

**BY ORDER OF THE
COMMANDER, PACIFIC AIR FORCES**



PACAF INSTRUCTION 11-201

2 DECEMBER 1996

Flying Operations

**PACAF PARTICIPATION IN AIRCRAFT
DEMONSTRATIONS**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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OPR: HQ PACAF/DOT (Maj Stuart T. Latta)

Certified by: HQ PACAF/DOT (Col Bryant E. Gross)

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This instruction implements policy guidance in AFD 11-2, Flight Rules and Procedures; and AFI 11-209, Air Force Participation in Aerial Events. This instruction establishes the duties and responsibilities of Headquarters Pacific Air Forces (PACAF), supporting Numbered Air Forces (NAF) and their tasked units in providing single-ship aerial demonstrations; and provides guidance for request procedures, scheduling guidelines, support requirements, and maneuver profiles. This instruction does not apply to United States Air Force Reserve (USAFR) or Air National Guard (ANG) units or their members.

SUMMARY OF REVISIONS

This revision clarifies NAF responsibilities for processing demonstration requests; amends post demonstration reporting procedures; incorporates requirement for HQ PACAF/DOT review of demonstrations; and updates Monthly Demonstration Summary and Show Summary and Critique examples. New or revised material is indicated by a *.

Chapter 1

OPERATIONAL PROCEDURES

1.1. Introduction. Procedures for requesting, processing, and accomplishing aircraft demonstrations are listed in this chapter. The following directives provide further policy or procedural guidance in the conduct of these events.

- DoD Directive 5410.18, *Community Relations*
- DoD Instruction 5410.19, Armed Forces Community Relations
- AFI 11-206, General Flight Rules
- AFI 11-209, Air Force Participation in Aerial Events
- AFI 31-101, Aircraft Systems Security Standards
- AFI 35-201, Air Force Community Relations
- Part 91, Federal Aviation Regulations

1.2. Terms Explained. Unless otherwise indicated, terms and definitions used in AFI 11-209, AFI 35-201, and this instruction are the same. The term “Abnormal Procedure” identifies the specific abort procedure for each maneuver.

1.3. Suspenses. The HQ PACAF/DO approves the aerial demonstration schedule 45 days prior to the beginning of an event month (i.e., June schedule approved by 15 April). Requests must be received 60 days prior to the event month to be considered.

1.4. HQ PACAF Responsibilities. HQ PACAF/DO is the approval authority and HQ PACAF/DOTT is the central scheduling authority for all single-ship demonstrations. HQ PACAF/DOTT will notify a show sponsor when a demonstration has been approved for their event and forward a copy of the PACAF Demonstration Team Support Manual. HQ PACAF/DOTT will notify PACAF/PA of scheduled performances.

1.5. Demonstration Requests.

1.5.1. Civilian locations requesting an aerial demonstration must submit the appropriate request to the Office of Assistant Secretary of Defense for Public Affairs (OATSD/PA). OATSD/PA notifies PACAF of events that are eligible for consideration.

1.5.2. Air Force units may submit a request, through command channels, directly to HQ PACAF/DOT for consideration. When multiple requests are received from within a NAF’s AOR, the NAF will develop a prioritized list of requests prior to forwarding them to HQ PACAF/DOT.

1.5.3. Requests from other services should be submitted, through command channels, to HQ PACAF/DOT in accordance with applicable directives.

1.5.4. HQ PACAF/AOS will analyze show sites for operational suitability and safety.

1.6. Scheduling and Policies. The following policies will guide development of the monthly aerial demonstration schedule. Waivers to these policies require HQ PACAF/DO approval.

- 1.6.1. For a 4-weekend month, a maximum of four sites per team will be scheduled. For a 5-weekend month, a maximum of five sites will be scheduled.
- 1.6.2. Try to schedule at least 1 weekend off per month.
- 1.6.3. The single-ship F-16 aerial demonstration team should not perform in conjunction with the Thunderbirds.
- 1.6.4. Demonstrations will commence not earlier than 1 hour after sunrise and not later than 1 hour prior to sunset.
- 1.6.5. For air shows where the Thunderbirds or Blue Angels are scheduled, single-ship demonstrations will be scheduled to land no later than 15 minutes prior to the scheduled pre-show start time.

