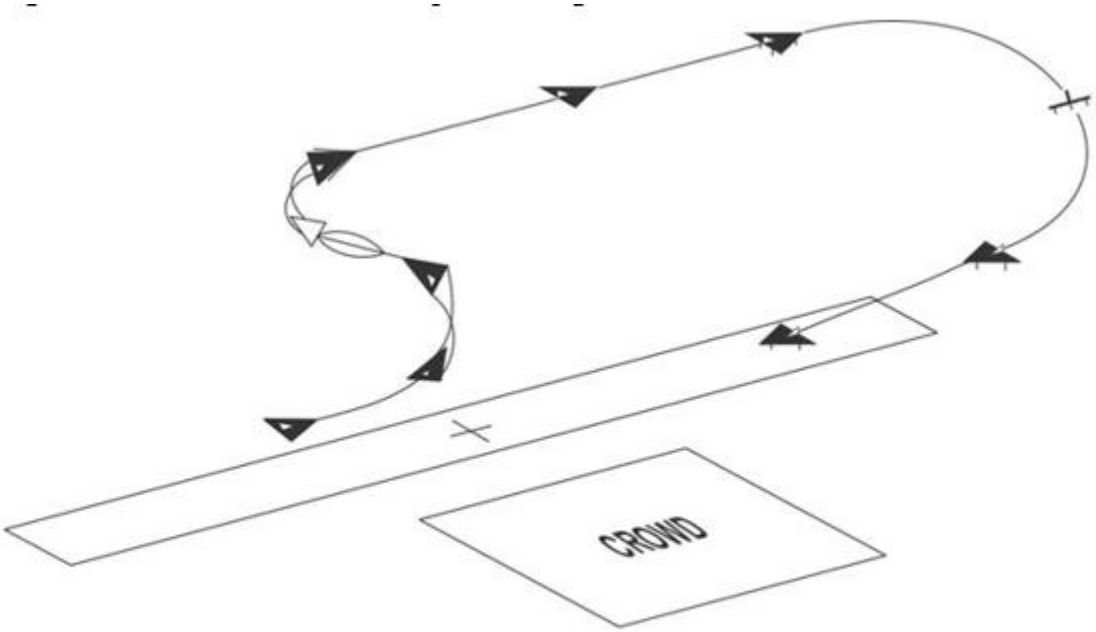
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 10,000’	125 / 250	IDLE	N/A
Exit **min** 5,000’	A/R / 450	IDLE	8

4.22.1. **Maneuver Description:** As the aircraft nose is brought through the horizon, reacquire the air show environment. In idle power, perform a vertical spiraling descent oriented toward show center. Initiate dive recovery to recover by 6,000 feet AGL. Do not exceed 450 knots in the descent. The direction of the dive recovery should be as necessary to reposition for the next maneuver, however do not exit the maneuver over the crowd.

4.22.2. **Abnormal Procedures:** If entry airspeed window is not met (too fast) adjust dive angle to minimize airspeed in the descent. If below 12,000 AGL at the apex of the climb (airspace restrictions, weather conditions), adjust dive angle to safely execute a recovery at 6,000 AGL. When initiating the spiral descent at altitudes above 15,000 AGL, adjust minimum dive recovery altitude accordingly. (If starting at 18,000 feet AGL, initiate dive recovery at 9,000 AGL) Initiate an immediate dive recovery if airspeed is at/or above 450 knots. Show center orientation is a secondary consideration in the spiral descent. If at any time during the maneuver it appears that the aircraft is not attaining the prescribed altitude/airspeed parameters, abort the maneuver. Roll out and/or pull to a wings-level position, initiate a descent and reposition the aircraft for follow-on maneuvering. **Option:** Due to changing weather conditions, the vertical spiraling descent may not be possible after the Max Climb. Start a descent when able to maintain VMC conditions to position the aircraft to set up for the next maneuver.

4.23. Tactical Pitch-Up to Landing (Direction of Landing).

Figure 4.18. F-15E Tactical Pitch-Up to Landing.



Tactical Pitch-Up To Landing
F-15E

Table 4.16. F-15E Tactical Pitch-Up to Landing Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	350	MAX	4 to 6
Exit	Downwind Alt	250	A/R	1 to 4

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	300 / 425	MAX	8
Exit	Downwind Alt	200 / 350	A/R	N/A

4.23.1. **Maneuver Description:** On the 1,500-foot show line at 3,000 feet prior to show center, 500 feet AGL, and 350 knots select afterburner. Smoothly pull the nose five degrees up, establish a climb, and relax stick pressure. Perform an unloaded 405-degree aileron roll followed by an aggressive pull-up to downwind. During the pull to downwind, terminate afterburner and slow to below 300 knots. Configure for and execute a normal final turn and landing.

4.23.1.1. **Option 1:** On the pull-up to downwind, an additional 180-degree roll (reversal) may be performed to land from the opposite direction. Start at 4,000 feet prior to show center.

4.23.1.2. **Option 2:** If a Heritage Flight is to be performed immediately following completion of the demonstration, conduct a low approach or wings-level pass and proceed to rejoin with Heritage Flight aircraft using pre-briefed procedures.

4.23.2. **Abnormal Procedures:** If entry parameters are not achieved by show center, pull up to a normal closed pattern.

Section 4C—-Low Profile

4.24. Maximum Performance Takeoff Inverted. Perform the Maximum Performance Takeoff Inverted as described in **paragraph 4.10** **Note:** Unless otherwise stated, **Abnormal Procedures** for the low profile are the same as the high profile.

4.25. Flat Pass. Perform the Flat Pass as described in **paragraph 4.11**.

4.26. High-G Turn (Right to Left). Perform the High-G turn as described in **paragraph 4.12**.

4.27. Triple Aileron Roll (Left to Right). Perform the Triple Aileron Roll as described in **paragraph 4.13.**

4.28. Four-Point Roll (Right to Left). Perform the Four-Point Roll as described in **paragraph 4.14**.

4.29. Level 8 (Right to Left).

Figure 4.19. F-15E Level 8.

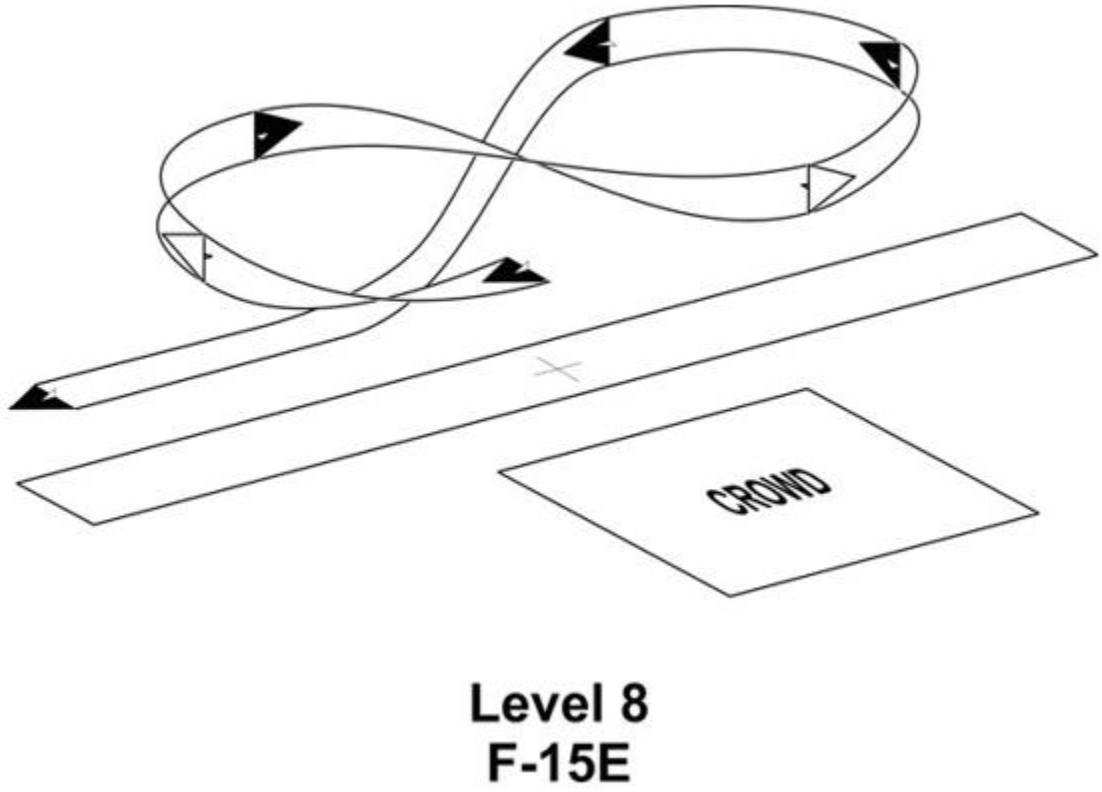


Table 4.17. F-15E Level 8 Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	450	MAX	6-7
Exit	500’	400	MAX	2 to 4

PARAMETER			LIMITS		
Altitude AGL			Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry	**min**	400’	400 / 500	MAX	9
Exit	min	400’	300 / 450	MAX	9

4.29.1. **Maneuver Description:** At approximately 2,500 feet past show center, select full afterburner and accelerate to approximately 450 knots. Turn away from the crowd using approximately 85 degrees of bank (<75 degrees inside the 1,500-foot show line). Begin the turn with a smooth G onset-rate to maintain airspeed at approximately 350-400 knots and 5 to 7 Gs. G-loading and airspeed bleed-off rate varies with density altitude. Maintain a minimum of 300 knots. The first 180 degrees of turn should be accomplished with a 1¾-degree nose-up attitude to make the turn appear level to the crowd. After 225 degrees of turn, unload and briskly roll wings-level. Approaching the show line, reverse direction of turn and accomplish a second level turn in the opposite direction. Adjust power to enter the second turn with the same entry parameters as the first. Fly the second turn using the same techniques as the first. After 270 degrees and with a 45-degree cut to the show line, reverse the turn again. Vary the bank angle and pitch to arrive at level flight at the completion of the maneuver and to ensure the maneuver is finished above the entry altitude. Ensure surface winds are taken into careful consideration to center the maneuver over show center and to avoid overshooting the show line. Complete the maneuver by turning as required to finish on the show line heading the same direction as entry. Perform a repositioning maneuver to set up for the next maneuver.

4.29.2. **Abnormal Procedures:** Adjust power and G as required to avoid overshooting the show line. If the aircraft descends below 500 feet AGL, reorient lift vector to ensure a timely correction. If the aircraft descends below 400 feet AGL or the airspeed decays below 300 knots, abort the maneuver by rolling wings-level, climbing to 500 feet AGL, and repositioning for the follow-on maneuver.

4.30. Low Angle Strafe Pass (Left to Right). Perform the low angle strafe pass as described in **paragraph 4.16** At the completion of the low angle strafe pass, reposition the aircraft to set up for the LAHD Bomb Pass.

4.31. LAHD Bomb Pass (Right to Left). Perform the LAHD Bomb Pass as described in **paragraph 4.17.**

4.32. SAM Weave. Perform the SAM Weave as described in **paragraph 4.18**.

4.33. Dedication Pass (Left to Right). Perform the Dedication Pass as described in **paragraph 4.19**.

4.34. Knife Edge Pass (Right to Left). Perform the Knife Edge Pass as described in **paragraph 4.20.**

4.35. Tactical Pitch-Up to Landing (Direction of Landing). Perform the Tactical Pitch-Up to Landing as described in **paragraph 4.23**.

Section 4D—-Flat Profile

4.36. Maximum Performance Takeoff Inverted. Perform the Maximum Performance Takeoff Inverted as described in **paragraph 4.10 Note:** Unless otherwise stated, **Abnormal Procedures** for the flat profile are the same as the high profile.

4.37. Flat Pass. Perform the Flat Pass as described in **paragraph 4.11**.

4.38. High-G Turn (Right to Left). Perform the High-G Turn as described in **paragraph 4.12**.

4.39. Triple Aileron Roll (Left to Right). Perform the Triple Aileron Roll as described in **paragraph 4.13.**

4.40. Four-Point Roll (Right to Left). Perform the Four-Point Roll as described in **paragraph 4.14**.

4.41. Level 8 (Right to Left). Perform the Level 8 as described in **paragraph 4.29**.

4.42. Dedication Pass (Left to Right). Perform the Dedication Pass as described in **paragraph 4.19**.

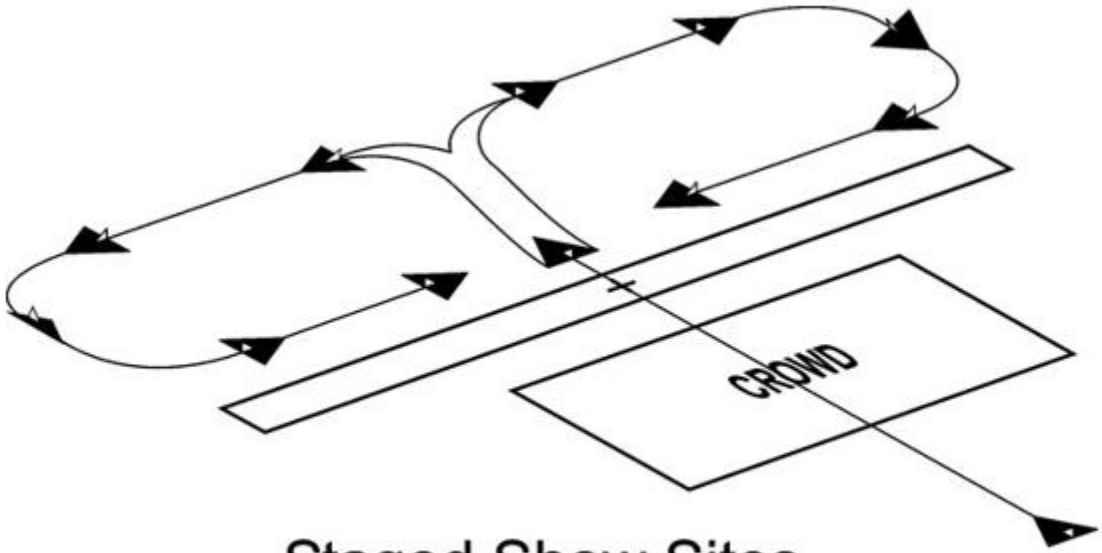
4.43. Knife Edge Pass (Right to Left). Perform the Knife Edge Pass as described in **paragraph 4.20.**

4.44. Tactical Pitch-Up to Landing (Direction of Landing). Perform the Tactical Pitch-Up to Landing as described in **paragraph 4.23**, however, DO NOT perform the rolling portion of the maneuver. The maneuver is non-aerobatic.

Section 4E—-Staged Show Sites

4.45. Staged Show Site Entry.

Figure 4.20. F-15E Staged Show Sites.



4.45.1. When demonstration aircraft takeoff from other than the show site, plan to arrive over the show site with the fuel requirements prescribed in **paragraph 4.2** plus enroute return fuel IAW AFI 11-2F-15E, Vol 3, *F-15E Operations Procedures*. The pilot may enter from behind the crowd at a minimum of 1,000 ft AGL as depicted in **Figure 4.20**, or via a Flat Pass maneuver down the show line, and complete the show as described in this chapter**.** Upon completion of the last pass and clearing the crowd, turn out behind the crowd and return to the staging airport. Pilots should plan to fly a full demonstration, but may cut the profile short as required to maintain suitable enroute return fuel.

Chapter 5

F-16 DEMONSTRATION MANEUVERS

Section 5A—-General Information

5.1. General. Use maneuvers described in this chapter for training and for F-16 aerial demonstrations. The demonstration sequence is designed so all of the maneuvers up to the High Alpha Pass are performed in the same direction with respect to the crowd line. The High Alpha Pass is designed to be flown against the wind. Abnormal procedures are written for each maneuver. If the entry conditions are not met for any maneuver, a wings-level pass is flown and the pilot transitions to the next maneuver. Demonstration pilots transmit parameters prior to initiating the descending portion of vertical pull-throughs for the Split-S, Shark's Tooth, and Vertical Reposition maneuvers. These calls are made when the pilot reaches apex of the maneuver. The ground safety observer monitors demonstration pilot altitude and airspeed radio calls, and directs an abort when parameter limits are exceeded. Following all maneuvers and before clearing the show line to reposition for the next maneuver, the pilot ensures any descent has been stopped and the aircraft is in a climbing or level attitude with the flight path marker at or above the horizon.

5.2. Aircraft Configuration and Fuel Requirements. Ensure aircraft configuration for all demonstrations is clean (no wing pylons or missiles except wingtip smoke winders) and internal fuel. Fuel considerations include: divert requirements, cable availability, temperature, and density altitude. Normal minimum fuel for take-off is:

5.2.1. Staged Show: 6,000 pounds.

5.2.2. High Show: 5,000 pounds.

5.2.3. Low Show: 4,000 pounds.

5.3. Airspeed and G Limits. Demonstration pilots may not exceed 0.94 Mach. The maximum target G for this demonstration profile is 7.5 Gs. This does not preclude a momentary increase in G for safety considerations.

5.4. Show line Restrictions. The majority of the F-16 demonstration is flown on the 1,500-foot show line. Maneuvers not conforming to FAA Order 8900.1, Volume 3, **Chapter 6**, require approval via the FAA AFS-800 Maneuver Package approval process. **(T-0)**.

5.5. Airspace and Runway Requirements. Required airspace for the F-16 is 15,000 feet AGL and normally a five-mile radius from show center. The minimum dimensions of the aerobatic box are 3,000 feet wide, 6,000 feet long, and up to 15,000 feet AGL (high show). If the FAA has waived a show line to closer than 1,500 feet, the aerobatic box may be less than 3,000 feet wide, provided there is at least 1,200 feet from either the primary or secondary show line. Minimum runway length is 7,000 feet and width is 75 feet. Ensure the runway, taxiway, and parking area are stressed for a 30,000-pound aircraft with single wheel type landing gear.

5.6. Weather Requirements. Weather PARAMETER LIMITS for the high profile are a ceiling of at least 7,000 feet AGL and three miles ground and five miles in-flight visibility with a discernible horizon. The Low Show profile requires 1,500 feet AGL and 5 miles in-flight visibility with a discernable horizon. The ceiling requirements for each maneuver are based on waived airspace (clear of clouds) and require adjustment if using VFR rules. Plan maneuvers to maintain VMC throughout the show sequence.

5.7. High Density Altitude Demonstrations. For high-density altitude shows, PARAMETER LIMITS must be adjusted accordingly. You must add 500 feet to APEX altitudes for each 2,000 feet of altitude above 3,000 feet MSL and 10 knots to airspeeds. For example, if the show site altitude is 5,000 feet MSL, add 500 feet to the baseline target and 10 knots to the airspeed. If the show site altitude is 7,000 feet MSL, add 1,000 feet to the baseline target and 20 knots to the airspeed.

5.8. Demonstration Maneuver Profiles.

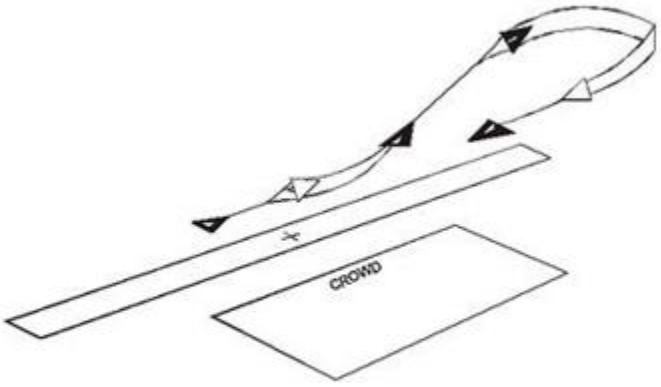
Table 5.1. Demonstration Maneuver Profiles.

High Show
Maximum Performance Takeoff and Climb to Cuban 8
High Speed Flat Pass
Triple Aileron Roll
High-G Turn
Four-Point Roll
Flat Pass
Falcon Turn
Shark's Tooth
High Alpha Pass
Muscle Climb
Knife Edge Pass
Maximum Performance Climb with Rolls
Spiral Descent
Dedication Pass
Tactical Pitch-Up to Landing
Low Show
Takeoff to Level 8 (or Cuban 8 if the ceiling is verified at or above 3,500 feet AGL)
High Speed Flat Pass
Triple Aileron Roll
High-G Turn
Four-Point Roll
Flat Pass
Falcon Turn
High Alpha Pass

Muscle Climb (transition as required by weather)
Knife Edge Pass
Dedication Pass
Tactical Pitch-Up to Landing

5.9. Reposition Maneuvers. Reposition maneuvers may be flown in either direction at any time during the demonstration sequence as required. Repositioning turns may not include added aileron rolls or other accenting maneuvers.

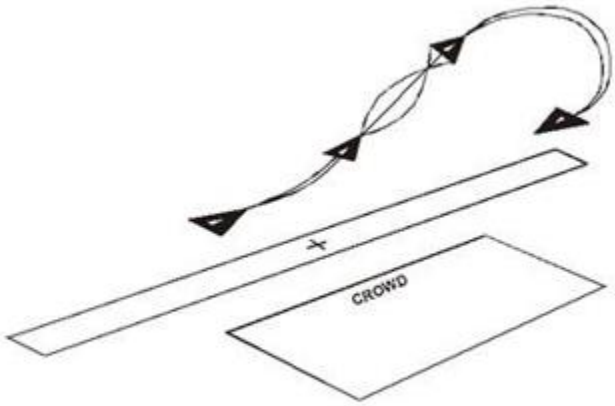
Figure 5.1. F-16 Flat Wifferdill Reposition Maneuver.



Flat Wifferdill Reposition Maneuver
F-16

5.9.1. **Flat Wifferdill Reposition Maneuver.** The Flat Wifferdill Maneuver turn is a combination horizontal and shallow vertical turn used to change direction at each end of the show line when performing the low profile. The Flat Wifferdill Maneuver turn uses less altitude than a normal reposition. It requires a larger cut and tends to be looser and flatter than a normal turn. The target G for this maneuver is 6.5 to 7.0 Gs. A 270-degree turn reversal may be made while the aircraft is climbing. Each turn may differ slightly so that airspeed/altitude parameters for the next maneuver are established in the flat reposition. The entry "cut" turn for the flat reposition is made to ensure no show line or crowd line penetration.