1.7. Show Location. Aerial demonstrations will be flown over a clearly defined show line. Show lines can include a runway, taxiway, road, or a specially constructed show line (school buses, boats or barges, snow fence, etc.)

1.8. Air Show Sponsor Responsibility. The sponsor will ensure all requirements contained in the PACAF Single-Ship Demonstration Team Support Manual are met. Failure to comply with the support manual could result in cancellation of the aerial demonstration. The Support Manual is provided to each scheduled show location by HQ PACAF/DOTT.

1.9. Reporting.

1.9.1. A post demonstration report will be telephoned to the PACAF Operations Center by the pilot narrator on the day of each scheduled demonstration. If unable to contact the PACAF Operations Center, contact the Misawa AB command post who will in turn relay the status to the PACAF Operations Center. As a minimum, include:

Weather

Show profile

Estimated crowd count

Unusual occurrences/ remarks

1.9.2. Monthly Demonstration Summary, RCS: PAF-DOT(M)9506: Submit to HQ PACAF/DOTT NLT 10 days after each month IAW the formats at Attachments 1 and 2.

1.9.3. End-of-Season Report, RCS: PAF-DOT(A)9507: Submit to HQ PACAF/DOTT NLT 15 October IAW the formats at Attachments 3 and 4.

1.10. Recommended Changes.

1.10.1. The demonstration flight sequence will not be altered. Any proposed new maneuver must be approved in advance and in writing by PACAF/CC (including context and constraints) before any type of in-flight experimentation, practice, or performance takes place.

1.10.2. Recommendations for changes to this instruction will be submitted directly to HQ PACAF/DO, with an info copy to HQ PACAF/DOTT.

1.11. Demonstration Performance Reviews.

1.11.1. All demonstrations will be videotaped and should include the complete narration as well as the ground environment during the low altitude maneuvers. Video tapes will be reviewed by the Wing Commander, Vice Wing Commander, or Operations Group Commander/Deputy Operations Group Commander unless the demonstration is viewed in person. Submit a copy of each demonstration to HQ PACAF/DOT for review NLT 15 days after the demonstration. Include a completed Demo Gradesheet IAW the format at Attachment 5 with the demonstration videotape. PACAF/CC or NAF/CC may periodically request a videotape for review.

1.11.2. An annual pre-season assessment will be submitted by the NAF/CC to PACAF/CC NLT 1 March. The assessment will review the qualifications and training progress of demonstration teams IAW this instruction and will include a videotape of a current performance of the team for PACAF/CC review.

1.12. Proficiency Requirements.

1.12.1. Each pilot will fly a minimum of one demonstration every 15 days. If 15 days are exceeded, the next demonstration will be flown above 1,000 feet AGL.

1.12.2. If fuel permits, high show practice demonstrations should terminate with a low approach followed by practice of maneuvers that are unique to the low show. The pilot may transition to the low show maneuvers before the Tactical Pitch-up to Land.

1.13. Transition During Performance. Each performance should be planned to fly a complete high or low show profile. However, conditions such as scattered clouds in the show area may require the demonstration pilot to transition between the high show and low show profiles at certain transition points.

1.14. Use of Teams for Static Display. The demonstration pilot and narrator will normally arrive in two aircraft with one to be used as a spare for the demonstration. Neither aircraft should be used for static display purposes.

Chapter 2

DEMONSTRATION PILOT SELECTION AND TRAINING

2.1. General. The HQ PACAF/DO has established a F-16 aerial demonstration team. A standard team is composed of two aircraft, one demonstration pilot, a minimum of two narrators, and necessary support personnel. Responsibility for individual team selection and support will be assigned to the Wing Commander.

2.2. Demonstration Pilot Selection.

2.2.1. Wing Commanders are responsible for selecting PACAF demonstration pilots. Screening and selection procedures will be established by the Wing Commander.

2.2.2. Demonstration pilot duty is a 2-year assignment and selected pilots will be placed in a 2-year freeze status from the date assigned to demonstration duty.

2.3. Narrator Selection. Wing Commanders are responsible for selecting narrators. Screening and selection procedures will be established by the Wing Commander. The normal narrator tour of duty will be 1 year and freeze actions are not required.

2.4. Training. Training will be accomplished according to the guidelines of this instruction.

2.4.1. The Wing Commander may alter the training sequence and individual sorties as necessary to ensure proficiency and progress. Additional sorties may be scheduled to ensure that level is achieved.

2.4.2. Maneuvers will be performed as described in the approved profiles for each aircraft.

2.4.3. Wing Commanders may approve lowering altitudes to approved minimums when the pilot has demonstrated the necessary proficiency and judgment for current level of training.

2.4.4. New demonstration pilots will be checked out by a currently qualified demonstration pilot.

2.4.5. The F-16 requires a two-seat aircraft for missions TS-2 through TS-10.

2.4.6. All training will be accomplished in VMC.

2.4.7. Training performance during each event will be documented and progress monitored by the Wing Commander.

2.4.8. Final certification of the demonstration pilot and narrator(s) will be documented by the Wing Commander, with an informational copy forwarded to HQ PACAF/DOT.

2.4.9. Individuals designated to film demonstrations will be thoroughly trained. Training will 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. Training Guide.

2.5.1. Each new demonstration pilot will receive extensive ground training from the predecessor.

2.5.2. The Wing Commander, Vice Wing Commander, Operations Group Commander, or Deputy Operations Group Commander will be present to monitor every training demonstration. The Wing

Commander will be informed of any problems which occur with the demonstration flight, narration, or video equipment. All training flights will be videotaped and should include a complete narration.

2.5.3. Each practice except TS-3 will be over a runway environment.

2.6. Training Profile.

2.6.1. TS-1 (Ground Training):

- Standard Procedures
- Fuel Requirements
- Waivers
- Aircraft Handling Characteristics
- Safety Considerations
- Lessons Learned
- Emergency/Abort Procedures
- Team Management
- Scheduling

2.6.2. TS-2 (Back seat):

- Standard PACAF Demonstration Profile
- Minimum Run/Wet Runway Landing

2.6.3. TS-3 (Front Seat of a two-seat model):

- Standard PACAF Demonstration Profile.
- Accomplish above 5,000 feet AGL.
- Emergency/Maneuver Abort Procedures.

2.6.4. TS-4 through TS-10 (Front seat of a two-seat model):

- Standard PACAF Demonstration Profile.
- Accomplished over a runway, initial minimum altitude is 2,000 feet AGL.
- Minimum run/wet runway landing.

2.6.5. TS-11 through TS-15 (Solo).

2.7. Waiver. Based upon pilot proficiency, the Wing Commander may waive TS-10, TS-14, and TS-15.

Chapter 3

F-16 DEMONSTRATION MANEUVERS

Section 3A—General Information

3.1. General. Maneuvers discussed in this chapter are approved and authorized for use during the training for and execution of F-16 air demonstrations. Each maneuver, to include repositioning maneuvers, is discussed in detail beginning in paragraph 3.6. Abort procedures are written for each maneuver. If the entry conditions are not met for any maneuver, a wings-level pass will be flown and the pilot will go to the next maneuver.

3.2. Aircraft Configuration and Fuel Requirements. Aircraft configuration for all demonstrations will be clean (no wing pylons or missiles). The high profile uses approximately 4,000 pounds of fuel and the low 3,000 pounds. Minimum fuel load at takeoff is 5,500 pounds.

3.3. Airspeed and G-Limits. Demonstration pilots will not exceed 0.94 Mach. At no time will aircraft G-limits be exceeded.

3.4. Airspace and Runway Requirements . Airspace required for the F-16 is 15,000 feet AGL and normally a 5-mile radius from show center horizontally. Minimum runway required is 7,000 feet.

3.5. Weather Requirements. Weather minimums for the high profile are a ceiling of at least 7,000 feet and 5 miles ground and flight visibility and a discernible horizon. Weather required for the low profile is a ceiling of at least 2,500 feet with 5 miles ground and flight visibility and a discernible horizon. Maneuvers will be planned to maintain VMC throughout the show sequence.

3.6. Positioning Maneuvers.

3.6.1. Vertical Repositioning Maneuver. The vertical reposition will be flown to change direction at each end of the show line during a high show. Upon passing show center or at the completion of the previous maneuver with a minimum of 250 knots, a straight-ahead climb is commenced to put the aircraft in a 55-degree nose-high attitude. At a minimum of 3,000 feet AGL, the aircraft is rolled inverted and a pull through the vertical to approximately 45 degrees nose low is performed. The peak altitude reached should be approximately 5,000 feet AGL. At this point, back pressure is relaxed and the aircraft is smoothly flown to be in level flight at 500 feet AGL. At show sites where the pressure altitude exceeds 4,000 feet MSL, the altitudes for the roll and the peak will be increased by 500 feet.