Figure 5.2. F-16 Wifferdill Reposition Maneuver.



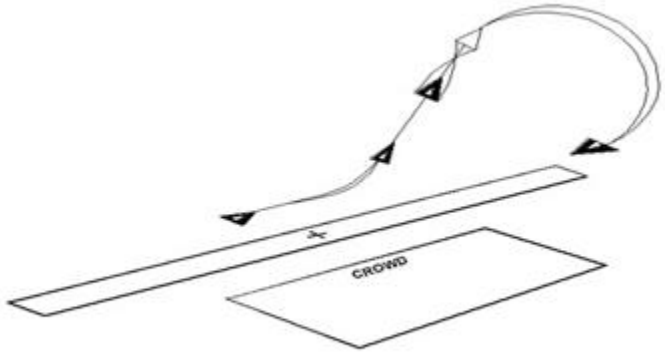
Wifferdill Reposition Maneuver
F-16

5.9.2. **Wifferdill Reposition Maneuver.** This maneuver is a combination horizontal and vertical turn used to change direction at each end of the show line. The vertical plane is used to maintain proximity to the demonstration area. Each turn may differ slightly so that airspeed/ altitude parameters for the next maneuver are established in the turn. As the aircraft departs the show line, maneuver in the horizontal and vertical plane to reposition for the next maneuver. The Target G for this maneuver is 6.0 to 7.0 Gs. A 270-degree rolling turn reversal is made while still climbing. During the last half of the maneuver, while descending, the turn is adjusted to establish the proper show line entry. The entry "cut" turn for the reposition is made to ensure no show line or crowd line penetration.

5.9.3. **Abnormal Procedures:** Consider weather, terrain, obstacles, and winds into the show line when determining how much vertical and horizontal turning room is necessary for the reposition.

5.9.4. **Vertical Reposition Maneuver.**

Figure 5.3. F-16 Vertical Reposition Maneuver.



Vertical Reposition Maneuver
F-16

Table 5.2. F-16 Vertical Reposition Maneuver Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	A/R	450	A/R	5.5 to 7.5
Apex	5,500'	275	A/R	Limiter
90 degrees nose low	≥3,500'	300	A/R	
Exit	500'	A/R	A/R	4 to 6

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry min	400'	150 / N/A	A/R	9
Apex min	5,000'	150 / 350	A/R	9
90 degrees nose low	3,000'	150 / 350		
Exit min	400'	A/R / A/R	A/R	9

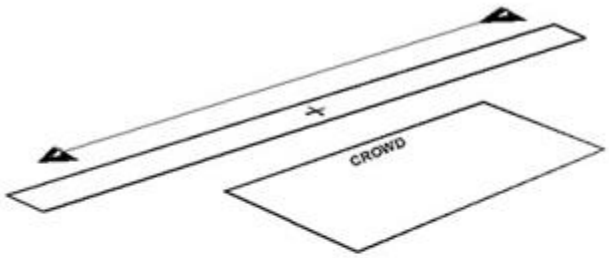
5.9.4.1. **Maneuver Description:** Fly the vertical reposition to change direction at each end of the 1,500-foot show line during a high show. Upon passing show center or at the completion of the previous maneuver, a straight-ahead climb is commenced using a 6.0 to 7.0 G pull to put the aircraft in a 55-degree nose high attitude. For slower entry parameters, use G as required to maintain a minimum of 150 KIAS. Power setting is based upon entry parameters to ensure a minimum airspeed of 150 KIAS in the climb. Pitch attitude may be reduced as well to hold airspeed. At a minimum of 3,000 feet AGL, the aircraft is rolled

inverted and the demonstration pilot unloads the aircraft to attain or exceed the apex target altitude. Once apex parameters are assured, initiate an aggressive 135-degree pull through the vertical, to approximately 45 degrees nose low. The peak altitude reached is a minimum of 5,000 feet AGL with a target of 5,500 feet AGL. Modulate the throttle as required to initiate the pull down with a target airspeed of 275 KIAS. Once recovery above the minimum altitude for the follow-on maneuver is assured, backpressure is relaxed and the aircraft is smoothly flown to be in level flight at the entry altitude for the next maneuver. In no circumstances should the demonstration pilot play the G during the 135-degree pull through the vertical.

5.9.4.2. **Abnormal Procedures:** If entry parameters are not attained, reposition in the oblique for follow-on maneuvers. If apex parameters are not achieved with regard to airspeed or altitude, immediately recover the aircraft to the nearest horizon and abort the split-S. If the airspeed exceeds 350 KIAS during any portion of the dive or is below 3,000 feet AGL at 90 degrees nose-low, immediately initiate a dive recovery to the nearest horizon.

5.9.5. **Flat Pass.**

Figure 5.4. F-16 Flat Pass.



Flat Pass
F-16

Note: May be flown either direction.

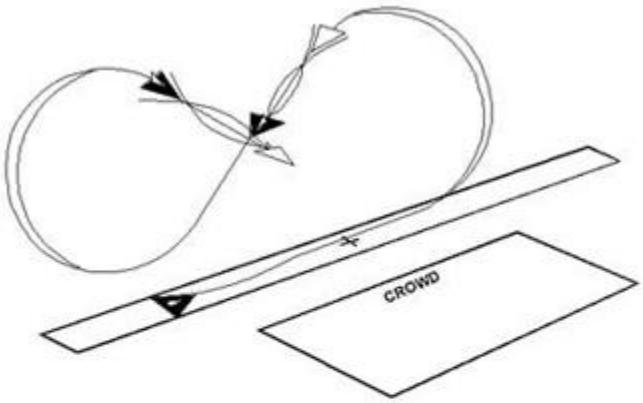
5.9.5.1. **Maneuver Description:** The flat pass is a repositioning maneuver used alone or in combination with an oblique reposition for the primary purpose of orienting the subsequent demonstration maneuver in the approved direction relative to the crowd line. The Flat Pass may be flown in either direction at any time during the demonstration sequence if required. It should be flown IAW **paragraph 5.11.**

5.9.5.2. **Abnormal Procedures:** If any problems are encountered, the demo pilot should begin an immediate climbing turn away from the crowd.

Section 5B—-High Profile

5.10. Maximum Performance Takeoff and Climb to Cuban 8.

Figure 5.5. F-16 Maximum Performance Takeoff and Climb to Cuban 8.



Maximum Performance
Takeoff and Climb to Cuban 8
F-16

Table 5.3. F-16 Maximum Performance Takeoff and Climb to Cuban 8 Parameters.

TARGET PARAMETERS			
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 200’	350	MIL to MAX	4 to 6
Apex ≥3,500’	200	MIL to MAX	2 to 4
Exit 500’	A/R	A/R	4 to 6

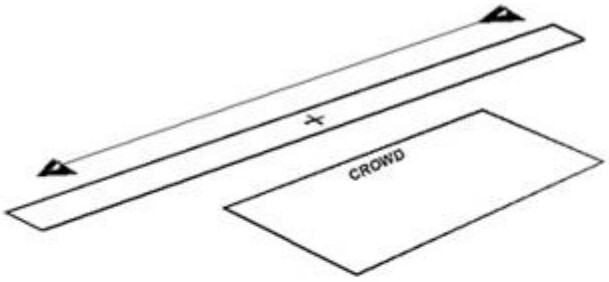
PARAMETER LIMITS			
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry min 100’	300 / 440	MIL to MAX	9
Apex min 3,000’	150 / 350	MIL to MAX	5
Exit min 400’	250 / A/R	A/R	9

5.10.1. **Maneuver Description:** Do not attempt takeoff when the takeoff roll exceeds 80 percent of available runway. The takeoff is made in full afterburner. After takeoff, establish a positive rate of climb and raise the gear, at a minimum of 300 knots begin a wings-level 4.0 to 6.0-G pull. Hold the pull until 90 degrees of pitch, then release the backpressure to approximately 2.5 G until 25 to 35 degrees nose-high inverted. Play the backpressure to ensure the over-the-top airspeed and altitude are above 150 knots and 3,000 feet AGL. Continue the pull until 25 to 45 degrees nose-low inverted. Unload to hold pitch, deselect afterburner, and perform an unloaded 1/2 roll to a wings-level upright. At 2,000 feet AGL, modulate power as required and begin a four to six-G wings-level pull to arrive on the show line at 500 feet AGL with 350 knots. Accomplish the second half of a Cuban 8 using entry airspeed of approximately 350 knots, an entry pull of 4.0 to 6.0 Gs and over-the-top minimum of 150 knots. The descending portion of the second half is accomplished exactly as the descending portion of the first half. **Note:** If airfield runway alignment or takeoff considerations drive a crowd right-to-left takeoff, the pilot may execute an immediate reposition to re-enter the appropriate show line from crowd left to accomplish the complete maneuver.

5.10.2. **Abnormal Procedures:** If entry parameters are not attained, clear the show line in front of the crowd. If at any time during the maneuver it appears the minimum over-the-top altitude or airspeed parameters cannot be met, abort the maneuver by performing an unloaded roll to the wings-level upright position accelerating to 250 knots in afterburner and continuing down the show line. If desired pitch attitude is exceeded while inverted, roll upright and set desired pitch angle and continue maneuver. If less than 2,500 feet AGL while inverted, initiate an immediate roll and pull to wings-level. If at any time it becomes apparent that the maneuver is going to be completed inside the show line (poor wind correction, improper alignment), abort the maneuver and set up for the next pass.

5.11. High Speed Flat Pass (Right to Left).

Figure 5.6. F-16 Flat Pass.



Flat Pass
F-16

Note: May be flown either direction

Table 5.4. F-16 Flat Pass Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300’	0.70M	MAX	.5 to 1.5
Exit 300’	<.92M	IDLE to MAX	.5 to 1.5

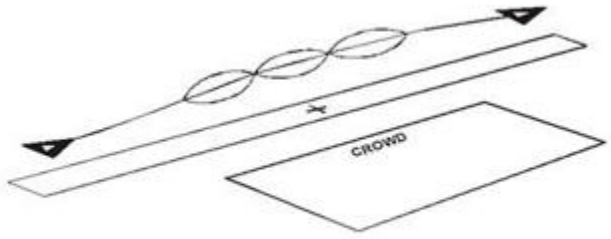
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS MIN/MAX	Power Setting	G
Entry min 200’	N/A / .94M	MAX	N/A
Exit min 200’	N/A / .94M	IDLE to MAX	N/A

5.11.1. **Maneuver Description:** This maneuver may be flown on the 500-foot show line at 300 feet AGL. After the repositioning maneuver, the pilot performs a flat pass. Upon completion of the flat pass, a reposition maneuver is flown in preparation for the next maneuver.

5.11.2. **Abnormal Procedures:** Deselect afterburner before exceeding 0.94 Mach.

5.12. Triple Aileron Roll (Left to Right).

Figure 5.7. F-16 Triple Aileron Roll.



Triple Aileron Roll
F-16

Table 5.5. F-16 Triple Aileron Roll Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500'	425	80% to MIL	.8 to 1.2
Exit 500'	450	80% to MIL	. 8 to 1.2

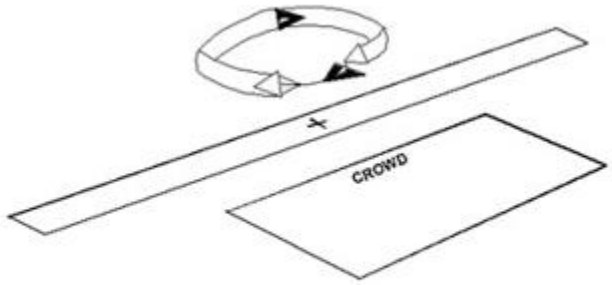
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 400'	400 / 500	80% to MIL	2
Exit **min** 400'	400 / 500	80% to MIL	N/A

5.12.1. **Maneuver Description:** On the 1,500-foot show line, at 3,500 feet prior to show center with approximately 425 knots raise the nose to 5-7 degrees pitch attitude, establish a climb, and relax stick pressure to approximately 0.8 Gs. Apply left-stick pressure to perform a maximum of three consecutive unloaded aileron rolls. Crosscheck the horizon and audibly count the rolls during the maneuver. As you complete the second roll, ensure the aircraft has gained altitude and that the flight path marker is above the horizon line in the HUD. If not, abort the maneuver and recover the aircraft above the minimum altitude. If you lose count of the number of rolls or experience roll-coupling immediately abort the maneuver. In all cases, complete the rolls at a higher altitude than entry. After rolling out wings-level upon completion of the third roll, smoothly apply aft-stick pressure as required to finish the maneuver at entry altitude (the objective of the maneuver is to make the pass look symmetrical to the crowd). Then perform a repositioning maneuver to prepare for the next maneuver.

5.12.2. **Abnormal Procedures:** If the minimum entry parameters are not met transition to a wings-level flat pass. At wings-level following the second roll, abort the maneuver if the flight path marker is not above the horizon line. Abort the maneuver if you lose count of the rolls during the sequence.

5.13. High-G Turn (Right to Left).

Figure 5.8. F-16 High-G Turn.



High G Turn
F-16

Table 5.6. F-16 High-G Turn Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	400	MIL to MAX	7.5
Exit	500’	350	MIL to MAX	6.5 to 7.5

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	330 / 440	MIL to MAX	9
Exit min	400’	250 / 440	MIL to MAX	9

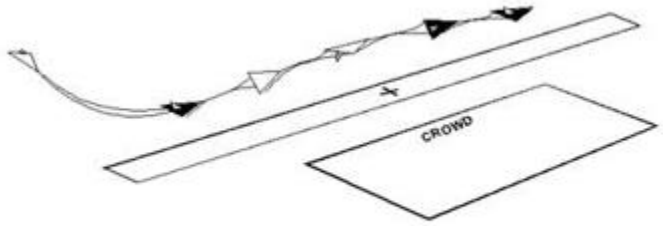
5.13.1. **Maneuver Description:** Beyond the 500-foot show line and just prior to show center select full AB and accelerate to 400 knots. At show center, turn away from the crowd using 75 to 85 degrees of bank (<75 degrees inside the 1,500-foot show line). Begin the turn with a smooth G onset-rate to approximately 7.5 Gs. G-loading and airspeed bleed-off rate vary with density altitude. Maintain a minimum of 250 knots. The first 180 degrees of turn should be accomplished with a 1¾-degree nose-up attitude and the last 180 degrees should be accomplished with a 1¾-degree nose-down attitude to make the turn appear level to the crowd. Vary the bank angle and pitch to arrive at level flight at the completion of 360 degrees of turn and to ensure the maneuver is finished above the entry altitude. Ensure surface winds are taken

into consideration in order to center this maneuver on show center and to avoid overshooting the show line. As you approach show center, smoothly but briskly roll out. Perform a repositioning maneuver to prepare for the next maneuver.

5.13.2. **Abnormal Procedures:** If the minimum entry parameters are not met, the pilot transitions to a wings-level flat pass. If during any portion of the maneuver it becomes apparent the aircraft may descend below 400 feet AGL or airspeed decay below 250 knots, abort the maneuver by rolling wings-level and climbing to 500 feet AGL. If necessary, adjust power and G as required (no lower than 250 knots) to avoid overshooting the show line.

5.14. Four-Point Roll (Left to Right).

Figure 5.9. F-16 Four-Point Roll.



Four-Point Roll
F-16

Table 5.7. F-16 Four-Point Roll Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500’	425	80% to MIL	.8 to 1.2
Exit	500’	450	80% to MIL	. 8 to 1.2

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min**	400’	400 / 500	80% to MIL	2
Exit min	400’	400 / 500	80% to MIL	N/A

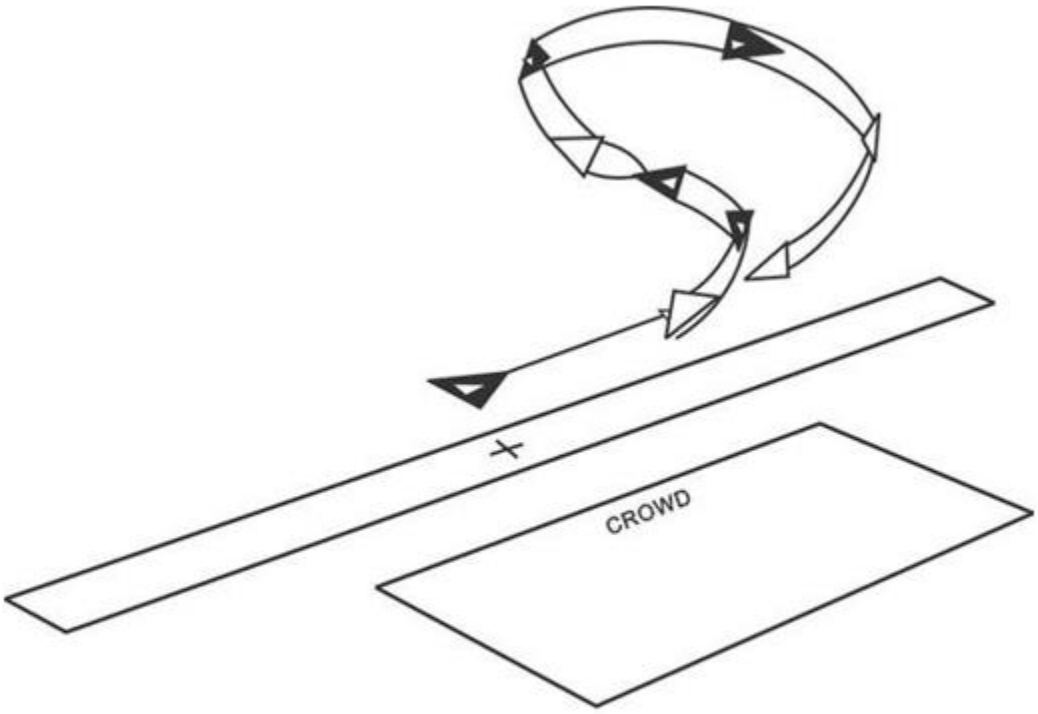
5.14.1. **Maneuver Description:** On the 1,500-foot show line, at 3,000 feet prior to show center, rotate the nose five to seven degrees nose-up, establish a climb, and relax stick pressure. A cadence four-point roll to the left is then performed by pausing momentarily at the 90-degree, 180-degree, 270-degree, and 360-degree points. The pace of the cadence should ensure the aircraft is at the 180-degree point over show center. In all cases, complete the roll at a higher altitude than it starts. Move the stick briskly, initiating a left roll and an immediate stop at the proper 90-degree point when pressure is released. Upon returning to wings-level, smoothly apply aft-stick pressure as required to finish the maneuver at entry altitude (the objective of the maneuver is to make the pass look symmetrical to the crowd). At the completion of the pass, a repositioning maneuver is performed to set up for the next maneuver.

5.14.2. **Abnormal Procedures:** If the minimum entry parameters are not met, the pilot transitions to a wings-level flat pass. If the flight path marker is below the horizon line at the wings-level inverted position, make an immediate roll to the upright position (abort), clearing the show line past the end of the crowd line.

5.15. Flat Pass (Right to Left). Perform the Flat Pass as described in **paragraph 5.11** and **Figure 5.6**

5.16. Falcon Turn (Left to Right).

Figure 5.10. F-16 Falcon Turn.



Falcon Turn
F-16

Table 5.8. F-16 Falcon Turn Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500'	400	MAX	6.5 to 7.5
Turn Reversal 1,500'	350	MIL to MAX	6.5 to 7.5
Exit 500'	350	MIL to MAX	6.6 to 7.5

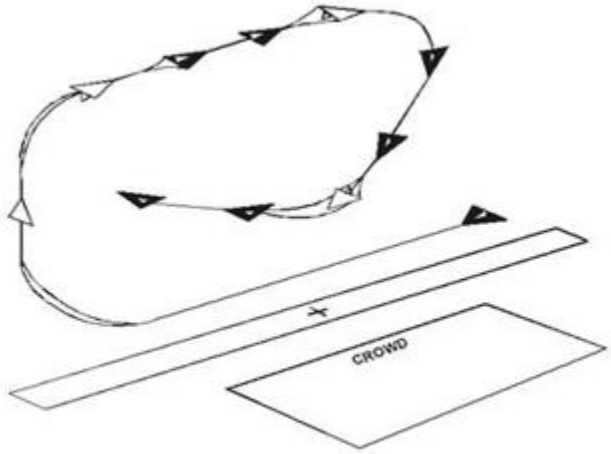
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry min 400'	330 / 440	MIL or Less	N/A
Turn Reversal 800'	300 / 440	A/R	N/A
Exit min 400'	250 / 440	A/R	9

5.16.1. **Maneuver Description:** This maneuver may be initiated at the 500-foot show line. Enter the show line at 500 feet AGL and 400 knots. Just prior to show center select full afterburner and perform a 6.5 to 7.5-G slightly climbing turn (20 to 30 degrees pitch angle) left away from the crowd. After 90 degrees of turn, reverse the direction of the turn to the right by unloading and rolling under 180 degrees. Perform a 6.5 to 7.5-G right slightly descending turn (10 to 20 degrees nose-low) for 270 degrees rolling out heading the opposite direction with a minimum of 250 knots. Accelerate down the show line at 500 feet AGL in preparation for the next maneuver.

5.16.2. **Abnormal Procedures:** If the minimum entry parameters are not met, the pilot transitions to a wings-level flat pass. If during any portion of the maneuver it becomes apparent the aircraft may descend below 400 feet AGL or overshoot 30 degrees nose-low, abort the maneuver by rolling wings-level and climbing to 500 feet AGL. If it becomes apparent the aircraft may overshoot the show line, use airspeed and G as required (no lower than 250 knots) to prevent the overshoot. **Note:** The Falcon Turn is a profile transition point if required by changing weather conditions.

5.17. Shark's Tooth (Right to Left).

Figure 5.11. F-16 Shark's Tooth.