3.6.2. Whifferdill Turn. The Whifferdill 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 Whifferdill. As the aircraft departs the show line, maneuver in the horizontal and vertical plane to reposition for the next maneuver. A turn reversal is made while still climbing. During the last half of the Whifferdill, while descending, the turn is adjusted to establish the proper show line entry. The entry "cut" turn for the Whifferdill is always away from the crowd with a reversal to ensure no show line or crowd line penetration.

3.6.3. Flat Pass. The flat pass is a repositioning maneuver used alone or in combination with a Whifferdill for the primary purpose of orienting the subsequent demonstration maneuver in the approved direction relative to the crowd line. It will be flown wings-level down the show line so as not to exceed 0.94 Mach and at a minimum of 500 feet AGL.

Section 3B—High Profile

3.7. Maximum Performance Takeoff and Climb to Cuban 8 or 1/2 Cuban 8 (depending on takeoff direction).

3.7.1. Takeoff will not be attempted when the takeoff roll exceeds 80 percent of available runway. If airfield conditions permit, a brake release point will 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 will the takeoff be initiated with less than 6,000 feet of runway remaining. The takeoff is made in full afterburner. With a minimum of 300 knots, begin a wings-level 4-G pull. The pull is held until 90 degrees of pitch, then the back pressure is released off to approximately 2.5 G to 25 to 35 degrees nose-high inverted. The back pressure is played to ensure the over-the-top airspeed and altitude are a minimum of 160 knots and approximately 3,000 feet AGL. The pull is continued down the backside to 25 to 35 degrees of pitch nose-low inverted. At 20 to 35 degrees of pitch nose-low, the pilot momentarily unloads to hold 25 to 35 degrees of pitch, deselects afterburner, and performs an unloaded roll to a wings-level upright and 25 to 35 degrees nose-low attitude. At 2,500 feet AGL, the pilot decreases power as required and begins a 4-G wings-level pull to arrive on the show line at 500 feet AGL with 400 knots. If the direction of takeoff is left to right, the pilot accomplishes the second half of a Cuban 8 using an entry airspeed of approximately 400 knots, an entry pull of 5 G and over-the-top minimum of 160 knots. The descending portion of the second half is accomplished exactly as the descending portion of the first half. If the direction of takeoff is right to left, the pilot accomplishes the first half of the Cuban 8 only. In either case, when past show center after completion of the appropriate Cuban 8 maneuver, a repositioning maneuver is performed in preparation for the next maneuver.

3.7.2. Abnormal procedure. If at any time during the maneuver it appears the minimum over-the-top altitude or airspeed parameters will not be met, the maneuver will be aborted by performing an unloaded roll to the wings-level upright position accelerating to 250 knots in afterburner and continuing down the show line.

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

3.8.1. After the repositioning maneuver, the pilot will perform a Flat Pass as described in paragraph 3.6.3. Upon completion of the flat pass, a repositioning maneuver is flown in preparation for the next maneuver.

3.8.2. Abnormal procedure. If it becomes apparent that 0.94 Mach will be exceeded, afterburner will be deselected.

3.9. Triple Aileron Roll (Left to Right).

3.9.1. At 3,000 feet prior to show center with 400 to 450 knots and a minimum of 500 feet AGL, raise the nose 5 to 10 degrees and perform a series of unloaded rapid aileron rolls to the left (not to exceed

three). The maneuver will terminate at 500 feet AGL minimum. When wings-level following the last aileron roll, the pilot performs a repositioning maneuver to prepare for the next maneuver.

3.9.2. Abnormal procedure. 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 upright.

3.10. High G Turn (Right to Left).

3.10.1. At show center with a minimum of 350 knots and 500 feet AGL, initiate a hard right 360-degree turn. Vary G and power as necessary to maintain a minimum of 250 knots. Roll out of the turn and proceed down the show line. At 2,000 feet past show center, perform a repositioning maneuver to prepare for the next maneuver.

3.10.2. Abnormal procedure. If during any portion of the maneuver it becomes apparent the aircraft will descend below 400 feet AGL, the maneuver will be aborted by rolling wings-level upright, away from the crowd, and climbing to 500 feet AGL. If it becomes apparent the aircraft will overshoot the show line, airspeed will be reduced (no lower than 250 knots) to prevent the aircraft from overshooting the show line.

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

3.11.1. Entry parameters are 400 to 450 knots and no lower than 500 feet AGL. At 2,000 feet prior to show center, briskly rotate the nose 5 to 10 degrees nose up. 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. At the completion of the pass and at the 360-degree point, a repositioning maneuver is performed to set up for the next maneuver.

3.11.2. Abnormal procedure. If the nose is lower than the horizon at the 180-degree inverted point, the roll rate should be increased to ensure the maneuver is finished no lower than initiated.

3.12. Double Immelmann (Right to Left).

3.12.1. Enter the show line at 500 feet AGL and 400 to 450 knots. At show center, select afterburner, initiate a 6- to 8- G wings-level pull, and perform an Immelmann. With a minimum of 290 knots at the top, perform another Immelmann. Roll out from the second Immelmann at approximately 150 knots and proceed to the end of the show line. At a minimum of 175 knots and 5,000 feet AGL, perform a Split-S to re-enter the show line from right to left at 500 feet AGL. Passing 3,000 feet AGL, the aircraft should be at or past pure vertical nose low at a minimum of 250 knots. Continue the hard turn to 45 degrees nose low upright. At this point, back pressure is relaxed and the aircraft is smoothly flown to be in level flight at 500 feet AGL and 350 knots in preparation for the next maneuver.

3.12.2. Abnormal procedure. If it becomes apparent that the aircraft will not be at or past pure vertical nose low and a minimum of 250 knots by 2,500 feet AGL during the Split-S, the straight through pull will be aborted. To abort the Split-S, roll unloaded to wings-level upright and pull to the nearest horizon. If below 350 knots, use full afterburner. A Whifferdill turn will be flown to re-enter the show line.

3.13. Falcon Turn (Left to Right).

3.13.1. Enter the show line at 500 feet AGL and 350 knots. Just prior to show center select full afterburner and perform a hard slightly climbing turn (5 to 15 degrees nose high) 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 hard right slightly descending turn (5 to 10 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.

3.13.2. Abnormal procedure. If during any portion of the maneuver it becomes apparent that aircraft will descend below 400 feet AGL or overshoot 15 degrees nose low, the maneuver will be aborted by rolling wings-level and climbing to 500 feet AGL. If it becomes apparent the aircraft will overshoot the show line, airspeed will be reduced (no lower than 250 knots) to prevent the overshoot.

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

3.14.1. At 2,000 feet past show center at 500 AGL and a minimum of 350 knots, select afterburner and perform a hard pull to 90 degrees nose high. Maintain full afterburner in the climb to 4,000 feet AGL, then perform a limiter pull of 90 degrees to inverted. Hold level inverted flight and accelerate to 250 knots. At 2,000 feet passed show center, perform a 135-degree pull through the vertical to 45 degrees nose low upright. Hold until reaching 2,000 feet AGL, then perform a right descending 90-degree turn away from the crowd. Turn left or right to set up on the appropriate 1,500 feet downwind for the Slow Speed Pass into the wind.

3.14.2. Abnormal procedure. Do not attempt the 135-degree corner of this maneuver less than 4,000 feet AGL or out of the airspeed range of 200 to 300 knots. 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 Slow Speed Pass.

3.15. Slow Speed Pass (Into the wind).

3.15.1. During the turn to the show line following the previous maneuver, extend landing gear and speed brakes and attain 140 knots by 2,000 feet prior to show center. Maintain 130-140 knots and descend no lower than 300 feet AGL. If a portion is flown over/down the active runway, minimum altitude for that portion is 100 feet AGL. At 1,000 feet past show center, raise the gear, accelerate to 170 knots minimum and rotate the nose to 55 degrees nose high. At a minimum of 4,000 feet AGL, initiate a vertical reposition maneuver in preparation for the next maneuver.

3.15.2. Abnormal procedure. If airspeed decreases below 120 knots or a descent rate develops, select full afterburner and perform normal go around procedures.