Shark's Tooth
F-16

Table 5.9. F-16 Shark's Tooth Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500'	350	MAX	6.5 to 7.5
Apex ≥6,000'	250	MIL to MAX	6.5 to 7.5
90 degrees nose low ≥3,500'	275	IDLE to MIL	A/R
Exit 500'	A/R	A/R	4 to 6

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry min 400'	330 / N/A	MAX	9
Apex 5,000'	150 / 350	MIL to MAX	9
90 degrees nose low 3,000'	150 / 350	IDLE to MIL	9
Exit min 400'	A/R / A/R	A/R	9

5.17.1. **Maneuver Description:** (High Show Only. If ceiling is less than 7,000 feet AGL transition to the high alpha pass following the Falcon Turn.) This maneuver is a three-sided square loop with the third corner at a 135-degree angle. It avoids the pure vertical recovery in the last corner of a normal square loop. On the 1,500-foot show line, at 2,000 feet past show center, select afterburner and perform a 6.5 to 7.5-G pull to 90 degrees nose-high. Maintain full afterburner in the climb to 4,500 feet AGL, and then perform a 5.0 to 7.0-G pull of 90 degrees to inverted. Roll out to wings-level upright and maintain 250 knots. At 2,000 feet past show center, roll inverted, select power as required and perform a 5.0 to 7.0-G pull to 90 degrees nose-low. Approaching 4,500 feet to 3,500 feet AGL, at a maximum of 350 KIAS, continue to pull to 45 degrees nose-low upright. Hold until reaching 2,000 feet AGL, and then perform a descending turn away from the crowd. Turn left or right to set up on the appropriate 1,000 feet AGL downwind for the High Alpha pass into the wind.

5.17.2. **Abnormal Procedures:** If the minimum entry parameters are not met, the pilot transitions to a wings-level flat pass. Do not attempt to pull down from the inverted apex below 5,000 feet AGL or with more than 350 KIAS. If out of the maneuver envelope, perform a roll to wings-level upright and make a descending turn away from the crowd to set up on a downwind position for the High Alpha pass. At 90 degrees nose-low, max airspeed is 350 KIAS and minimum altitude is 3,000 feet AGL. If either is exceeded, execute a dive recovery IAW tech order procedures.

5.18. High Alpha Pass (Into the wind).

Figure 5.12. F-16 High Alpha Pass.

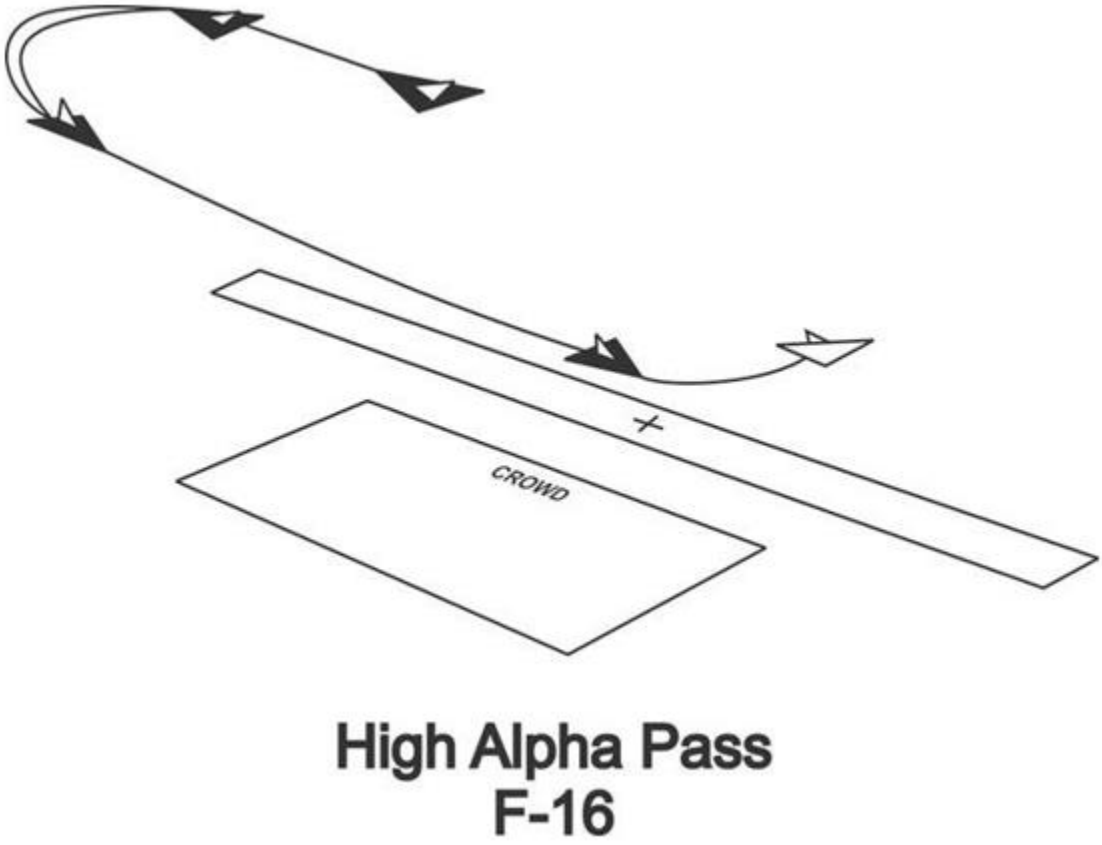


Table 5.10. F-16 High Alpha Pass Parameters.

TARGET	PARAMETERS			
Altitude AGL	Airspeed KCAS	Power Setting	AOA	G
Entry 500’	125	A/	20 deg	.5 to 1.5
Exit 500’	125	A/	20 deg	.5 to 1.5

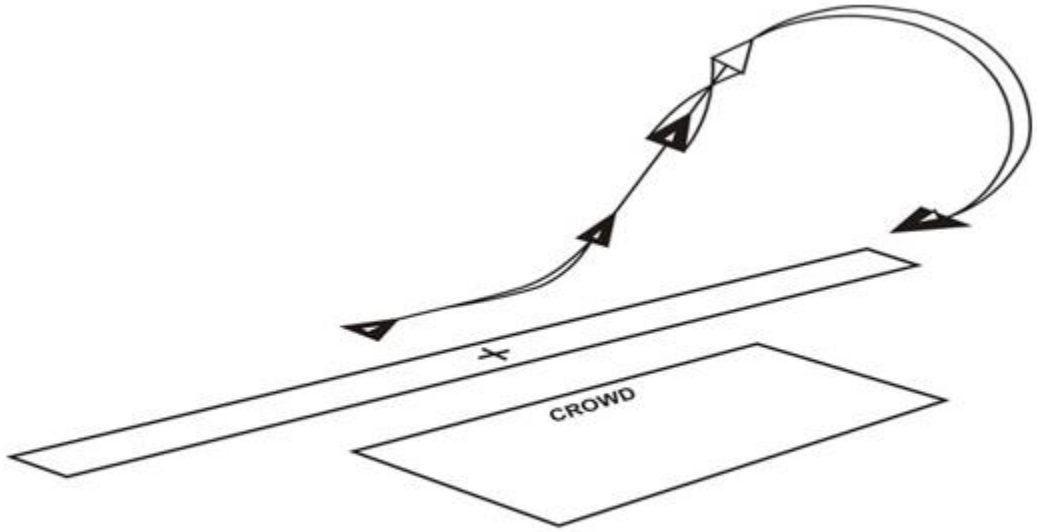
PARAMETER	LIMITS			
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	AOA **MIN/MAX**	G
Entry **min** 400’	115 / N/A	A/R	N/A / 23 deg	.5 to 1.5
Exit **min** 400’	115 / N/A	A/R	N/A / 23 deg	.5 to 1.5

5.18.1. **Maneuver Description:** During the turn to the 500-foot show line following the shark’s tooth maneuver, use speed brakes and G as required to gradually slow the airspeed and attain 125 knots and 500 feet AGL by 2,000 feet prior to show center. As the aircraft rolls out on the show line, ensure the speed brakes are retracted, smoothly bring the nose up and use power as required to achieve the target parameters. Use the Gun Cross in the HUD in relation to the pitch ladders to achieve the target AOA. As a technique, select Vertical Velocity Indicator (VVI) in the HUD to help achieve level flight, as the tendency is to climb during the maneuver. Maintain the desired ground track by looking out the sides of the canopy and cross checking the desired heading in the HUD and/or Horizontal Situation Indicator (HSI). To complete the maneuver, select full afterburner and transition to the muscle climb.

5.18.2. **Abnormal Procedures:** If the minimum entry parameters are not met transition to a wings-level flat pass. If the airspeed falls below 115 knots or a descent rate develops, select full afterburner and perform a normal go-around procedure.

5.19. Muscle Climb Maneuver.

Figure 5.13. F-16 Muscle Climb Maneuver.



Muscle Climb Maneuver
F-16

Table 5.11. F-16 Muscle Climb Maneuver Parameters.

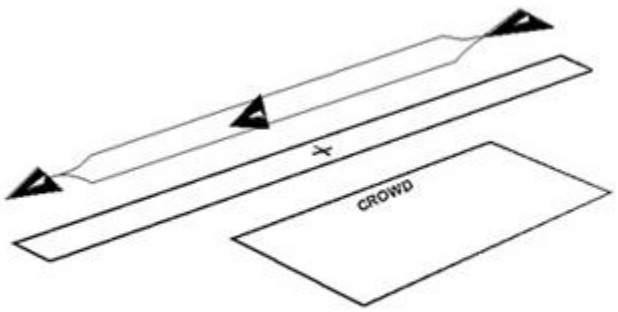
TARGET PARAMETERS				
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	500'	125	MAX	1 to 1.8
Apex	≥5,500'	175	MIL to MAX	A/R
90 degrees nose low	≥3,500'	300	A/R	
Exit	500'	A/R	A/R	4 to 6
PARAMETER LIMITS				
Altitude AGL		Airspeed KCAS MIN/MAX	Power Setting	G
Entry **min**	400'	115 / N/A	MAX	2
Apex **min**	5,000'	150 / 350	MIL to MAX	N/A
90 degrees nose low	3,000'	150 / 350	A/R	
Exit **min**	400'	A/R / A/R	A/R	9

5.19.1. **Maneuver Description:** Passing show center, simultaneously select full afterburner and pull up to establish up to a 55-degree nose-high attitude using 1.5 – 1.8 Gs. For Low profile, vary nose position consistent with weather. The afterburner has to light in order to execute this maneuver and allow the aircraft to accelerate to maintain a minimum of 150 KIAS in the climb. Pitch attitude may be reduced to hold airspeed. The demonstration pilot may then transition to a Wifferdill or Vertical Reposition Maneuver (VRM) as required when adjusting to the show line for subsequent maneuvers. VRM may not be flown during the Low profile regardless of ceiling changes. If a VRM is flown, the demonstration pilot adheres to the apex and 90-degree nose-low parameters listed in **Table 5.11** and the procedures for a VRM as described in **paragraph 5.9.4.** Once recovery above the minimum altitude for the follow-on maneuver is assured, backpressure is relaxed and power modulated to smoothly transition to level flight at the entry altitude for the next maneuver.

5.19.2. **Abnormal Procedures:** If the airspeed falls below the minimum of 150 knots, a nose-high recovery should be accomplished. If the airspeed exceeds 350 KIAS during any portion of a follow-on VRM or if the aircraft is below 3,000 feet AGL at 90 degrees nose-low, immediately initiate a dive recovery to the nearest horizon.

5.20. Knife Edge Pass.

Figure 5.14. F-16 Knife Edge Pass.



Knife Edge Pass
F-16

Table 5.12. F-16 Knife Edge Pass Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500’	425	MIL to MAX	.5 to 1.5
Exit 500’	475	MIL to MAX	.5 to 1.5

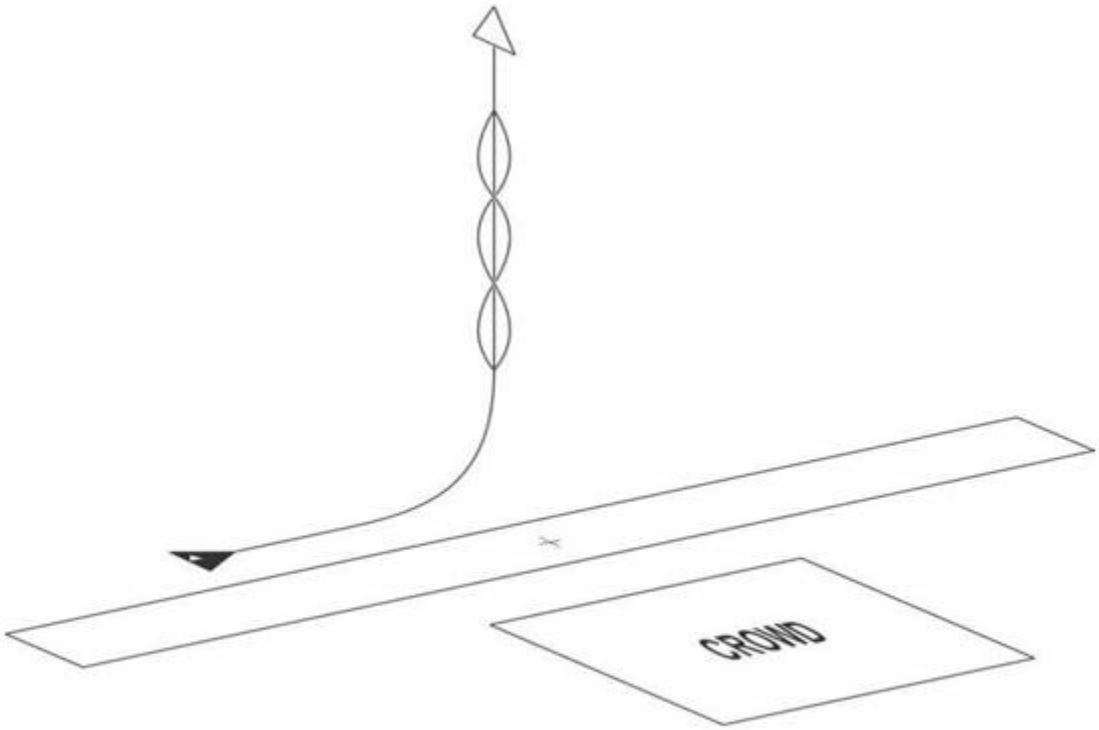
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 400’	400 / 550	MIL to MAX	N/A
Exit min 400’	400 / 550	A/R	N/A

5.20.1. **Maneuver Description:** Enter the 1,500-foot show line at 500 feet AGL and 425 knots. At 4,000 feet prior to show center, raise the nose to five to seven degrees, establish a climb, and apply stick pressure to roll 90 degrees toward the crowd. Hold this attitude until 4,000 feet past show center. Use top rudder to hold the nose above the horizon and forward stick pressure to keep the aircraft on the show line. To complete the maneuver, unload, roll wings-level, and perform a repositioning maneuver.

5.20.2. **Abnormal Procedures:** If the minimum entry parameters are not met transition to a wings-level flat pass. If it becomes apparent the aircraft may descend below 400 feet AGL, roll out of the bank and clear the show line. **Note:** The Knife Edge Pass may be used as a repositioning maneuver for the purpose of orienting the subsequent demonstration maneuver in the approved direction relative to the crowd line. **Note:** The Knife Edge Pass is a profile transition point if required by changing weather conditions.

5.21. Maximum Performance Climb with Rolls.

Figure 5.15. F-16 Maximum Performance Climb with Rolls.



Maximum Performance Climb With Rolls
F-16

Table 5.13. F-16 Maximum Performance Climb with Rolls Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300'	450	MIL to MAX	6 to 7.5
Recovery/Exit	250	A/R	4 to 6
2,500' prior to assigned altitude			

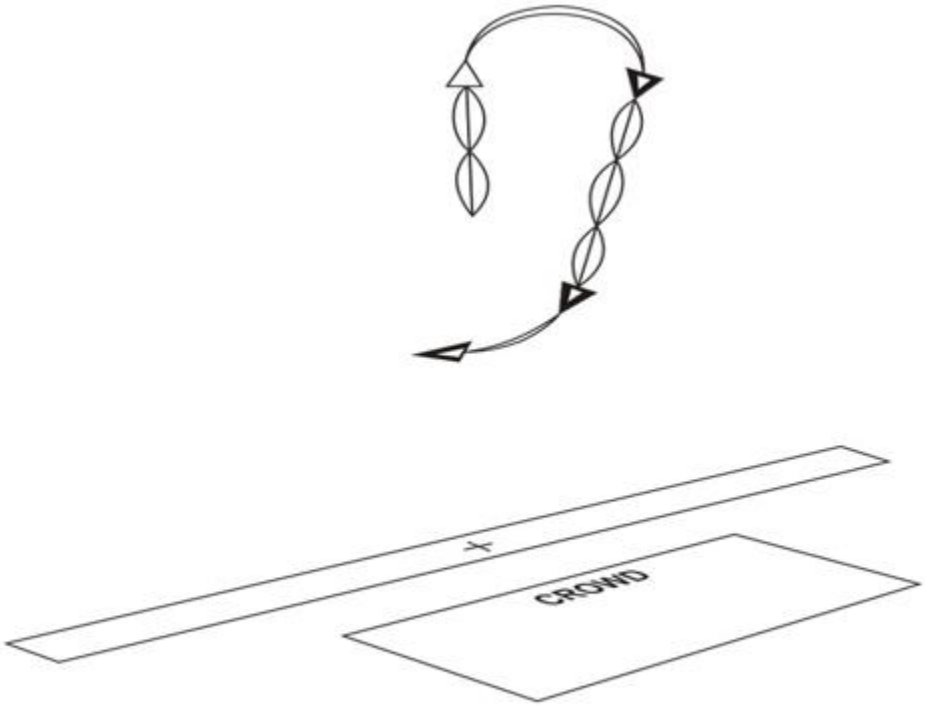
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 200'	330 / 550	MIL to MAX	9
Apex **NTEWA**	150 / N/A	A/R	9

5.21.1. **Maneuver Description:** Enter on the 1,500-foot show line with a minimum of 330 knots at 300 feet AGL approaching show center 135 degrees to the crowd line, but with the flight path not directed toward the crowd. At 3,000 feet prior to show center select full afterburner and initiate a 6.5 to 7.5-G wings-level pull to arrive at show center with 90 degrees of pitch. The pull should be made so the aircraft is vertical at show center. When the aircraft is vertical, perform high-rate unloaded aileron rolls until reaching a minimum of 250 knots or 2,500 feet AGL below wavered airspace. Take every precaution to avoid slow airspeed in an exaggerated pitch attitude due to the potential of "pitch hang-up". Stop the aileron rolls and execute a vertical recovery by smoothly pulling the nose to the nearest horizon to prevent exceeding waivered airspace. Modulate power and speed brakes as required while performing the descending portion of a repositioning maneuver to enter the show line for the next maneuver.

5.21.2. **Abnormal Procedures:** If the minimum entry parameters are not met transition to a wings-level, flat pass. If roll-coupling occurs during the climb (to exceed approximately 2.5 G), smoothly stop the roll, then pull to the nearest horizon, and roll upright. Initiate an immediate recovery to the nearest horizon if airspeed decays to 250 KIAS minimum or altitude reaches 2,500 feet AGL below the top of waivered airspace.

5.22. F-16 Spiral Descent.

Figure 5.16. F-16 Spiral Descent.



Spiral Descent
F-16

Table 5.14. F-16 Spiral Descent Param.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry NTEWA	200	IDLE	1 to 2
Exit 4,000' and 45° NL	A/R	A/R	3 to 7

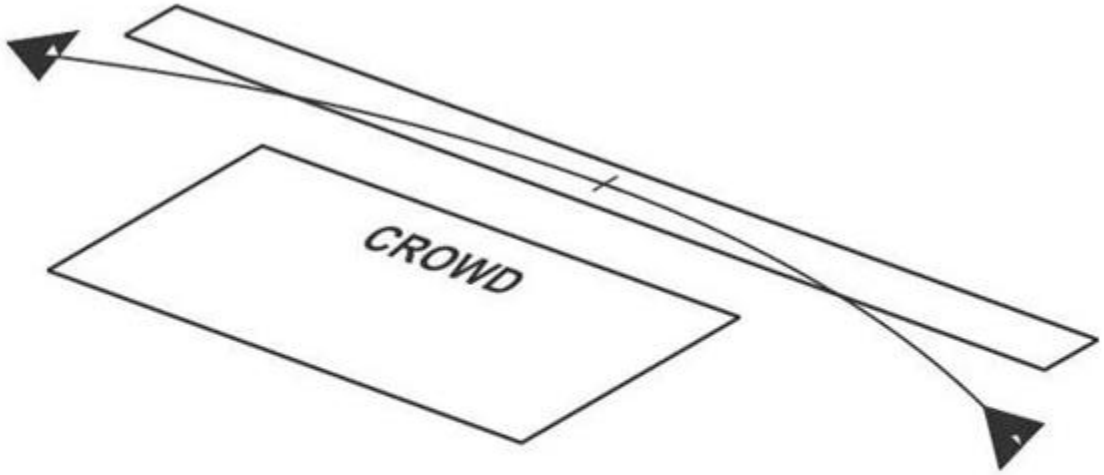
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 8,000'	150 / 350	IDLE	N/A
Exit **min** 3,500' and ≤45° NL	250 / 440	A/R	8

5.22.1. **Maneuver Description:** As the aircraft nose is brought through the horizon, reacquire the air show environment and perform the spiraling descent oriented toward show center. In idle power, allow the nose to fall to 45 degrees nose-low. Once established, apply back-stick pressure and roll simultaneously to maintain at least 200 knots initially in a spiraling dive, ensuring airspeed of 250-440 knots prior to initiating the recovery. At approximately 5,000' AGL, adjust dive angle and roll in order to be wings-level, less than 45 degrees nose-low at the planned altitude of 4,000 AGL. The maneuver is complete when the dive angle is less than 45 degrees. Continue a descent as required to reposition for the next maneuver, however do not perform or exit the maneuver over the crowd. Do not exceed 440 knots in the descent. The airspeed window of 250-440 knots at maneuver exit allows the pilot the flexibility to show the F-16's maneuvering ability early in the maneuver while gaining energy at or below corner velocity to set up for the next maneuver—the Dedication Pass.