3.16. Maximum Performance Climb with Rolls (with the wind).

3.16.1. Enter with a minimum of 400 knots and 500 feet AGL. At 2,000 feet prior to show center, select full afterburner and initiate a climb to arrive at show center with 90 degrees of pitch. Once pitch is set, unload and perform a series of high-rate aileron rolls until reaching a minimum of 225 knots or 2,000 feet below wavered airspace. Stop the aileron rolls then execute a vertical recovery by smoothly pulling the nose to the nearest horizon. Modulate power and speedbrakes as required while performing the descending portion of a repositioning maneuver to enter the show line at 350 knots and 500 feet AGL.

3.16.2. Abnormal Procedure. If roll coupling occurs during the climb (to exceed approximately 2.5 Gs), smoothly stop the roll, then pull to the nearest horizon, and roll upright.

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

3.17.1. Enter the show line at 500 feet AGL and 300 to 350 knots. At 2,000 feet prior to show center raise the nose 5 to 10 degrees, unload, and perform a 405-degree aileron roll away from the crowd followed by a pull up to downwind using afterburner. Configure for and execute a normal final turn and landing.

3.17.2. Abnormal Procedures. If entry parameters are not achieved by show center, the 405-degree aileron roll will not be performed and a simple pull up to a closed pattern will be completed.

Section 3C—Low Profile

3.18. Unless otherwise noted, abnormal procedures for the low profile are the same as the high profile.

3.19. Takeoff to Horizontal Cuban 8 (Direction of Takeoff).

3.19.1. Takeoff will not be attempted when the takeoff roll exceeds 80 percent of available runway length. If airfield conditions permit, a brake release point will 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 will the takeoff be initiated with less than 6,000 feet of runway remaining. The takeoff is made in full afterburner. Once the gear is retracted, an accelerating climb is made to 350 knots. At this point, maintain afterburner and begin an energy sustaining pitch-up to 500 feet AGL, turning 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. Complete the maneuver by turning to finish on the show line heading in the same direction as takeoff. 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).

3.19.2. Abnormal Procedures. If, during any portion of the maneuver, it becomes apparent the aircraft will descend below 400 feet AGL the maneuver will be aborted by rolling wings-level and climbing to 500 feet AGL. If it becomes apparent the aircraft will overshoot the show line, airspeed will be reduced (no lower than 250 knots) to prevent the aircraft from overshooting the show line.

3.20. Flat Pass (Right to Left). If the direction of takeoff is left to right, the repositioning maneuver following the horizontal Cuban 8 will be used to prepare for a flat pass as described in paragraph 3.6.3. At 2,000 feet past show center, execute a repositioning maneuver to set up for the next maneuver.

3.21. Triple Aileron Roll (Left to right). The Triple Aileron Roll will be performed as described in paragraph 3.9.1. When wings-level following the last aileron roll, the pilot performs a repositioning maneuver to set up for the next maneuver.

3.22. High G Turn (Right to Left). The High G Turn will be performed as described in paragraph 3.10.1. At 2,000 feet past show center, a repositioning maneuver to set up for the next maneuver.

3.23. Four-Point Roll (Left to Right). The Four-Point Roll is performed as described in paragraph 3.11.1. At the completion of the pass, execute a repositioning maneuver to set up for the next maneuver.

3.24. Falcon Turn (Right to Left). . The Falcon Turn is performed as described in paragraph 3.13.1.

3.25. Slow Speed Pass (Against the wind). The Slow Speed Pass is performed as described in paragraph 3.15.1.

3.26. Knife Edge Pass (Opposite direction of Slow Speed Pass).

3.26.1. Enter the show line at 500 feet AGL and 425 to 475 knots. At 3,000 feet prior to show center, unload, and roll 90 degrees toward the crowd. The aircraft is held in this position until 3,000 feet past show center. Maintain level to slightly climbing flight. To complete the maneuver, roll wings-level upright and perform a repositioning maneuver.

3.26.2. Abort Procedures. If it becomes apparent that the aircraft will descend below 400 feet AGL, roll out of the bank and proceed down the show line.

3.26.3. The Knife Edge Pass is a transition point to the Shark's Tooth or high profile Maximum Performance Climb with Rolls, if permitted by weather.

3.27. Tactical Pitch-Up to Landing (Direction of Landing). The Tactical Pitch-Up to Landing is performed as described in paragraph 3.17.1.