5.22.2. **Abnormal Procedures:** If below 8,000 feet AGL at the apex of the climb (airspace restrictions, weather conditions), adjust dive angle to safely execute a recovery at 4,000 feet AGL. Initiate an immediate dive recovery if airspeed exceeds 440 knots. Show center orientation is a secondary consideration in the spiral descent; do not continue the maneuver below minimum altitude to attempt a specific orientation in the air show environment. If at any time during the maneuver it appears that the aircraft may not attain the prescribed altitude/airspeed parameters, abort the maneuver. Roll out and/or pull to a wings-level position, initiate a descent and reposition the aircraft for follow-on maneuvering. **Option:** Due to changing weather conditions, the vertical spiraling descent may not be possible after the Max Performance Climb. Start a descent when able to maintain VMC conditions to position the aircraft for the next maneuver.

5.23. Dedication Pass. The intent of this maneuver is to pay tribute to our war fighters. It is flown prior to the Tactical Pitch-Up to Land during the High and Low Show profiles.

Figure 5.17. F-16 Dedication Pass.



Dedication Pass
F-16

Table 5.15. F-16 Dedication Pass Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G
Entry	300’	0.65M – 0.90M	MAX	1 to 3
Exit	300’	0.65M – 0.90M	IDLE to MAX	4 to 6

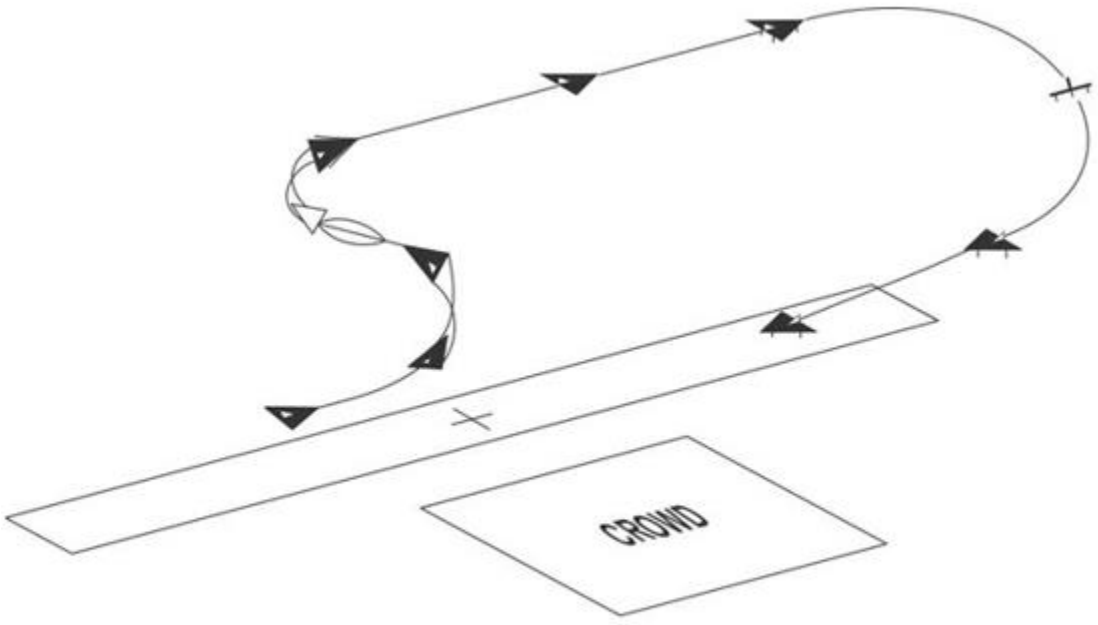
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS**MIN/MAX**	Power Setting	G
Entry **min**	200’	N/A / .90M	MIL to MAX	9
Exit **min**	200’	N/A / .90M	IDLE to MAX	9

5.23.1. **Maneuver Description:** The maneuver is flown beyond the 500-foot line. Following the Max Performance Climb with Rolls (high show), or Knife Edge (low show), attain a safe airspeed and reposition the aircraft to arrive behind and offset from the crowd. Fly the approach from behind the line, approximately 2 miles from show center, with an approximate 30-degree dive angle and a 45-degree cut (bank angle 75 to 90 degrees) to the show line, remaining beyond 500 feet from the crowd at all times. Upon reaching a point 500 feet from the corner of the crowd and 300 feet AGL, roll the aircraft into a level arcing pass using bank angles of 75 to 90 degrees. Use top rudder if necessary to maintain altitude. Select max power until passing the show line or until a target airspeed of .85M is anticipated. Use varying pressure altitudes and temperatures to determine when to deselect afterburner to ensure the target airspeed is attained at show center and the max airspeed is not exceeded. Optimum profile of the aircraft is achieved at approximately 80 degrees of bank. Use caution not to over bank the aircraft and allow the aircraft to lose altitude while banking. In order to maintain 500 feet from the crowd at each corner, ensure the flight path at show center extends beyond 500 feet. Continue the arc beyond the opposite crowd corner, reduce power as required, roll out of bank, and continue a maximum 45-degree climb to set up for the Tactical Pitch-up to Landing.

5.23.2. **Abnormal Procedures:** Abort the maneuver if at any time the aircraft comes closer than 500 feet to the crowd line or its lateral limits, an excessive dive angle or sink rate develops, entry parameters are not met, or the aircraft descends below 200 feet AGL. Abort the maneuver by rolling the aircraft wings-level and flying away from the crowd.

5.24. Tactical Pitch-Up to Landing (Direction of Landing).

Figure 5.18. F-16 Tactical Pitch-Up to Landing.



Tactical Pitch-Up To Landing
F-16

Table 5.16. F-16 Tactical Pitch-Up to Landing Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500’	350	MIL to MAX	5 to 7
Exit Downwind Alt	250	A/R	1

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry **min** 400’	300 / 440	MIL to MAX	9
Exit Downwind Alt	200 / N/A	A/R	N/A

5.24.1. **Maneuver Description:** Enter on the 1,500-foot show line at 500 feet AGL and 350 knots. At 2,000 feet prior to show center raise the nose to five to seven degrees pitch angle, unload, and perform a 405-degree aileron roll away from the crowd followed by a 5.0 to 7.5-G pull-up to point 90 degrees away from the crowd line. Execute a 180-degree roll, using afterburner and pull to the downwind leg. Configure for and execute a normal final turn and landing. **Option**: If a Heritage Flight is to be performed immediately following completion of the demonstration, conduct a low approach or wings-level pass and proceed to rejoin with Heritage Flight aircraft using pre-briefed procedures.

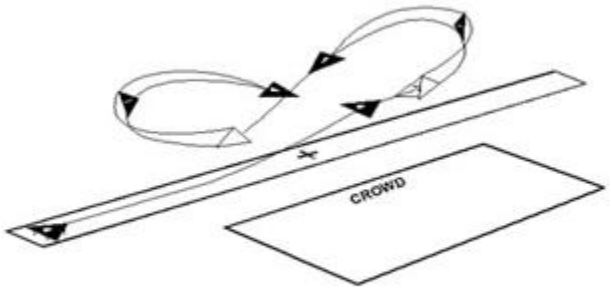
5.24.2. **Abnormal Procedures** : If entry parameter limits are not achieved by show center, do not perform the 405-degree aileron roll; instead, fly a simple pull-up to a normal closed pattern.

Section 5C—-Low Profile

5.25. Low Abnormal Procedures: Unless otherwise noted, abnormal procedures for the low profile are the same as the high profile.

5.26. Takeoff to Level 8 (or Cuban 8). Note: If show ceiling is verified to be at or above 3,500 feet AGL, the pilot may elect to fly a Cuban 8 as described in **paragraph 5.10.1**, in lieu of a Level 8.

Figure 5.19. F-16 Level 8.



Level 8
F-16

Table 5.17. F-16 Level 8 Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 500’	400	MAX	5 to 7
Turn Reversals 500’	350	MIL to MAX	5 to 7
Exit 500’	350	A/R	1

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	G
Entry min 400’	330 / 440	MAX	9
Turn Reversals min 400’	250 / 440	MIL to MAX	9
Exit min 400’	250 / 440	A/R	1

5.26.1. **Maneuver Description:** Do not attempt takeoff when the takeoff roll exceeds 80 percent of available runway length. If airfield conditions permit, a brake release point should be selected so takeoff occurs at show center. The show-center takeoff point is a secondary consideration to determining critical field length, abort criteria, etc. In no case initiate the takeoff with less than 6,000 feet of runway remaining. The takeoff is made in full afterburner. Ensure a positive rate of climb is established after takeoff. Once the gear is retracted, a three to five-degree nose-high climb is made while accelerating to 400 knots. At this point, maintain afterburner and begin an energy sustaining pitch-up to 500 feet AGL, using 5.0 to 7.0 Gs, and turn away from the crowd. After 225 degrees of turn, unload and reverse the direction of turn and perform a second level turn in the opposite direction. After 270 degrees with a 45-degree cut to the show line, the turn is again reversed. Vary the bank angle and pitch to arrive at level flight at the completion of the maneuver and to ensure the maneuver is finished above the entry altitude. Complete the maneuver by turning to finish on the show line heading in the same direction as takeoff. Ensure surface winds are taken into consideration in order to center this maneuver on show center and to avoid overshooting the show line. Once on the show line, execute a repositioning maneuver to prepare for either a Flat Pass (left to right takeoff) or the Triple Aileron Roll (right to left takeoff).

5.26.2. **Abnormal Procedures:** If during any portion of the maneuver it becomes apparent the aircraft may descend below 400 feet AGL or airspeed decays below 250 knots, abort the maneuver by rolling wings-level, climbing to 500 feet AGL, and clearing the show line. Use power and G as required (no lower than 250 knots) to prevent the aircraft from overshooting the show line.

5.27. Flat Pass (Right to Left). If the direction of takeoff is left to right, use the repositioning maneuver following the Level or Cuban 8 to prepare for a flat pass as described in **paragraph 5.11.1** At 2,000 feet past show center, execute a repositioning maneuver to set up for the next maneuver.

5.28. Triple Aileron Roll (Left to right). Perform the triple aileron roll as described in **paragraph 5.12.1** When wings-level following the last aileron roll, the pilot performs a repositioning maneuver to set up for the next maneuver.

5.29. High-G Turn (Right to Left). Perform the high-G turn as described in **paragraph 5.13.1** At 2,000 feet past show center, perform a repositioning maneuver to set up for the next maneuver.

5.30. Four-Point Roll (Left to Right). The four-point roll is performed as described in **paragraph 5.14.1** At the completion of the pass, execute a repositioning maneuver to set up for the next maneuver.

5.31. High Speed Pass. Perform the High Speed Flat Pass as in **paragraph 5.11.1** At the completion of the pass, execute a reposition maneuver to set up for the next maneuver.

5.32. Falcon Turn (Left to Right). The Falcon Turn is performed as described in **paragraph 5.16.1** At the completion of the maneuver, pull up to a downwind to prepare for the High Alpha pass against the wind. If the wind favors a right to left final, a normal 180-degree pitch-up to downwind is performed. **Note:** The Falcon Turn is a profile transition point if the weather ceiling has changed.

5.33. High Alpha Pass (Into the wind). This maneuver may be flown on the 500-foot show line. The High Alpha pass is performed as described in **paragraph 5.18.1** At 3,000 feet past show center, perform a repositioning maneuver to set up for the next maneuver.

5.34. Muscle Climb. Perform the Muscle Climb as described in **paragraph 5.19.1.** At the completion of the pass, execute a reposition maneuver to set up for the next maneuver.

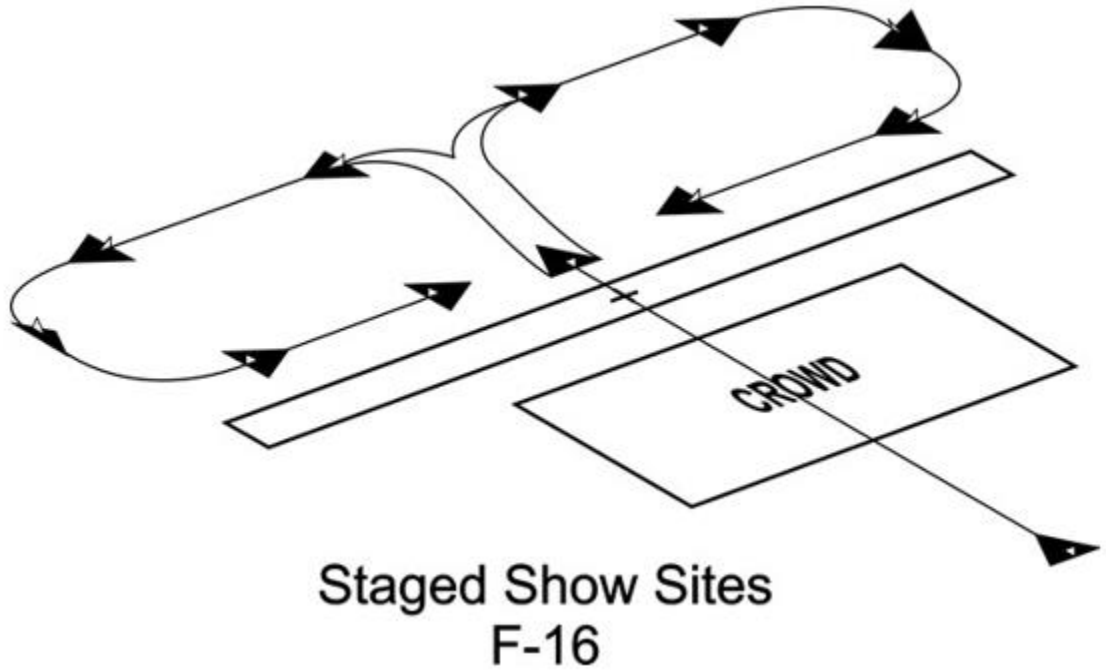
5.35. Knife Edge Pass. Perform the Knife Edge Pass as in **paragraph 5.20.1** At the completion of the pass, execute a reposition maneuver to set up for the next maneuver.

5.36. Dedication Pass. Perform the Dedication pass as described in **paragraph 5.23.1**

5.37. Tactical Pitch-Up to Landing. The tactical pitch-up to landing is performed as described in **paragraph 5.24.1**

5.38. Staged Show Sites.

Figure 5.20. F-16 Staged Show Sites.



5.38.1. When demonstration aircraft takeoff from other than the show site, plan to arrive over the show site with the fuel requirements prescribed in **paragraph 5.2** plus enroute return fuel IAW AFI 11-2F-16 Vol 3, *F-16 Operations Procedures.* The pilot may enter from behind the crowd at a minimum of 1,000 ft AGL as depicted in **Figure 5.20**, or via a Flat Pass maneuver down the show line, and complete the show as described in this chapter**.** Upon completion of the Dedication Pass and clearing the crowd, turn out behind the crowd and return to the staging airport. Pilots should plan to fly a full demonstration, but may cut the profile short as required to maintain suitable enroute return fuel.

Chapter 6

F-22 DEMONSTRATION MANEUVERS

Section 6A—--General Information

6.1. General. Maneuvers described in this document are used for training and flown in F-22 aerial demonstrations as the complete aerobatic demonstration profile. Aerobatic maneuvers are included in this grouping, and as such treat this profile as a standard Single Ship Tactical Demonstration profile. The profile passes are listed in a specific order and described in a specific orientation to the crowd. Abnormal procedures are written for each maneuver. If the entry conditions are not met for any maneuver, the pilot recovers to wings-level flight and transitions to the next maneuver. Certain maneuvers require the pilot to transmit airspeed and/or altitude to a safety observer. The ground safety observer confirms parameters are good, monitors the demonstration pilot's flight path, engine performance, and visually clears the demonstration area for traffic. The safety observer directs an abort when parameter limits are exceeded. Following each maneuver, and before clearing the show line to reposition for the next maneuver, the pilot ensures any descent has been stopped and the aircraft is in a level or climbing attitude with the flight path marker at or above the horizon.

6.2. Aircraft Configuration and Fuel Requirements. These maneuvers should be flown in a standard configured aircraft with a full fuel load of 18,000 pounds at engine start. If mission needs dictate, taking off with less than full fuel is authorized. Under all circumstances, ensure the pilot takes off with enough fuel to execute the profile and divert if necessary. Inert weapons may be loaded; however, if the total weight exceeds 1,000 pounds, ensure the total fuel at takeoff is less than 17,000 pounds.

6.3. Airspeed and G Limits. Demonstration pilots may not exceed 0.94 Mach. **(T-2).** The maximum target G for this demonstration is 7.5 Gs. This does not preclude a momentary increase in G for safety considerations.

6.4. Show line Restrictions. The majority of the F-22 demonstration is flown on the 1,500-foot show line. Maneuvers not conforming to FAA Order 8900.1, Volume 3, Chapter 6, require approval via the FAA AFS-800 Maneuver Package approval process. **(T-0).**

6.5. Airspace and Runway Requirements. Required airspace for the F-22 is 6,000 feet AGL and normally a five-mile radius from show center horizontally. The minimum dimensions of the aerobatic box are 3,000 feet wide, 4,500 feet long, and 7,000 feet AGL. If the FAA has waived a show line to closer than 1,500 feet, the aerobatic box may be less than 3,000 feet wide, provided there is at least 1,200 feet from either the primary or secondary show line. Minimum runway length and width is 7,000 feet x 75 feet. Ensure the runway, taxiway, and parking area are stressed for a 65,000-pound aircraft with single wheel type landing gear.

6.6. Weather Requirements. Weather PARAMETER LIMITS for the high show profile are a ceiling of at least 4,500 feet AGL, three miles ground and five miles in-flight visibility with a discernible horizon. Ceiling required for the low profile is 1,500 feet AGL. The ceiling requirements for each maneuver are based on waived airspace (clear of clouds) and require adjustment if using VFR rules. Plan maneuvers to maintain VMC throughout the show sequence.

6.7. High Density Altitude Demonstrations. For high density altitude shows, adjust PARAMETER LIMITS in accordance with the following:

6.7.1. Add 500 feet to APEX altitudes for each 2,000 feet of altitude above 3,000 feet MSL and 10 knots to entry airspeeds on all maneuvers that exceed 30 degrees AOA. For example, if the show site altitude is 5,000 feet MSL, add 500 feet to the baseline target and 10 knots to the airspeed. If the show site altitude is 7,000 feet MSL, add 1,000 feet to the baseline target and 20 knots to the airspeed.

6.8. Demonstration Maneuver Profiles.

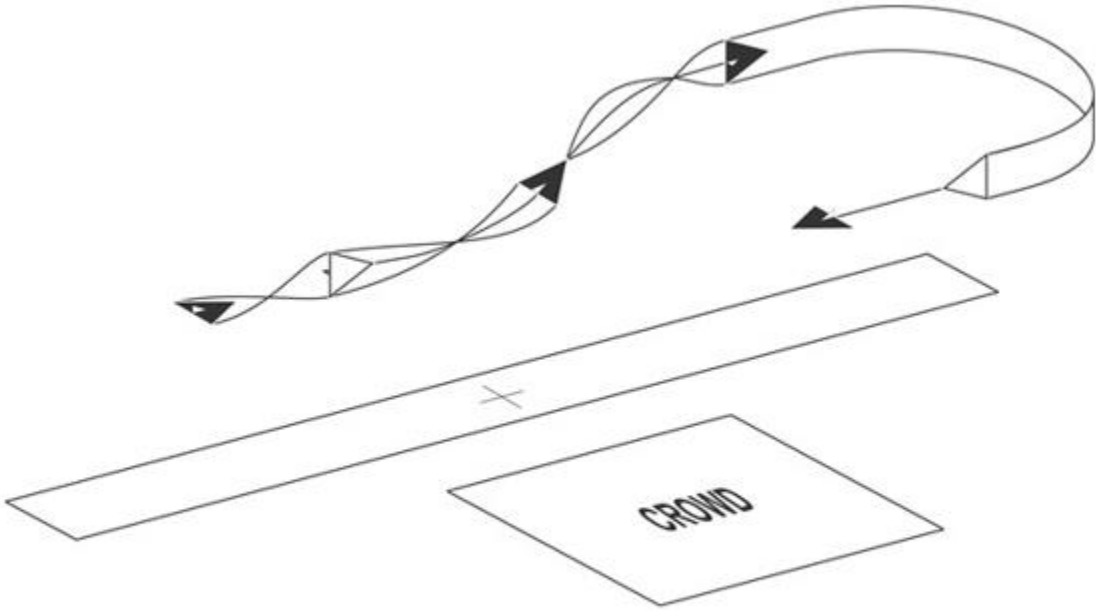
Table 6.1. F-22 Demonstration Maneuver Profiles.

High Show
Maximum Power Takeoff to High AOA Loop
Minimum Radius Turn to J-Turn Reposition
Weapon Bay Door Pass
Dedication Pass
Pedal Turn
Power Loop
Loaded Roll
Tail Slide
Slow Speed Pass
Split-S Reposition
High Speed Pass
Hoover Pitch to Land
Low Show
Maximum Power Takeoff
Minimum Radius Turn
Weapon Bay Door Pass
Dedication Pass
Slow Speed Pass
Loaded Roll
High Speed Pass
Minimum Radius Turn
Hoover Pitch to Land

6.9. Reposition Maneuvers. Reposition maneuvers may be flown in either direction at any time during the demonstration sequence as required. IAW FAA regulations, 90 degrees of bank may be exceeded during repositions (if required). Repositioning turns may not include added aileron rolls or other accenting maneuvers.

6.9.1. **Flat Wifferdill Reposition Maneuver** . The Flat Wifferdill Maneuver turn is a combination horizontal and shallow vertical turn used to change direction at each end of the show line when performing the low profile. The Flat Wifferdill Maneuver turn uses less altitude than a normal Wifferdill. It requires a larger cut and tends to be looser and flatter than a normal Wifferdill. 270-degree turn reversal may be made while the aircraft is climbing. The target G for this maneuver is 6.5 to 7.0 Gs. Each turn may differ slightly so that airspeed/altitude parameters for the next maneuver are established in the flat Wifferdill. The entry "cut" turn for the flat Wifferdill is made to ensure no show line or crowd line penetration.

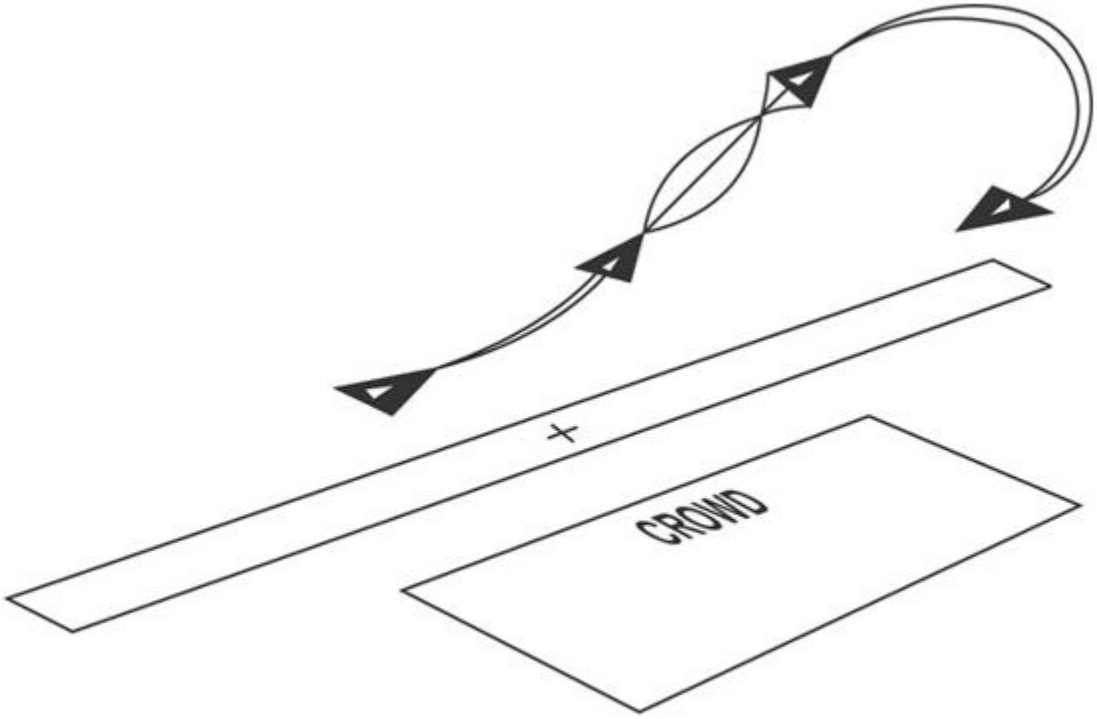
Figure 6.1. F-22 Flat Wifferdill Reposition.



Flat Wifferdill Reposition Maneuver
F-22

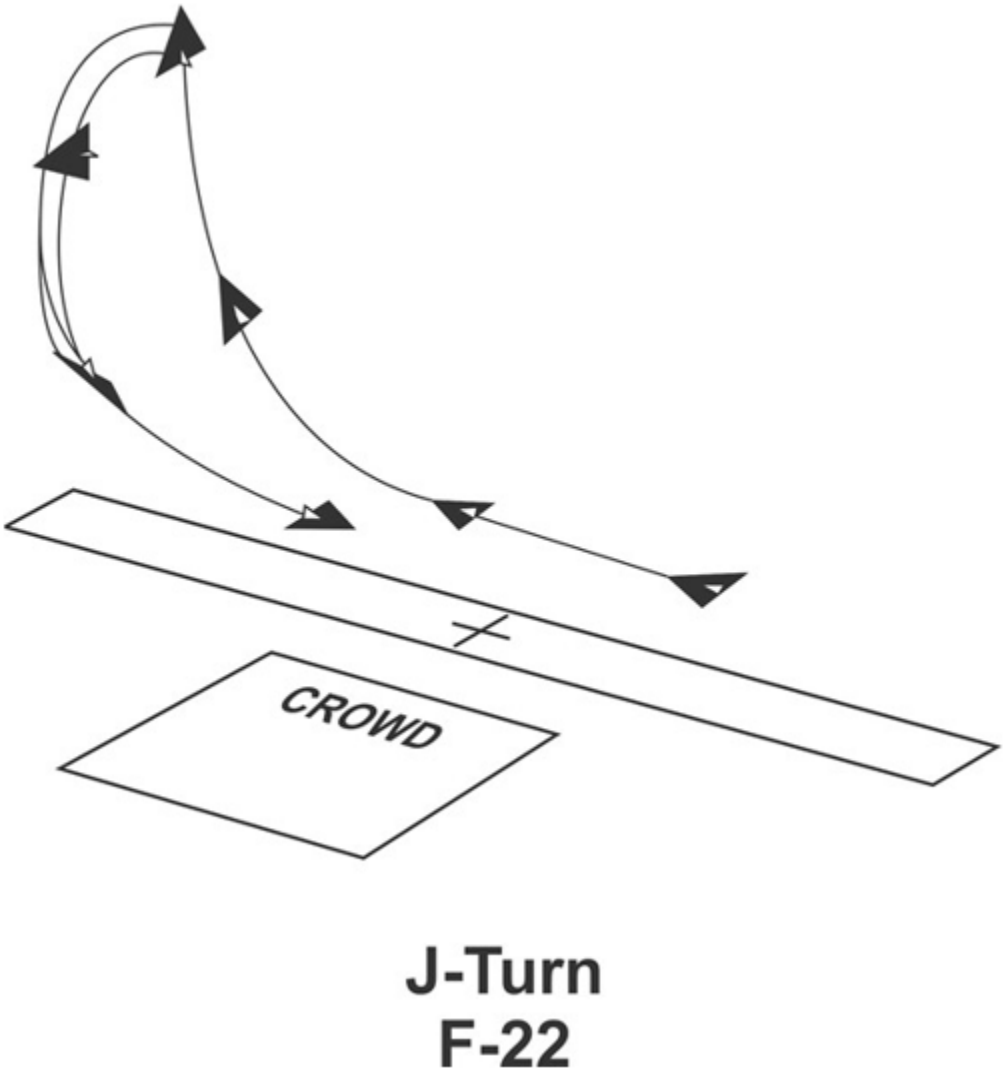
6.9.2. **Wifferdill Reposition Maneuver.** The Wifferdill turn is a combination horizontal and vertical turn used to change direction at each end of the show line. The vertical plane is used to maintain necessary proximity to the demonstration area. Each turn may differ slightly so that airspeed/altitude parameters for the next maneuver are established in the Wifferdill. As the aircraft departs the show line, maneuver in the horizontal and vertical plane to reposition for the next maneuver. The target G for this maneuver is 6.5 to 7.0 Gs. A 270-degree turn reversal is made while still climbing. During the last half of the Wifferdill, while descending, the turn is adjusted to establish the proper show line entry. The entry "cut" turn for the Wifferdill is made to ensure no show line or crowd line penetration.

Figure 6.2. F-22 Wifferdill Reposition.



6.9.3. **J-Turn Reposition Maneuver.** The J-Turn reposition maneuver can be used to quickly change directions at each end of the show line while minimizing separation from the crowd and further displaying the slow-speed maneuverability of the Raptor. From desired position with 100 KCAS minimum, aggressively apply aft stick while wings-level to climb and slow the aircraft while increasing the alpha. At 36 degrees AOA or more, use stick and rudder to maneuver in the direction of the runway. Do not maintain high alpha more than is necessary to maneuver the aircraft and do not slow the aircraft to below 75 KCAS if below 2,500 feet AGL and greater than 75 degrees nose-high. Once the nose slices back to the horizon and is pointed towards the crowd line, break the alpha to 36 degrees for the recovery and maintain alpha until sink rate is arrested and begin to set up for the next pass. Regardless of nose position, recover from high AOA and fly the aircraft out not later than 2,500 feet AGL.

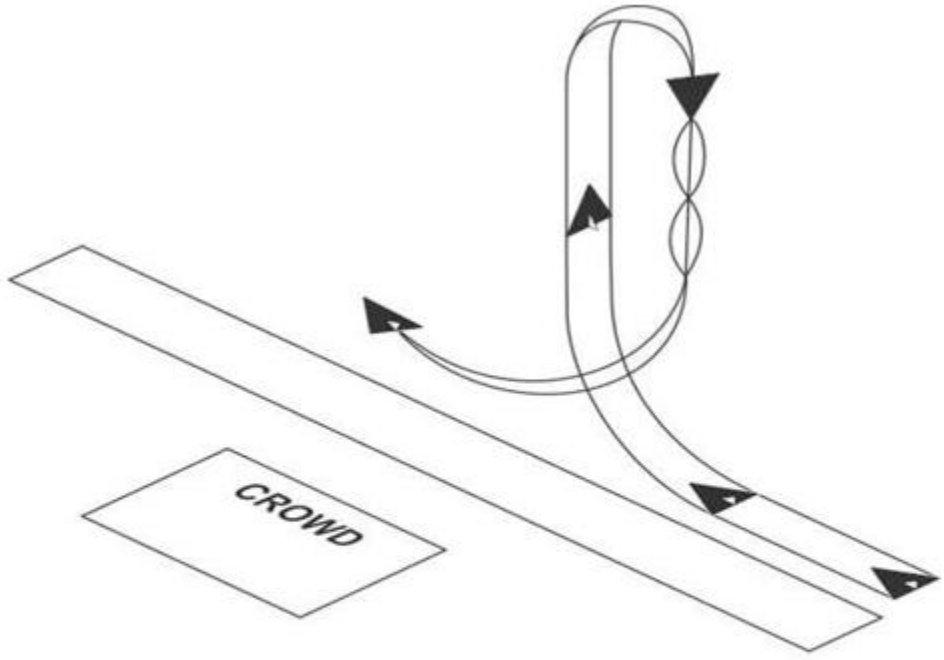
Figure 6.3. F-22 J-Turn Reposition.



Section 6B—High Profile

6.10. Maximum Power Takeoff to High AOA Loop.

Figure 6.4. F-22 Maximum Power Takeoff to High AOA Loop.



T/O To High AOA Loop
F-22

Table 6.2. F-22 Maximum Power Takeoff to High AOA Loop Parameters.

TARGET PARAMETERS				
	Altitude AGL	Airspeed KCAS	Power Setting	Degrees Nose High (Deg NH)
Entry	0'	250	MAX	75
Pull	3,500'	100	MAX	N/A
Roll	3,000'	100	MAX	90 NL
Recovery	2,500'	N/A	MAX	N/A

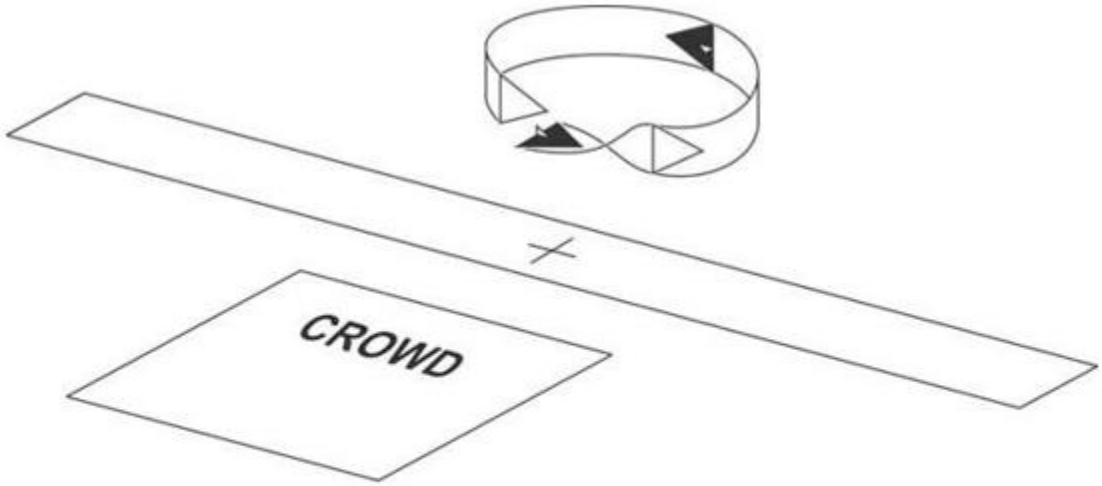
LIMITS					
Altitude AGL			Airspeed KCAS **MIN/MAX**	Power Setting	Deg NH
Entry	N/A		200 / N/A	MAX	80
Pull	**min**	3,000'	80 / N/A	MAX	N/A
Roll	**min**	2,800'	80 / N/A	MAX	90 NL
Recovery	**min**	2,000'	N/A / 400	MAX	N/A

6.10.1. **Maneuver Description:** Select full AB at brake release and check engine conditions on the roll. Rotate at tech order speed and begin climb. Confirm gear is retracted and the light is extinguished in the gear handle. Accelerate in full afterburner (AB) with a positive climb rate until approaching show center and on the 1,500-foot show line. At 250 KCAS begin an aggressive pull (soft to hard stop initially) up to 75 degrees nose-high. Hold 75 degrees nose-high (water mark) and allow airspeed to slow, AOA to decrease and altitude to increase. Passing 3,000 feet AGL, smoothly bring the nose to 90 degrees nose-high and wait for 3,500 feet AGL. At 3,500 feet AGL, execute a full aft stick high AOA loop to bring the nose to 90 degrees nose-low. Hold 90 degrees nose-low and accelerate. At 100 KCAS, execute a 405-degree roll to set the lift vector on a 45-degree reposition line. If 100 KCAS is not obtained prior to 2,800 feet AGL, do not execute the 405-degree roll, but rather a 45-degree roll to set the reposition line and begin recovery within parameters. Regardless of orientation, execute a 36-degree AOA recovery NLT 2,000 feet AGL and reposition for the next maneuver.

6.10.2. **Abnormal Procedures:** If the show profile takeoff is interrupted by an aircraft malfunction, make a normal takeoff or if conditions warrant, abort the takeoff. If an afterburner does not light or they are producing thrust asymmetrically do not initiate the pull up. If an afterburner blows out prior to initiating the pull, immediately abort the maneuver and execute a nose-high recovery. Should an engine or afterburner fail, immediately reduce both throttles to MIL or below and recover the aircraft. Do not reselect AB until any yaw rate is arrested and airspeed is >100 KCAS. If the aircraft slows to 75 KCAS prior to reaching 2,500 feet AGL, do not execute the high AOA loop and execute a nose-high recovery to wings-level. Should the takeoff need to be executed from right to left for winds or runway length, execute a 225-degree roll to set the reposition line. Regardless of the starting axis, the reposition line needs to be set and the recovery initiated by 2,000 feet AGL.

6.11. Minimum Radius Turn.

Figure 6.5. F-22 Minimum Radius Turn.



Minimum Radius Turn
F-22

Table 6.3. F-22 Minimum Radius Turn Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	G/Deg NH
Entry	500’	440	MAX	7.5
Exit	500’	275	MAX	N/A
Pull	500’	275	MAX	*90
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS**MIN/MAX**	Power Setting	G/Deg NH Max
Entry **min**	400’	350 / 475	MAX	A/R
Exit **min**	400’	200 / 400	MAX	A/R
Pull **min**	400’	200 / N/A	MAX	*110

6.11.1. **Maneuver Description:** Prior to show center, select full AB and accelerate to 440 KCAS. Beyond the 500-foot show line and at show center, turn away from the crowd using 75 to 85 degrees of bank. Begin the turn with an aggressive G onset-rate to 7.5 Gs to avoid accelerating and begin bleeding airspeed. G-loading and airspeed bleed-off rate vary with density altitude. The first 180 degrees of turn should be accomplished with a 1 ¾ degree nose-up attitude and the last 180 degrees of turn should be accomplished with a 1 ¾ degree nose-down attitude to make the turn appear level to the crowd. After the first 180 degrees of turn, continue to bleed airspeed down to 250 KCAS. Vary the bank angle, pitch, and pull to arrive at level flight, 275 KCAS, and no closer than 1,500-foot show line at the completion of 360 degrees of turn. Maximum degrees of flight path marker negative pitch allowed while correcting for altitude is 5 degrees. Ensure surface winds are taken into consideration in order to center this maneuver on show center and to avoid overshooting the show line. As you approach show center, smoothly roll out and aggressively pull the nose to 90 degrees nose-high. 90 degrees nose-high may be exceeded (up to 110 degrees) as long as the airspeed minimum is maintained. As soon as the aircraft reaches 150 KCAS, begin a full forward push to drive the nose back down to the horizon and set up for the J-Turn reposition.

6.11.2. **Abnormal Procedures:** If the minimum entry parameters are not met, transition to a wings-level flat pass. If during any portion of the maneuver it becomes apparent the aircraft may descend below 400 feet AGL or airspeed decays below 200 KCAS, abort the maneuver by rolling wings-level and climbing to 500 feet AGL. If the aircraft approaches 475 KCAS and the pilot is already at 9 Gs, reduce power to not less than minimum afterburner and bleed energy. If necessary, adjust power and G as required (no lower than 200 KCAS) to avoid overshooting the 1,500-foot show line. In the pull after the roll-out, if airspeed reaches 150 KCAS prior to achieving 90 degrees nose-high begin the push forward early. Do not attempt the J-turn reposition if the aircraft does not exceed 2,500 feet AGL during the turn.

6.12. Weapon Bay Door Pass.

Figure 6.6. F-22 Weapon Bay Door Pass.

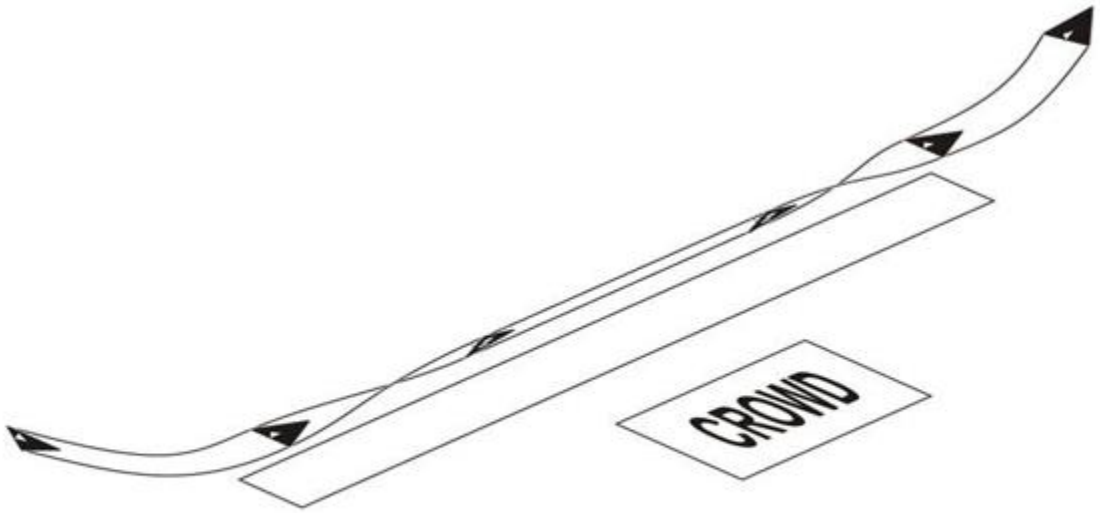


Table 6.4. F-22 Weapon Bay Door Pass Parameters.

TARGET	PARAMETERS			
Altitude AGL	Airspeed KCAS	Power Setting	G	Bank
Entry 300’	200	A/R	1 to 2	75
Exit 300’	200	A/R	1 to 2	75
Roll 500’	250	A/R	1 to 2	N/A

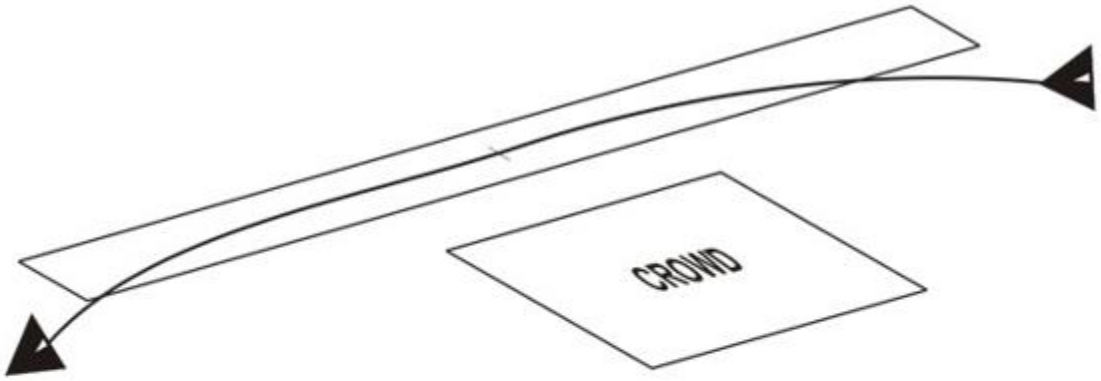
PARAMETER	LIMITS			
Altitude AGL	Airspeed **KCAS MIN/MAX**	Power Setting	G	MaxBank
Entry **min** 200’	175 / N/A	A/R	N/A	90
Exit **min** 200’	175 / N/A	A/R	N/A	90
Roll **min** 400’	200 / N/A	A/R	N/A	N/A

6.12.1. **Maneuver Description:** On extended show line (offset up to 30 degrees), establish wings-level and 200 KCAS. Approaching the 500-foot show line, bank away from the crowd (not to exceed 75 degrees), open all doors and begin a gentle turn to maintain bank, airspeed and altitude. Passing show center, close all doors, add power, and fly to the 1,500 ft show line. Begin a climb to 500 feet AGL and select MAX AB. Once above 500-feet AGL and 250 KCAS, execute a 300-degree roll to set your lift vector (LV) on the reposition line for the Dedication Pass.

6.12.2. **Abnormal Procedures:** Only open doors IAW tech order guidance. If doors do not open symmetrically, close all doors and abort the pass.

6.13. Dedication Pass.

Figure 6.7. F-22 Dedication Pass.



Dedication Pass
F-22

Table 6.5. F-22 Dedication Pass Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300’	.65 - .92M	MAX	1
Exit 300’	.65 - .92M	IDLE to MAX	4 to 7.5

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS MIN/MAX	Power Setting	G
Entry **min** 200’	.5 / .94M	IDLE to MAX	A/R.
Exit **min** 200’	.5 / .94M	IDLE to MAX	A/R

6.13.1. **Maneuver Description:** The maneuver is flown beyond the 500-foot show line. The approach is flown from behind the line, approximately 2 miles from show center with an approximate dive angle of 30 degrees and a maximum of 45-degree cut from the show line (as to not exceed 90 degrees of bank in the turn). Maintain beyond 500 feet horizontally from the crowd at all times. Upon reaching a point 500 feet from the corner of the crowd at 300 feet AGL, roll the aircraft into a level arcing pass using 75 to 90 degrees of bank. Select full AB until passing the show line or until .92M is anticipated. In order to maintain 500 feet separation from the crowd at both corners, ensure the apex of the arc is greater than 500 feet from show center (the amount depends on the degrees offset from the show line at the start of the arc and the amount of G used in the turn). Continue the arc until reaching the opposite crowd corner, roll out, reduce power and initiate a climb.

6.13.2. **Abnormal Procedures:** Abort the maneuver if at any time: the aircraft comes closer than 500 feet to the crowd line or its lateral limits, an excessive dive angle or sink rate develops, entry parameters are not met, or the aircraft descends below 200 feet AGL. Abort procedures are to roll wings-level, climb and fly away from the crowd.

6.14. Pedal Turn.

Figure 6.8. F-22 Pedal Turn.

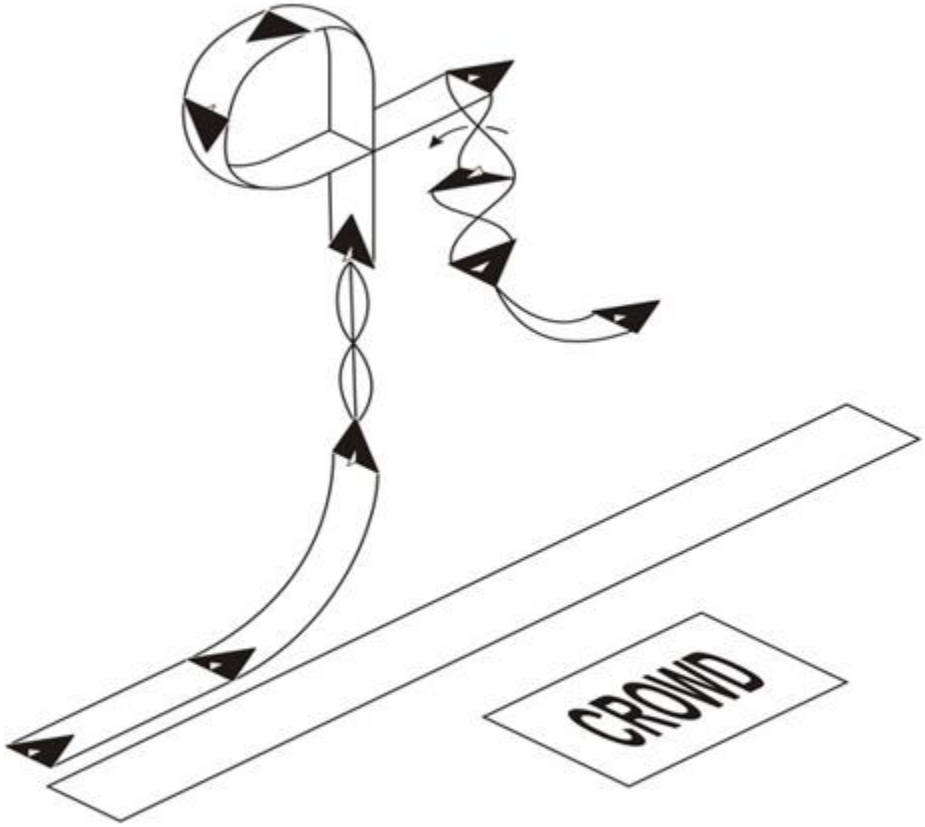


Table 6.6. F-22 Pedal Turn Parameters.

TARGET PARAMETERS			
Altitude AGL	Airspeed KCAS	Power Setting	Deg NH
Entry 300'	300	MAX	0
Pull 4,000'	N/A	MAX	90
Exit / Recovery N/A	N/A	MAX	N/A

PARAMETER LIMITS			
Altitude AGL	Airspeed KCAS MIN/MAX	Power Setting	Min Deg NH
Entry **min** 200'	250 / 375	MAX	N/A
Pull **min** 3,000'	75 / N/A	MAX	80
Exit / Recover **min** 2,500'	N/A	MAX	

6.14.1. **Maneuver Description:** Following the Dedication Pass reposition, align on the 1,500-foot crowd line at 300 feet AGL and 300 KCAS. Approaching show center, select full AB, ensure both are lit symmetrically and begin an aggressive (soft to hard stop) pull to 90 degrees nose-high. When established 90 degrees nose-high with AOA less than 10 degrees, execute a 360-degree roll. Climb and decelerate to arrive at 4,000 feet AGL with no less than 75 KCAS. Execute a maximum (hard stop) wings-level pull to pull the nose through the inverted around to the horizon (high alpha loop). As the nose approaches the horizon upright, apply full pedal in the best direction for winds and maintain full-aft stick. Continue the turn for 360 degrees or until lined up on the 1,500-foot crowd line and begin an aggressive push forward to break the alpha and accelerate. Catch 36 alpha in full AB and arrest the descent rate. Should winds, weather or other factors dictate, the pedal turn may be executed as two 180-degree turns. Pre-brief this sequence of two 180-degree turns and do not execute from an airborne "on the fly" assessment. If the 180/180 pedal turn is the desired maneuver, add 1,000 feet to the apex pull, making the minimum pull 5,000 feet AGL. Execute two 360-degree rolls due to the additional altitude required.

6.14.2. **Abnormal Procedures:** If an afterburner does not light, do not initiate the entry pull up. If an afterburner blows out prior to initiating the apex pull, immediately abort the maneuver and execute a nose-high recovery. If the aircraft airspeed decreases to less than75 KCAS prior to reaching 4,000 feet AGL, initiate the pull early and assess altitude parameters to execute the pedal turn. If 2,500 feet AGL is reached prior to completing the pedal turn, recover early. No matter the orientation of the aircraft, initiate recovery at 2,500 feet AGL and fly a 36-degree AOA recovery to arrest sink rate. Should an engine or afterburner fail, immediately reduce both throttles to MIL or below and recover the aircraft. Do not reselect AB until yaw rate is arrested and airspeed is greater than 100 KCAS.

6.15. Power Loop.

Figure 6.9. F-22 Power Loop.

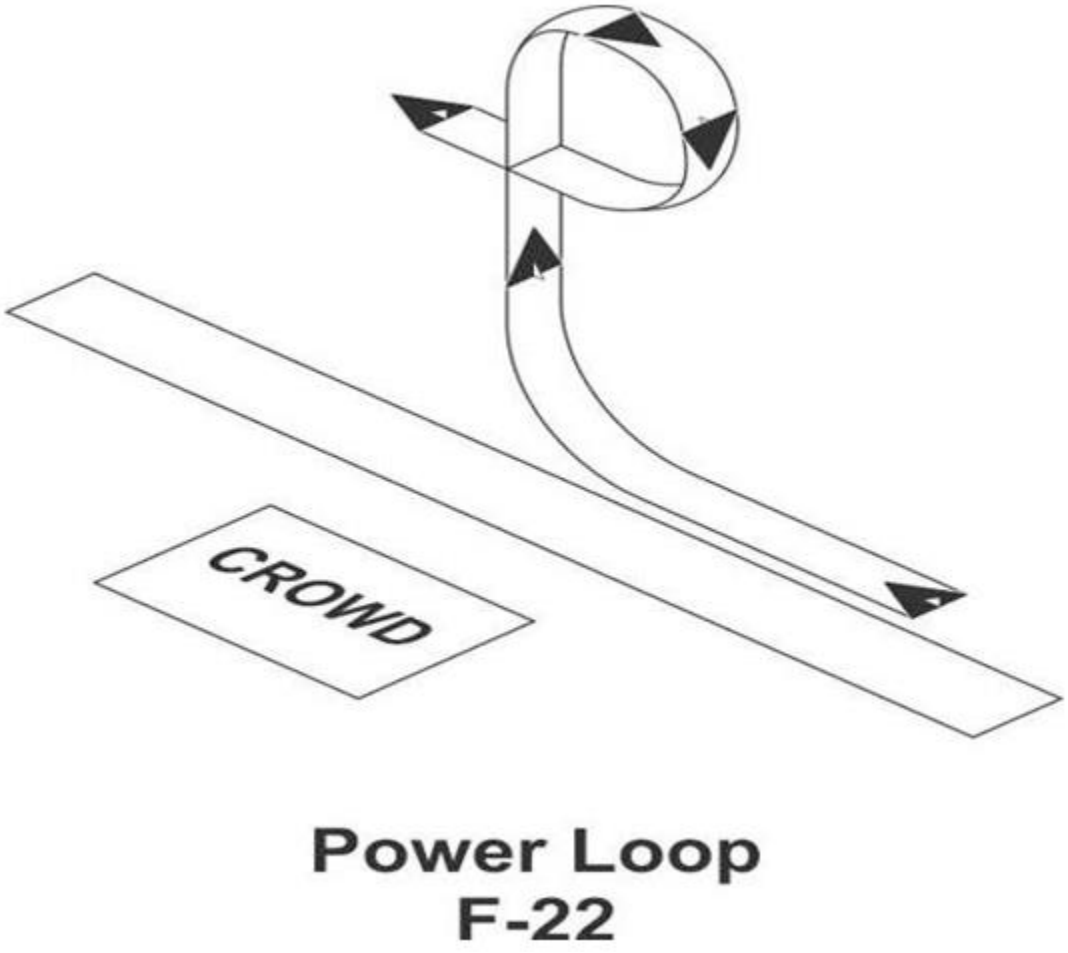


Table 6.7. F-22 Power Loop Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	Alpha
Entry 1,500’	250	MAX	0
Recovery (initiate) 2,700’	A/R	MAX	36

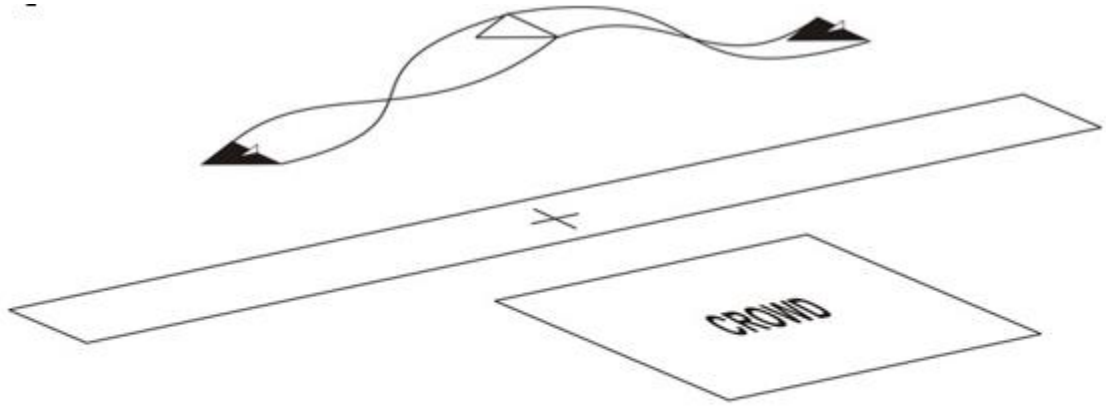
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	Alpha(min)
Entry **min** 1,300’	225 / 350	MAX	N/A
Recovery(initiate) **min** 2,500’	A/R	MAX	30

6.15.1. **Maneuver Description:** Following the Pedal Turn, accelerate in full AB and reposition to remain on the 1,500-foot show line and arrive at show center at 1,500 feet AGL and 250 KCAS. Abeam show center, execute a maximum wings-level pull to bring the nose of the aircraft into the vertical. Continue a maximum pull all the way around until the nose of the aircraft is upright and at the starting horizon. Command forward-stick to decrease alpha and accelerate. Catch 36 degrees alpha and maintain until sink rate is arrested.

6.15.2. **Abnormal Procedures:** If afterburners are not symmetrically lit, do not initiate the pull up. Smoothly pull to the nearest horizon and recover the aircraft. Should an engine fail or an afterburner blow out, ensure throttles are in MIL or below and recover the aircraft. Do not reselect AB until any yaw rate is arrested and airspeed is >100 KCAS.

6.16. Loaded Roll.

Figure 6.10. F-22 loaded Roll.



Loaded Roll
F-22

Table 6.8. F-22 Loaded Roll Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	AOA
Entry 1,400’	150	MAX	36
Exit 1,300’	150	MAX	36

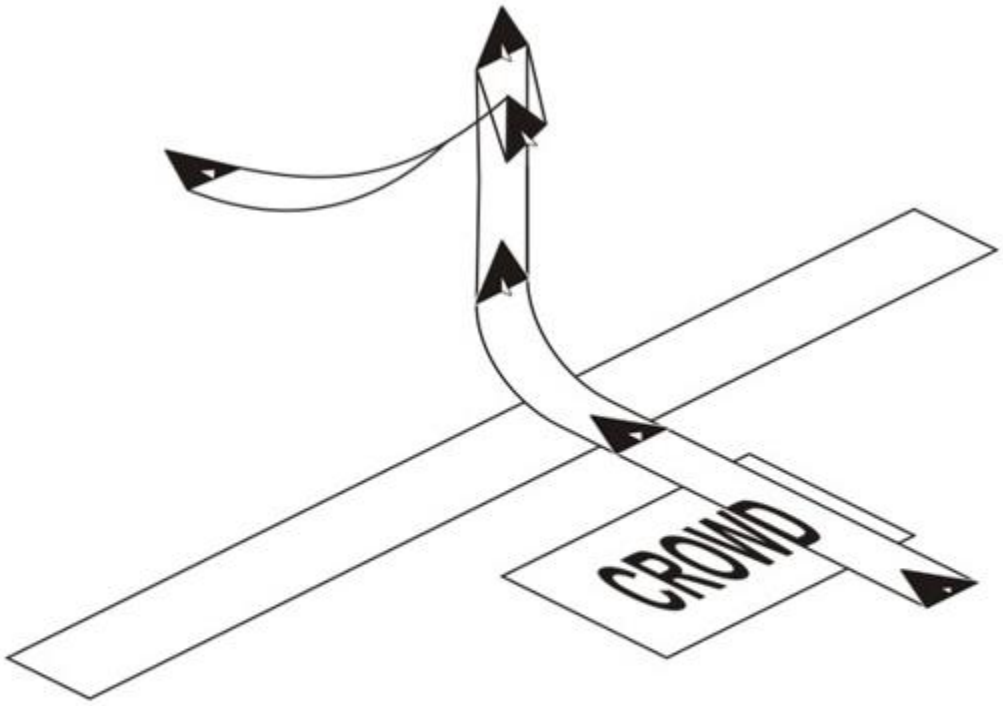
PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS **MIN/MAX**	Power Setting	AOA **(max)**
Entry **min** 1,300’	110 / N/A	MAX	40
Exit **min** 1,200’	100 / N/A	MAX	40

6.16.1. **Maneuver Description:** Following recovery from the Power Loop, on the 1,500-foot show line, at 1,400 feet AGL (higher if aircraft is recovered earlier) and 36 degrees AOA, apply full lateral stick and approximately half pedal deflection with the flight path marker above the horizon. Maintain 30-36 degrees AOA initially, then remove pedal deflection and reduce back-stick pressure to maintain 20-28 degrees AOA while the lift vector (LV) is below the horizon. Once the LV is above the horizon, complete the roll by increasing back-stick pressure and AOA to 30-36 degrees. When the aircraft reaches upright wings-level to the horizon, decrease angle of attack, accelerate and begin to reposition for the next maneuver.

6.16.2. **Abnormal Procedures:** If both afterburners do not light, do not exceed 30 degrees angle of attack and recover the aircraft. If the aircraft descends below 1,200 feet AGL, immediately initiate a recovery by rolling wings-level (with decreased AOA) and pulling to the nearest horizon. If the aircraft ever exceeds 40 degrees nose-low or an excessive sink rate develops, recover. If airspeed is allowed to decay to less than 100 KCAS, terminate the maneuver and recover.

6.17. Tail Slide.

Figure 6.11. F-22 Tail Slide.



Tail Slide
F-22

Table 6.9. F-22 Tail Slide Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	Deg NH
Entry	1,000’	250	MIL	0
Apex	3,000’	0	Idle to MIL	80
Recovery	2,700’	75	MIL	N/A

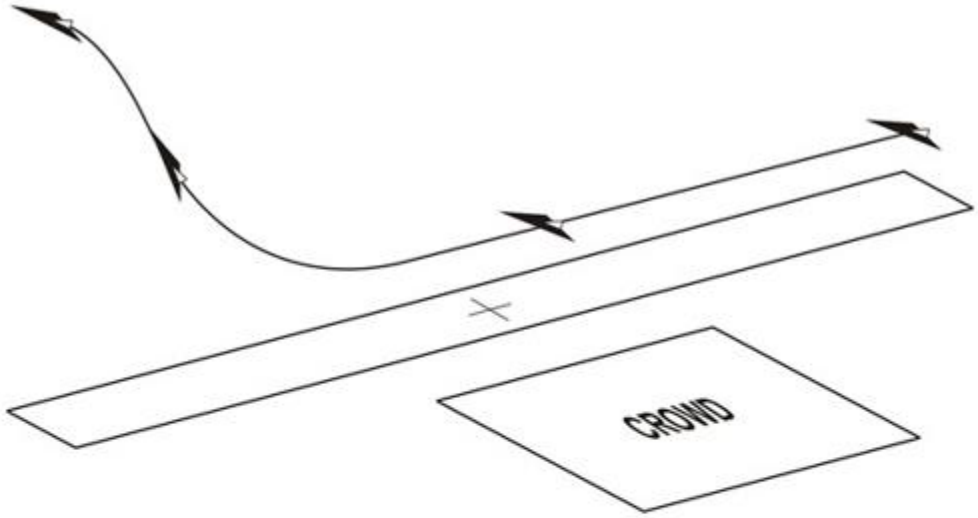
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS	Power Setting	Deg NH
Entry	**min** 900’	225 / 350	MIL	N/A
Apex	min 2,800’	N/A	Idle to MIL	90
Recovery	min 2,500’	N/A / 85	MIL	N/A

6.17.1. **Maneuver Description:** After the Loaded Roll, reposition behind the crowd, perpendicular to the show line and directly behind show center. Fly over show center at 1,000 feet AGL and 250 KCAS. Select military (MIL) power over show center and at the 1,500-foot show line, execute a hard stop pull in MIL power to 80 degrees nose-high. Hold 80 degrees nose-high with back stick pressure and attempt to align the waterline and Climb Dive Marker (CDM) as the aircraft slows. Modulate power to arrive at 3,000 feet AGL and 0 KCAS. Smoothly reselect MIL power and allow the aircraft to slide backwards while holding 80 degrees nose-high. At 2,700 feet AGL or 75 KCAS backwards (whichever occurs first), push forward of the soft stop to assist the FLCS in bringing the nose down and reducing AOA. Recover in MIL power to wings-level flight. Begin a turning reposition for the Slow Speed Pass. Entry to the tail slide may be flown from show left or right if dictated by crowd or show line restrictions (e.g. foreign tradeshows). This type of entry is flown with same entry altitude and airspeed parameters; however, the entry is initiated by a climbing turn away from the crowd approximately 1,000 feet prior to show center to achieve the same tail slide parameters and position in the aerobatic box as the standard reposition over the crowd. Ensure this entry is flown and documented in practice prior to accomplishing in a public performance.

6.17.2. **Abnormal Procedures:** If sideslip (beta in the HUD) rapidly increases through 20 degrees or is observed greater than 30 degrees, initiate a recovery by pushing forward slightly less than the soft stop. If the tail slide begins prior to 2,800 feet AGL, immediately initiate a recovery.

6.18. F-22 Slow Speed Pass.

Figure 6.12. F-22 Slow Speed Pass.



Slow Speed Pass
F-22

Table 6.10. F-22 Slow Speed Pass Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	AOA
Entry	1,000’	80	Cruise to MIL	36
Exit	1,000’	80	Cruise to MIL	36

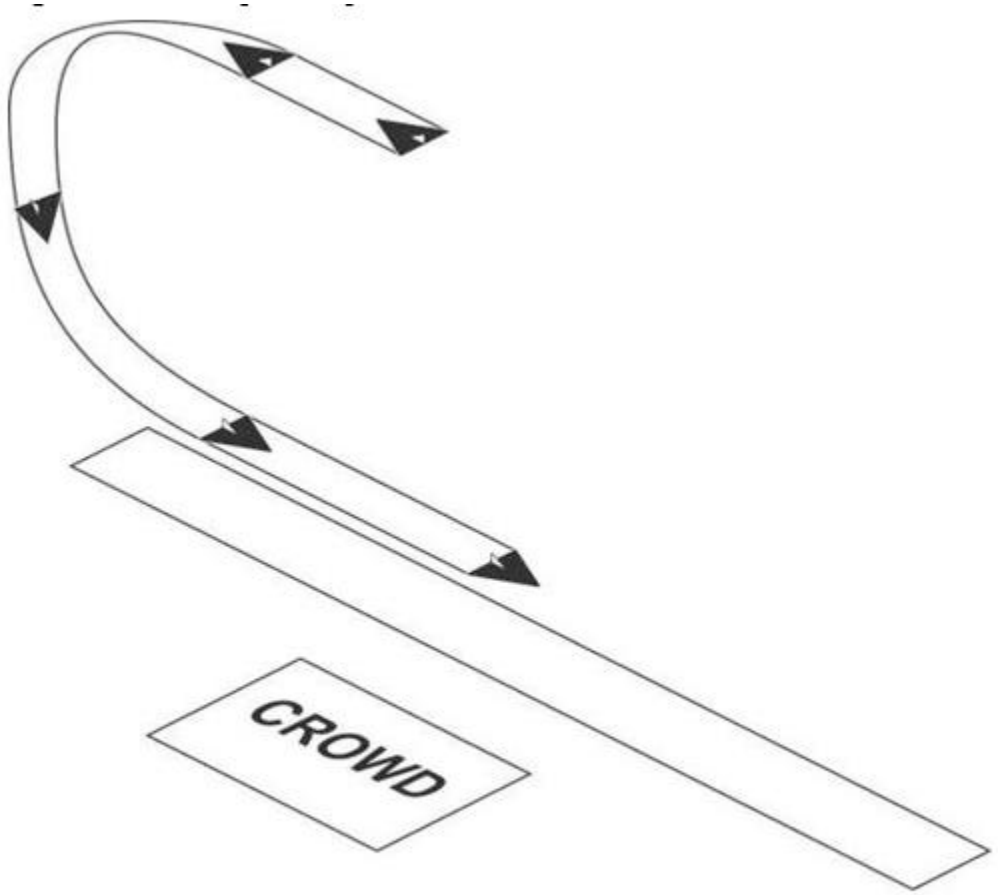
PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	AOA**(max)**
Entry **min**	900’	75 / N/A	MIL	40
Exit **min**	900’	75 / N/A	MIL	40

6.18.1. **Maneuver Description:** Following the Tail Slide, begin a turn in the direction to set up the Slow Speed Pass into the wind. If wind is negligible or predominantly a crosswind, set the pass to be the same direction as the takeoff. Maintain 120 KCAS in the reposition turn and fly to a point ~3,000 feet from the start of the crowd line. Target the line 90 degrees off pass heading at 1,000 feet AGL and 150 KCAS in MIL power. Execute a soft stop pull to align the jet on the desired heading and catch 36 degrees angle of attack. Do not exceed 40 degrees angle of attack. Manipulate power and pitch to maintain 1,000 feet AGL and 36 degrees angle of attack on show line heading. After passing the crowd on the opposite side, select full afterburner and climb to 4,000 feet AGL to set up for the Split-S. During a Low Show, the reposition may be flown no less than 500 feet AGL. In all cases, the aircraft may not be flown less than 120 KCAS greater than 30 degrees AOA when less than 900 feet AGL.

6.18.2. **Abnormal Procedures:** If 40 degrees angle of attack is exceeded, immediately add power and push forward to catch and sustain 36 degrees. If the aircraft descends below 900 feet AGL terminate the maneuver and recover the aircraft. Do NOT select afterburner with less than 75 KCAS and greater than 36 degrees AOA. If the aircraft slows below 75 KCAS, add power (up to MIL) and decrease angle of attack. If an engine fails, IMMEDIATELY reduce power to mid-range on both throttles and begin a soft stop push to reduce AOA and gain airspeed. Do not push the nose greater than 10 degrees nose-low. Use lateral stick and pedal as required to maintain wings-level controllable flight. Accelerating through 100 KCAS, smoothly bring both throttles to MIL and full afterburner passing 125 KCAS. Recovery may be limited to 20 degrees AOA.

6.19. Split-S Reposition.

Figure 6.13. F-22 Split-S Reposition.



Split-S Reposition
F-22

Table 6.11. F-22 Split-S Reposition Parameters.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	AOA
Entry	4,000'	200	MAX	N/A
Exit	300'	.8 - .92M	MAX	N/A

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	AOA
Entry **min**	3,500'	150 / 275	MAX	N/A
Exit **min**	200'	N/A / .94M	A/R	N/A

6.19.1. **Maneuver Description:** In the climb after the Slow Speed pass move to the 1,500-foot show line, maintain 45-50 degrees nose-high and allow the aircraft to accelerate. Tailor degrees nose-high to not only accelerate but also gain separation away from the crowd for the follow-on High Speed Pass. If the nose is held too nose-high there may not be enough room to accelerate after the maneuver. At 4,000 feet AGL roll inverted and crosscheck airspeed. With 150 KCAS (minimum) execute an energy gaining turn to proceed back towards show center. Do not exceed 350 KCAS until the nose is through 90 degrees nose-low. Orientation to the crowd line needs to be immediately assessed. If the aircraft is not on the extended show line, make immediate corrections. Position the aircraft on the non-aerobatic show line at 300 feet AGL and approximately .8M for the high speed pass.

6.19.2. **Abnormal Procedures:** Initiate a parameters call to the safety observer prior to starting the pull. If airspeed is less than 150 KCAS (minimum) push the nose toward the horizon and increase airspeed to greater than 150 KCAS (minimum). With altitude greater than 3,500 feet AGL and airspeed greater than 150 KCAS, execute Split-S. If altitude is less than 3,500 feet AGL (i.e. weather) or airspeed is above 275 KCAS, abort the Split-S reposition. Roll the aircraft away from the crowd, reposition in a horizontal plane and slice back for the next maneuver. If an aircraft malfunction that may affect the aerodynamic performance of the aircraft asserts prior to reaching 90 degrees nose-low, discontinue the pull, roll wings-level and recover the aircraft.

6.20. High Speed Pass.

Figure 6.14. F-22 High Speed Pass.

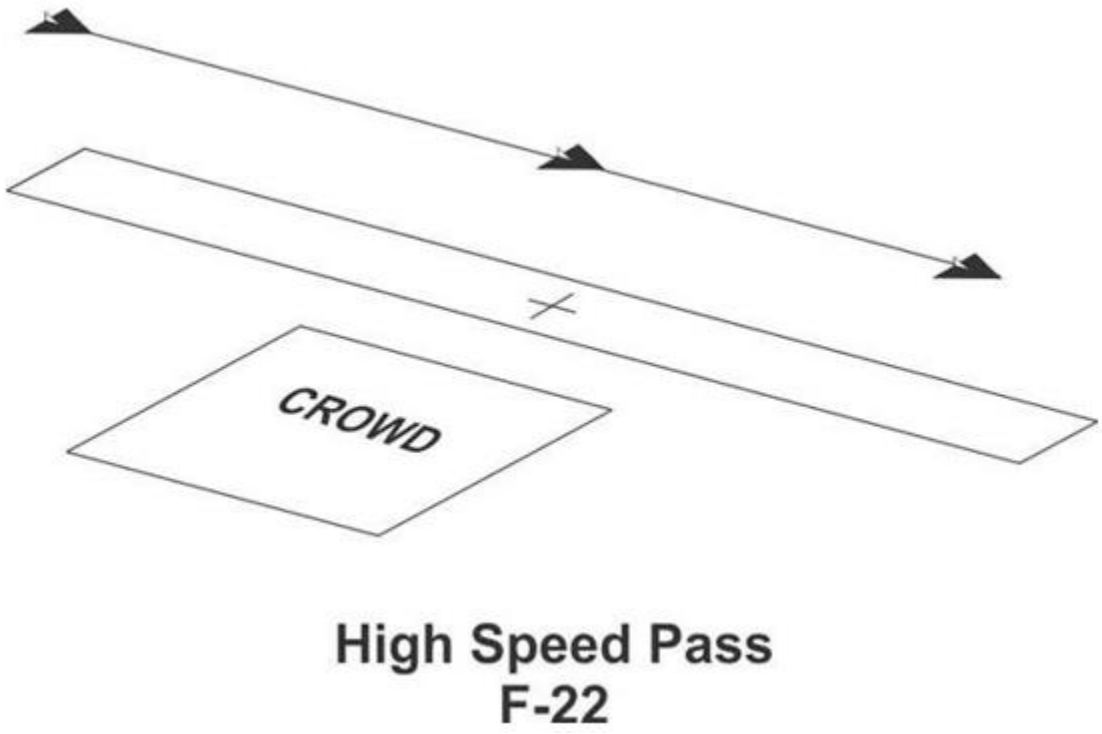


Table 6.12. F-22 High Speed Pass Parameters.

TARGET	PARAMETERS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry 300’	.8 - .92M	MAX	1
Exit 300’	.8 - .92M	IDLE to MAX	1

PARAMETER	LIMITS		
Altitude AGL	Airspeed KCAS	Power Setting	G
Entry **min** 200’	N/A / .94M	A/R	N/A
Exit **min** 200’	N/A / .94M	A/R	N/A

6.20.1. **Maneuver Description:** The High Speed Pass may be flown on the 500-foot show line at 300 feet AGL in maximum power, so as to target .8 - .92 Mach.

6.20.2. **Abnormal Procedures:** If it becomes apparent 0.94 Mach may be exceeded, afterburner should be deselected.

6.21. Hoover Pitch.

Figure 6.15. F-22 Hoover Pitch.

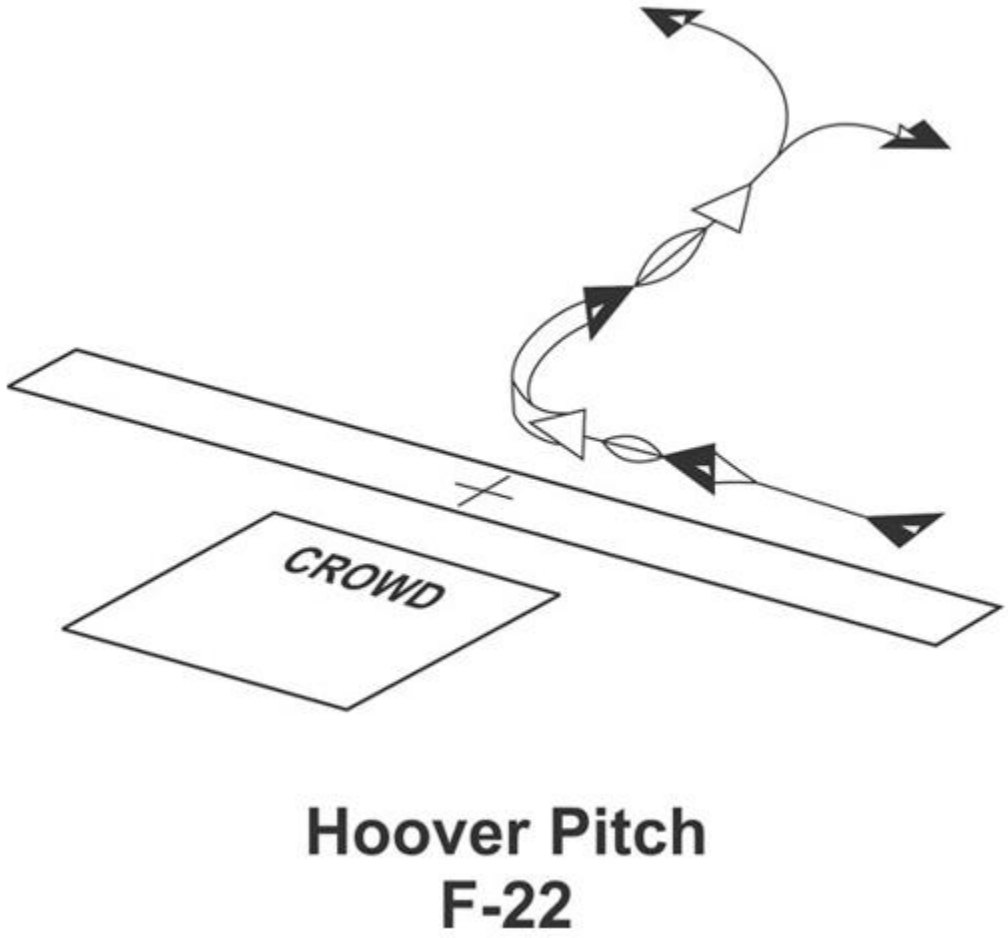


Table 6.13. F-22 Hoover Pitch.

TARGET		PARAMETERS		
Altitude AGL		Airspeed KCAS	Power Setting	Bank Angle
Entry	500’	300	A/R	90
Exit	500’	300	MAX	80

PARAMETER		LIMITS		
Altitude AGL		Airspeed KCAS **MIN/MAX**	Power Setting	Bank Angle
Entry **min**	400’	250 / 400	A/R	95
Exit **min**	400’	250 / 400	MAX	85

6.21.1. **Maneuver Description:** Establish the jet on the 1,500-foot crowd line from either right to left or left to right. Prior to entering the aerobatic box, achieve 300-400 feet AGL and 300 KCAS. Approximately 3,000 feet prior to show center bring the nose of the aircraft up (5 degrees nose-high or less should be required) to obtain 500 feet AGL by 1,000 feet prior to show center. 1,000 feet prior to show center, select full afterburner and roll the aircraft to 90 degrees of bank with the canopy to the crowd. At show center, execute a 190- degree roll into the crowd (tuck under) to establish 80 degrees of bank away from the crowd. Aggressively pull for the pitch to land or to reform for the Heritage Flight.

6.21.2. **Abnormal Procedures:** If airspeed is less than 250 KCAS, do not roll and simply pitch to land. If altitude is less than 400 feet AGL, do not execute the roll and pitch to land.

Section 6C—Low Profile

6.22. Maximum Power Takeoff. *N:* During a Low Profile, maneuvers may be flown in opposite directions dependent on direction of initial take-off and prevailing winds. Primarily, the profile begins by taking off show left to right. This orientation allows for the minimum radius turns, the weapons bay door pass, and the dedication pass all to be executed in the same direction as during a High Profile. During a Low Profile, the following maneuvers may be flown; Minimum Radius Turn, Weapon Bay Door Pass, Dedication Pass, Slow Speed Pass, Loaded Roll, High Speed Pass, Minimum Radius Turn, Hoover Pitch to Land.

MARK D. KELLY, Lt Gen, USAF
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(35FW)

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Commander

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

(Added-35FW) AFI 11-246V1, *Air Force Aircraft Demonstrations (A-10, F-15, F-16, F-22), 18 Nov 2019*

AFI 11-2F-15E, Vol 3, *F-15E Operations Procedures*, 5 April 2019

AFI 11-2F-16, Volume 3, *F-16 Operations Procedures*, 13 July 2016

(Added-35FW) AFI 33-324 *The Air Force Information Collections and Reports Management Program, 22 Jul 2019.*

AFI 33-360, *Publications and Forms Management*, 1 December 2015 AFI 11-209, *Participation in Aerial Events*, 22 May 2018

AFI 35-105, *Community Relations*, 23 June 2017

AFMAN 33-363, *Management of Records*, 1 March 2008 AFPD 11-2, *Aircrew Operations*, 31 January 2019

FAA Order 8900.1, *Flight Standards Information Management System (FSIMS)*, Current Edition

Sponsor Support Manual available via ACC/A3TA Website,

http://www.acc.af.mil/Home/aerial-events

Adopted Forms

AF Form 847, Recommendation for Change of Publication

Abbreviations and Acronyms

AB—Afterburner

AC LMT—Aircraft Limit

AFI—Air Force Instruction

AFPD—Air Force Policy Directive

AFMAN—Air Force Manual

AFR—Air Force Reserve

AFRIMS—Air Force Records Information Management System

AGL—Above Ground Level

ANG—Air National Guard

AOA—Angle of Attack

AOS—Air Operations Squadron

A/R—As Required

CDM—Climb Dive Marker

CFT—Conformal Fuel Tanks

DCO—Deputy Commander for Operations

DEG NH—Degrees Nose High

DEMO—Demonstration

DRU—Direct Reporting Unit

EAA—Experimental Aircraft Association

FAA—Federal Aviation AdministrationFAR – Federal Aviation Regulations

FLCS—Flight Control System

G—Gravity

GS—Ground Simulator

GT—Ground Training

HSI—Horizontal Situation Indicator

HUD—Heads-Up Display

IAW—In Accordance With

ICAS—International Council of Air Shows

KCAS—Knots Calibrated Air Speed

KIAS—Knots Indicated Air Speed

KIO—Knock it Off

LAHD—Low Altitude High Drag

LOWAT—Low Altitude

LV—Lift Vector

MIA—Missing In Action

MIL—Military

MDS—Mission Design Series

MSL—Mean Sea Level

NH—Nose High

NM—Nautical Miles

OPR—Office of Primary Responsibility

OPTEMPO—Operations Tempo

OTT—Over The Top

PCS—Permanent Change of Station

POC—Point Of Contact

POW—Prisoner Of War

QFE—Altimeter Field Elevation

SAAM—Special Assignment Airlift Mission

TOLD—Takeoff and Landing Data

TS—Training Sortie

VFR—Visual Flight Rules

VMC—Visual Meteorological Conditions

VRM—Vertical Reposition Maneuver

VVI—Vertical Velocity Indicator

WSO—Weapons Safety Officer

Terms

Abnormal Procedure—Specific abort procedure for maneuver

CONUS—Contiguous United States

OCONUS—Outside Contiguous United States

Pyro—Pyrotechnic

Pull-through—to complete a complicated maneuver

Special Assignment Airlift Mission (SAAM)—A dedicated U.S. military aircraft, chartered to deliver sensitive, classified or explosive defense articles to a specific customer location when no commercial delivery capability exists.

Attachment 2

EXAMPLE SHOW SUMMARY AND CRITIQUE

A2.1. Example Show Summary and Critique. Single-Ship demonstration teams will use their MAJCOM-approved forms to critique air shows:

Figure A2.1. F-16 EAST DEMONSTRATION TEAM AIR SHOW SUMMARY AND CRITIQUE

F-16 EAST DEMONSTRATION TEAM AIR SHOW SUMMARY AND CRITIQUE

Show Location:_____Dates(s):_____

Demos Time/Type:_____/_____;_____/_____;_____/_____

Time (H/L/Cnx) Time (H/L/Cnx) Time (H/L/Cnx)

Estimated Attendance Each Day:_____/_____/_____

Total Flying Hours Required to Support Event: _____

Estimated Cost: Travel:_____Per Diem:_____Lodging: _____

Recruiting Support

Was recruiter contacted? Yes / No

Was recruiter present at air show? Yes / No

Was Recruiting Opportunities and Autographs Booth in a good location? Yes / No

What were the off-show recruiting activities? _____

_____

_____

PA Support

What PA type activities did you participate in?_____

_____

_

FAA Support:	UNSAT	SAT
Preshow Support/Planning:	UNSAT	SAT
Air show support and operations:	UNSAT	SAT

Overall recommendation to attend this event again: NO YES

REMARKS (explain above responses; unsat or no answers require comments):

_____

_____

_____

_____

_____

Attachment 3

AERIAL SITE SURVEY

A3.1. Aerial Site Survey. Pilots Will Accomplish Following Site Survey Actions In Preparation For Aerial Demonstration. **(T-2)**.

A3.1.1. Preflight:

A3.1.1.1. Review Airfield Diagram (Photo If Possible) To Include Runways, Taxiways, Barriers, Show Line, Crowd Line, Field Elevation, and Obstacles (Such As Towers, Mountains, Rising Terrain, Buildings, Etc.)

A3.1.1.2. Analyze Weather Patterns, Sun Angle/elevation, Mountain Shadows, for Impact on Flight Profile

A3.1.1.3. Obtain Local No-fly Restrictions, Noise Abatement, And Bird Avoidance Procedures

A3.1.1.4. Review FAA Waiver for Applicable Details, Airspace (Up To 5 Nm/15,000 Feet AGL)

A3.1.1.5. Identify Control Agencies Such As On-site Tower/local Radar (TRACON) Traffic Control

A3.1.2. Survey Flight:

A3.1.2.1. Circle Show Site, Fly Show Line, Look For Maneuver Reference Points, And Obstacles

A3.1.2.2. If Practical, Accomplish Aerial Survey Flight at Same Time Of Day As Planned Aerial Demo

A3.1.2.3. Observe Holding Points (For Staged Shows and Heritage Flights)

Attachment 4

DEMONSTRATION FLIGHT BRIEFING

A4.1. Demonstration Flight Briefing. Pilots will accomplish the following flight briefing actions in preparation for aerial demonstrations: **(T-2)**.

A4.1.1. Demonstration pilot will attend FAA mass briefing. **(T-2)**.

A4.1.2. As a minimum review the following with ground safety observer:

A4.1.2.1. Time hack

A4.1.2.2. EP of the Day

A4.1.2.3. WX/NOTAMS

A4.1.2.4. Mission overview

A4.1.2.5. Mission data card

A4.1.2.6. Airfield diagram and show layout

A4.1.2.7. Review site survey data

A4.1.2.8. Accomplish any non-briefing items prior to flight

A4.1.3. Ground procedures:

A4.1.3.1. Start, taxi, marshalling

A4.1.3.2. Spare procedures

A4.1.4. Takeoff:

A4.1.4.1. Runway lineup

A4.1.4.2. Minimum fuel

A4.1.4.3. Abort procedures

A4.1.4.4. Low altitude ejection

A4.1.4.5. Land immediately after T/O

A4.1.5. Aerial Demonstration:

A4.1.5.1. Staged vs. local

A4.1.5.2. Primary show (HI):

A4.1.5.2.1. Maneuvers

A4.1.5.2.2. Individual maneuver parameters

A4.1.5.2.3. Mandatory parameter radio calls

A4.1.5.2.4. WX transition (HI/LO) points

A4.1.5.3. Alternate show (LO):

A4.1.5.3.1. Maneuvers

A4.1.5.3.2. Individual maneuver parameters

A4.1.5.3.3. Mandatory parameter radio calls

A4.1.5.3.4. WX transition (HI/LO) points

A4.1.5.4. Abnormal:

A4.1.5.4.1. Maneuver abort and reposition

A4.1.5.4.2. Emergencies

A4.1.5.4.3. Ground safety observer termination procedure calls/procedures

A4.1.6. Recovery:

A4.1.6.1. Pattern and Landing

A4.1.6.2. After landing/de-arm

A4.1.6.3. Emergency/alternate airfields

A4.1.7. Debrief

A4.1.7.1. When/where?

A4.1.8. Set aside time to mentally prepare for demo

Attachment 5

SAMPLE FIRST YEAR DEMONSTRATION PILOT CERTIFICATION CHECKLIST

Figure A5.1. SAMPLE FIRST YEAR DEMONSTRATION PILOT CERTIFICATION CHECKLIST.

The following actions will be taken prior to MAJCOM/CC certification: (NLT times provide guidance and are not mandatory)

_____1. Aug: WG/CC will: **(T-2)**

____a. Designate new demonstration pilot

____b. Inform MAJCOM Aerial Events of selection

_____2. Sept: OG/CC will: **(T-2)**

____a. Ensure demonstration pilot has entered training

____b. NLT 30 Oct - Inform MAJCOM Aerial Events of planned NAF/CC and WG/CC certification dates

_____3. 15 Nov. MAJCOM Aerial Events forward SSS to MAJCOM/CC to obtain approval of certification schedule

____a. Names of pilot that will need certification

____b. General method of certification (individually, two at a time, etc)

____c. Dates for certification

Note: MAJCOM/CC certification date initiates certification countdown for individual pilot

_____4. MAJCOM Aerial Events inform WG/CC of planned certification dates

_____5. NLT Cert – 30 days: WG/CC pre-certify demonstration pilot and forward grade book to NAF/CC

_____6. NLT Cert – 15 days: NAF/CC approve demonstration pilot and WG/CC forward grade book to MAJCOM Aerial Events

_____7. NLT Cert – 14 days: applicable OG submits airspace waiver

_____8. NLT Cert – 7 days: protocol coordinates:

____a. With airfield manager for MAJCOM/CC observation location

____b. With local communications squadron for PA system at MAJCOM/CC observation location

____c. With local transportation for demonstration team and unit leadership if required

_____9. NLT Cert – 2 days:

____a. MAJCOM Aerial Events prepare IOI for MAJCOM/A3 to include: Demonstration team arrival and departure times; unit leadership arrival and departure times; practice, certification, and backup times; demonstration pilot meeting time with MAJCOM/CC; other significant information

____b. MAJCOM Aerial Events forward demonstration pilot grade book to MAJCOM/A3

____c. MAJCOM Aerial Events checks with protocol to ensure support arranged

_____10. Demonstration team arrival: MAJCOM Aerial Events representative meets team at Base Ops

_____11. Cert – 2 hrs: protocol ensures setup of MAJCOM/CC observation location

_____12. Cert + 1 day: MAJCOM Aerial Events prepares letter to FAA (AFS 800) to inform them of additional MAJCOM pilot approved to perform single-ship demonstrations

Note for ACC: ACC/A3TA will update letter to FAA to inform them of pilots approved to fly Heritage Flight profiles if training is accomplished WELL AFTER COMACC certification. **(T-0)**

Attachment 6 (Added-35FW)

PACAF F-16 DEMONSTRATION TEAM ADMINISTRATION

A6.1. (Added-35FW) Introduction. This attachment contains guidance for PACAF F-16 Demonstration Team administration in the 35 FW.

A6.1.1. **(Added-35FW)** The waiver authority for this supplement is 35 FW/CC. Submit waiver requests through 35 OG/CC.

A6.2. (Added-35FW) 35 FW/CC Responsibilities.

A6.2.1. **(Added-35FW)** Ensure each member of the demonstration team receives an official passport.

A6.3. (Added-35FW) 35 OG/CC Responsibilities.

A6.3.1. **(Added-35FW)** Responsibility for coordination of the demonstration schedule IAW 1.4.5.6 is delegated to the 35 OG/CC.

A6.3.2. **(Added-35FW)** The requirements of **paragraph 1.4.6.4** are waived for the 35FW. However, the 35OG/CC may still attend off-station shows at their discretion to provide command oversight.

A6.3.3. **(Added-35FW)** The senior review authority duties and requirements of **paragraph 1.4.5.9** are delegated by the 35 FW/CC to the 35 OG/CC & 35 OG/CD.

A6.4. (Added-35FW) 35 MXG/CC Responsibilities.

A6.4.1. **(Added-35FW)** Provide one aircraft (two lines) for each scheduled local demonstration practice day, unless coordinated otherwise with the OSS/DO and Demonstration Team Commander. This aircraft will not be available as a spare for the AMU, unless the demonstration sorties for that day are cancelled. Additionally, two prime and one spare aircraft will be provided for all demonstration performances. The demonstration team superintendent should attend the shared resources meeting as required to provide inputs concerning aircraft availability requirements for upcoming performances – in some circumstances, aircraft may need to be available to the team as many as three days prior to departure. All scheduled maintenance that will come due during the TDYs will be complied with by the owning AMU prior to departure. In the event that one or both aircraft cannot complete this requirement, additional/spare aircraft will be made available. The demonstration team should be responsible for launching the show aircraft cross country; however, should TDY travel logistics dictate that the team members depart prior to the aircraft, the AMUs will be required to launch the aircraft. This will be pre-coordinated with the AMU leadership.

A6.4.2. **(Added-35FW)** Provide team travel pods, tools, tool boxes, support equipment, test equipment, and cleaning materials for off-station demonstrations. Travel pods will be painted and in working condition.

A6.4.3. **(Added-35FW)** Provide a storage/workspace for the demonstration team (outside support section) to store their deployment ISUs.

A6.4.4. **(Added-35FW)** Provide when able a programmed MIDS and MMC for off-station demonstrations if they are available in the MRSP kit or cann aircraft/TNB.

A6.5. (Added-35FW) 35 FW/PA Responsibilities.

A6.5.1. **(Added-35FW)** 35 FW/PA is responsible for public relations packages in conjunction with local and off-station aerial demonstrations by the PACAF Demonstration Team, as tasked by/ coordinated with PACAF/PA.

A6.5.2. **(Added-35FW)** Coordinate with public affairs offices nearby where off-station demonstrations are to be performed to enhance and promote the mission of recruiting and public relations. U.S. Military and Air Force public relations activities such as team visits to area schools, civic organizations, recruiting visits and media stations will be coordinated by the team superintendent with support from 35 FW/PA and PACAF/PA as required.

A6.5.3. **(Added-35FW)** Produce a media schedule proposal in coordination with PACAF for the demonstration team to be completed and approved by the demonstration team commander. This should be completed NLT 15 February of the upcoming season.

A6.5.4. **(Added-35FW)** Coordinate for individual and group demonstration team pictures. This should be completed NLT 15 February of the upcoming season.

A6.5.5. **(Added-35FW)** 35FW/PA will designate a PA specialist to accompany the team to all demonstrations, unless coordinated otherwise with the Demonstration Team commander.

A6.5.6. **(Added-35FW)** 35FW/PA will provide support as required for the creation of multimedia features, stories, and products documenting team activities and coordinating their approval for public release.

A6.6. (Added-35FW) Demonstration Team Overview.

A6.6.1. **(Added-35FW)** The operations element of the F-16 Demonstration Team is directly responsible to the 35 OSS/CC. The flight within the 35 OSS will consist of the demonstration pilot and additional team personnel as authorized by programmed unit manning.

A6.6.2. **(Added-35FW)** The demonstration pilot is the team commander. He/she will be in command for all traveling members, including augmentees (e.g. security forces), when the team is off-station for demonstration-sponsored events. The team superintendent will be the immediate and direct supervisor for all maintenance team members during all demonstration team sponsored events and TDYs. He/she is also the acting First Sergeant for the team. Together, the team commander and superintendent will address disciplinary actions as permitted by their authority during demonstration-sponsored events and TDYs.

A6.6.3. **(Added-35FW)** During the normal week and show season, demonstration team members are still active members of the 35 FW and perform daily duties as such. However, when there are official demo functions, team members must be released from their duty sections. This includes time for maintenance and appearance of the demonstration aircraft, preparation for deployments/TDY's, scheduled public affairs, recruiting and civic events. Demonstration team maintenance members will not be scheduled for regular weekend duty (including the weekends immediately prior to, during, or immediately after a team performance), squadron or section additional duties, or details during the demonstration season or pre-season work-up. Exceptions to this policy must be approved on a case-by-case basis by the member's Sq/CC, and the demonstration team commander or superintendent should be notified. During the off-season, maintenance team personnel will remain assigned to the team. Leave should be minimized during the season as much as possible. Team members (with the

exception of safety observers) will not be available or tasked for squadron deployments when airshow demonstrations, practices, or other demonstration team events are scheduled unless circumstances dictate otherwise and approved by the 35 FW/CC. One safety observer (SO) must be made available by the fighter squadrons for all team practices and airshows. The team commander, SOs, and fighter squadron DOs will coordinate as required to ensure adequate SO availability before an SO departs on a fighter squadron TDY or deployments. All other team members will be made available for all demonstration shows.

A6.7. (Added-35FW) Demonstration Team Manning.

A6.7.1. **(Added-35FW)** Demonstration team support personnel will be assigned for a two-year rotation unless reassigned by PCS, separation, retirement, or removed administratively by the team commander and superintendent. Past members will not normally be reconsidered for demonstration team membership after being gone for an extended period (i.e. remote tour).

A6.7.2. **(Added-35FW)** The maintenance component of the demonstration team is directly responsible to the 35 MXG/CC and consists of the team superintendent, assistant superintendent, two crew chiefs, one avionics specialist, one electronics and environmental systems craftsman, one propulsion system specialist and one aircraft structural maintenance craftsman. The second highest ranking maintenance team member will be the Assistant Superintendent. The team will be 100 percent manned. Maintenance Support Team members will be in the following grades and AFSCs:

A6.7.2.1. **(Added-35FW)** Team Superintendent (1). MSgt in a maintenance AFSC (2A373, 2A374, 2A676, 2A671, or 2W171). The superintendent must possess exceptional release (ER) and all system Red ‘X’ (excluding Egress system). The superintendent should be, if at all possible, a CDDAR Team Chief.

A6.7.2.2. **(Added-35FW)** Team Assistant Superintendent (1). TSgt in a flightline MX AFSC 2A373, 2A374, 2A676, or 2A671F. The assistant superintendent must possess Red ‘X’ orders in their primary AFSC. If not already qualified, the assistant superintendent should receive aircraft launch qualification training from an AMU immediately upon selection for the demonstration team.

A6.7.2.3. **(Added-35FW)** Team Crew Chiefs (2). SSgt, SrA or A1C in the AFSC 2A3X3. The SSgt must possess Red ‘X’ orders in their primary AFSC. This individual must also be trained and certified to perform inlet & exhaust inspections. The team will have a minimum of one 7-level crew chief. SrA should possess inlet & exhaust certifications. A1C’s will only be accepted if they are out of CDCs (if applicable) and are 5-level core task qualified. The ranking Crew Chief will be designated as the Lead Crew Chief. They will be responsible for ensuring all tasks for daily flying operations are completed.

A6.7.2.4. **(Added-35FW)** Avionics Specialist (1). SSgt or SrA in AFSC 2A3X4(C). The individual should be a well qualified 7-level on common tasks associated with their systems.

A6.7.2.5. **(Added-35FW)** Electronics and Environmental Systems Specialist (1). SSgt or SrA in AFSC 2A6X6. Individual will be proficient on all common tasks associated with their systems.

A6.7.2.6. **(Added-35FW)** Propulsion System Specialist (1). SSgt, or SrA in AFSC 2A6X1F. The individual will be proficient on all common tasks associated with their systems on the F-16 and GE-129 engine. This person must be trained and certified to perform blade blend, inlet & exhaust and borescope inspections.

A6.7.2.7. **(Added-35FW)** Aircraft Structural Maintenance Craftsman (1). TSgt or SSgt in AFSC 2A7X3. Individual should be well qualified with procedures to restore minor superficial flaws on the F-16. This member will not be designated by name as they will only travel TDY with the team during out-of-country performances.

A6.7.3. **(Added-35FW)** The operations support component of the demonstration team consists of three to six safety observers, an AFE technician, and up to one additional team administrative support individual.

A6.7.3.1. **(Added-35FW)** Safety observers will be current and qualified F-16 pilots. 4-ship flight leads are desired.

A6.7.3.2. **(Added-35FW)** The team requires an AFE technician to accompany the team on all TDYs. The AFE technician will be qualified in all relevant tasks associated with the inspection, maintenance, repair, and adjustment of the harness, LPU, survival vest, g-suit, mask, CRU, anti-exposure and CAT suits, HMCS, and 55P helmet, and their sub-components. This individual must be trustworthy and able to independently execute AFE maintenance tasks in a deployed environment without supervision.

A6.7.3.2.1. **(Added-35FW)** With the approval of the OSS/CC, the demonstration team may select a named individual to the AFE position as an official team member, subject to WG/CC final approval IAW A6.13.5.

A6.7.3.3. **(Added-35FW)** With the approval of the OSS/CC, the demonstration team may select one additional administrative support individual as an official team member. This person will typically be selected from within the OSS. They will perform various support and additional team duties as designated by the team commander or superintendent. Examples of possible additional duties include: videographer, backup narrator, assisting with team travel coordination, etc. The selectee will be subject to WG/CC final approval IAW A6.13.5.

A6.8. (Added-35FW) Demonstration Team Additional Duties.

A6.8.1. **(Added-35FW)** Narrator(s).

A6.8.1.1. **(Added-35FW)** Maintain the scripted narration and keep it updated.

A6.8.1.2. **(Added-35FW)** Work with air show coordinators on which narration will be used and be responsible for the interpretation of the proper narration as required.

A6.8.1.3. **(Added-35FW)** Keep accurate account, maintenance serviceability status and requirements of all radio communications, computer and audio/visual equipment assigned to the team.

A6.8.2. **(Added-35FW)** Support Equipment Representative.

A6.8.2.1. **(Added-35FW)** Maintain an accurate list with serviceability status of all support and test equipment, AGE, cleaning materials and -21 equipment required for each air show.

A6.8.2.2. **(Added-35FW)** Work with supply to maintain and deploy, when required, the demonstration MSK Kits and miscellaneous parts.

A6.8.2.3. **(Added-35FW)** Pack, process and deploy cargo in preparation for team deployments.

A6.8.2.4. **(Added-35FW)** Maintain the serviceable status on travel pods issued to the team by the AMU.

A6.8.3. **(Added-35FW)** Travel Arrangements

A6.8.3.1. **(Added-35FW)** The team superintendent is responsible for support members' TDY travel arrangements, procuring military airlift to and from the air show, ground transportation, commercial airline tickets, and lodging.

A6.9. (Added-35FW) Team Uniforms.

A6.9.1. **(Added-35FW)** Team members will be provided distinctive performance and social uniforms as approved by the team commander. The funding for the uniforms will be incorporated in the annual team budget.

A6.9.2. **(Added-35FW)** The team commander will be the final authority on uniform combinations to be worn at team practices, airshows, and other official team events.

A6.10. (Added-35FW) Demonstration Team Financial Support.

A6.10.1. **(Added-35FW)** 35 OG/RA will complete demonstration team members' TDY orders NLT three duty days prior to TDY date.

A6.10.2. **(Added-35FW)** The Team Superintendent and/or Assistant Team Superintendent must be trained on and issued a Government Purchase Card (GPC) to purchase required team supplies, equipment and uniforms. The team commander, superintendent, assistant superintendent, and 35 OG/RA will manage the demonstration team's annual budget.

A6.10.3. **(Added-35FW)** The demonstration team commander and superintendent will carry government-provided cell phones with voice mail for deployed communication with other deployed team members and home station while TDY within Japan. The phone will be used to communicate with home station the status of personnel, aircraft, and logistics.

A6.11. (Added-35FW) Flying Operations Procedures.

A6.11.1. **(Added-35FW)** Demonstration practices and performances will not be flown within 30 minutes of sunrise or sunset or when the bird watch condition is severe.

A6.11.2. **(Added-35FW)** Wing Scheduling (35 OSS/OSO) will coordinate with Base Operations and Japanese aviation authorities to NOTAM airfield closure during demonstration practices. 35 OG squadrons will also be notified of any airfield closures and impacts on wing flying.

A6.11.3. **(Added-35FW)** Misawa's air traffic area will be closed from surface to 15,000 ft within a 5 mile radius for demonstration practices. No takeoffs or landings are permitted. Aircraft are allowed to arm / de-arm normally and return to the chocks / hot pits. Aircraft may taxi to EOR and arm normally, but may not make any radio calls over the tower frequency and will not be allowed to cross Rwy 10/28.

A6.12. (Added-35FW) Ground and Maintenance Operational Procedures.

A6.12.1. **(Added-35FW)** The team superintendent will be notified of maintenance team members being tasked for duties outside the squadron, training, leave, and compensatory time off before the team member is released. The superintendent will coordinate with each team member's section chief and training manager to ensure each team member receives the required demonstration team training. The superintendent will also notify each section chief of all TDYs and practice times.

A6.12.2. **(Added-35FW)** Team members will be made available to prepare for each show NLT three duty days prior to each deployment unless coordinated otherwise with the team superintendent. Deploying team members will also be given one compensatory day off immediately after returning from each deployment.

A6.12.3. **(Added-35FW)** Team commander and superintendent will determine required personnel to attend each off-station deployment.

A6.12.4. **(Added-35FW)** The squadron responsible for launching the demonstration aircraft (13/14 FS) Operations Personnel Management will accomplish flight orders.

A6.13. (Added-35FW) Team Selection.

A6.13.1. **(Added-35FW)** Demonstration Pilot/Team Commander

A6.13.1.1. **(Added-35FW)** The 35 FW/CC is responsible for final selection and will approve and certify the new demo pilot upon completion of training. The selection process should begin in the fall and be completed NLT 1 April. This timeline will ensure the incoming pilot attends at least one staged and one non-staged show prior to certification. Typically Iwakuni Friendship Day will be the non-staged show, with Hofu serving as the staged show. Interested pilots will submit a resume and letter of desire to the 35 OG/CC and a copy to the current Demonstration Team CC through their respective squadron commanders. 35 OG/CCE will schedule interviews with the 35 OG/CC and coordinate final interviews with the 35 FW/CC. Minimum Requirements: 750 hrs fighter-coded flight time (T-38 included), 300 hrs F-16 flight time, instructor pilot (desired), flight commander equivalent (Major or senior Captain).

A6.13.2. **(Added-35FW)** Superintendent

A6.13.2.1. **(Added-35FW)** Team Superintendent selection is a competitive choice made from SNCOs within the Maintenance Group. Whenever possible, this position will be filled at least two months prior to the end of the season to allow sufficient turnover time and training. Personnel submitted for consideration as the demonstration team superintendent must meet minimum qualifications in A6.7.2.1.

A6.13.2.2. **(Added-35FW)** Once an opening and selection date has been determined by the team commander, the maintenance squadron superintendents will advertise the open position to all Maintenance Group squadrons for consideration. Squadron and/or AMU supervision will provide names of qualified, interested applicants to the team commander and superintendent.

A6.13.2.3. **(Added-35FW)** Prior to the selection date, a selection board will convene to interview each candidate and select the most qualified individual. Each candidate must meet and interview with the board in person. The selection board will consist of the team commander and outgoing demonstration team superintendent.

A6.13.2.4. **(Added-35FW)** Once chosen, the name will be forwarded through the MXG/CC to the 35 FW/CC for final approval in writing. The wing commander may choose to interview the candidate prior to final approval.

A6.13.3. **(Added-35FW)** Narrator(s)

A6.13.3.1. **(Added-35FW)** SrA or above who is currently assigned to the team. Must be an articulate speaker with the ability to be spontaneous and adapt to multiple types of situations. The narrator is nominated by the team commander. IAW 2.3.1, the 35 FW/CC will approve final selection of the narrator.

A6.13.4. **(Added-35FW)** Safety Observers

A6.13.4.1. **(Added-35FW)** Safety observer candidates should be nominated by fighter squadron supervisors. The Demonstration Team commander will conduct an initial interview with prospective candidates and forward recommendations to the candidate's FS/CC. FS/CC endorsed names will then be routed through the OG/CC up to the FW/CC for final approval.

A6.13.5. **(Added-35FW)** Support Personnel Selection Process.

A6.13.5.1. **(Added-35FW)** Once a team maintenance vacancy exists, the maintenance squadron superintendents will advertise the position to all 35th Maintenance Group squadrons for consideration. AMU and/or squadron supervision will provide names of qualified, interested applicants to the team superintendent by the date set by the team commander (minimum of two weeks prior notice). Maintenance personnel submitted for consideration to the demonstration team must meet the minimum qualifications specified in A6.7.2.

A6.13.5.2. **(Added-35FW)** Individuals desiring to become a team member must:

A6.13.5.2.1. **(Added-35FW)** Meet all quality standards for dress and appearance, weight, physical fitness and military customs and courtesies.

A6.13.5.2.2. **(Added-35FW)** Prospective maintenance team members must be willing to spend extra hours daily for aircraft appearance and maintenance.

A6.13.5.2.3. **(Added-35FW)** Be willing to be TDY for most weekends during the show season.

A6.13.5.2.4. **(Added-35FW)** Present a sharp Air Force image to the general public, both verbally and in action.

A6.13.5.2.5. **(Added-35FW)** Must be resourceful, have the ability to work alone, demonstrate initiative and the Air Force Core Values of "Integrity First, Service Before Self and Excellence in all we do."

A6.13.5.2.6. **(Added-35FW)** Prospective maintenance team members must be recommended by the member's section chief and approved by the member's Chief or NCOIC to the Demonstration Team Superintendent.

A6.13.5.2.7. **(Added-35FW)** Prospective maintenance team members must submit Quality Assurance statistics for the last twelve months to the Demonstration Team Superintendent.

A6.13.5.2.8. **(Added-35FW)** The member's personnel records and EPRs will be made available for examination by the team superintendent and commander upon request.

A6.13.5.3. **(Added-35FW)** The team commander will interview each candidate and select the most qualified. After selection by the team commander, each name will be forwarded to the member's squadron commander for confirmation. Once the member's squadron commander has confirmed the individual, the name(s) will be forwarded to their respective GP/CC, as applicable, for review. Once reviewed by the GP/CC, the 35 FW/CC approves and appoints the support team members.

A6.14. (Added-35FW) Demonstration Team Upgrade & Continuation Training.

A6.14.1. **(Added-35FW)** A trained and current demonstration team ground safety observer is the 35 FW/CC designee for the demonstration pilot to regain currency.

A6.14.2. **(Added-35FW)** New support team members will be trained by current team members as outlined in the continuity binder and/or syllabus designated for their respective position. These training materials are located on the demonstration team share drive.