3.28. Staged Show Sites.

3.28.1. When demonstration aircraft takeoff from other than the demonstration site, plan to arrive over the show site with the fuel requirements stated in paragraph 3.2. plus enroute return fuel. Enter 90 degrees to the show line and directly behind the crowd at 1,000 feet AGL and not to exceed 0.94 Mach. Start a climbing turn to downwind in the appropriate direction to setup for a simulated takeoff. Turn back to the show line and slow to 170 knots. Lower the gear and fly down the show line at 300 feet AGL (100 feet AGL if flown over/down the active runway). At show center, retract the gear, select full afterburner, and replicate the appropriate high/low show takeoff maneuver. The remaining show sequence is unchanged except the closing maneuver will be a flat pass following the Maximum Climb with Aileron Rolls for the High Profile and the Knife Edge Pass for the Low Profile.

3.28.2. If circumstances do not allow a 90-degree entrance to the show line, the pilot may fly down the show line so as to not exceed 0.94 Mach and no lower than 300 feet AGL. Past the end of the crowd line, turn 45 degrees outside the show line, perform a repositioning maneuver, and turn back to the show line. Slow during the reposition maneuver to 170 knots. The remaining show sequence is unchanged.

JOHN M. McBROOM, Maj Gen, USAF
Director of Operations

Attachment 1

EXAMPLE OF MONTHLY DEMONSTRATION SUMMARY

Figure A1.1. - (RCS: PAF-DOT(M)9506)

DATE

MEMORANDUM FOR HQ PACAF/DOIT

FROM: F-16 Demonstration Team

SUBJECT: F-16 Demonstration Summary, March 9X

1. The monthly summary for the F-16 Demonstration Team is as follows:

- a. Dates: 1-31 March 9X
- b. Number of Practice Sorties Flown: 1
- c. Number of Scheduled Demonstrations Flown: 4
- d. Number of Deployment/Redeployment Sorties Flown (2 jets): 10
- e. Total Monthly Sorties/Hours Flown: 15/7.6
- f. Number/Location:

1/Misawa AB, JA *

2/Osan AB, ROK

1/Kadena AB, JA **

* 5AF/CC certification flight

** 1 x air abort for AB problem/flew spare jet

- g. Total Practice Demonstrations, Year to Date: 10
- h. Total Scheduled Demonstrations Flown, Year to Date: 6
- i. Total Deployment/Redeployment Sorties Flown, Year to Date: 10

2. Show critiques for each show location are attached.

3. The following are requests for upcoming locations:

4-7 Jun Darwin, Australia

19-21 Jun Bangalore, India

4. POC is Capt Jones, DSN 226-4915.

CHRIS JONES, Capt, USAF

F-16 Demonstration Pilot

Attachments:

1. Misawa AB, JA Open House Summary
2. Osan AB, ROK Summary
3. Kadena AB, JA Air Show Summary

cc:

35 OG/CC

Attachment 2

EXAMPLE OF SHOW SUMMARY AND CRITIQUE

Table A2.1. - Summary and Critique

F-16 DEMONSTRATION TEAM AIR SHOW SUMMARY AND CRITIQUE					
Show Location: (SAMPLE)		Dates(s):			
Show POC:		Other Major Demos:			
Demos Flown:		Estimated Attendance Each Day:			
Show Times:		Weather:			
Staged Show: Yes / No		Staged From:			
Overall show evaluation: (SAMPLE)		UNSAT	MARG	SAT	EXCEL
2. Pre-show coordination and cooperation:		UNSAT	MARG	SAT	EXCEL
3. Facilities/airfield condition/suitability:		UNSAT	MARG	SAT	EXCEL
4. Maintenance support:		UNSAT	MARG	SAT	EXCEL
5. Quarters - Officer:		UNSAT	MARG	SAT	EXCEL
6. Quarters - Enlisted:		UNSAT	MARG	SAT	EXCEL
7. Vehicle and transportation support:		UNSAT	MARG	SAT	EXCEL
*8. FAA/Host Nation coordination and support:		UNSAT	MARG	SAT	EXCEL
9. Recruiting support/value:		UNSAT	MARG	SAT	EXCEL
10. Hospitality, social functions, food:		UNSAT	MARG	SAT	EXCEL
REMARKS:					
SAMPLE CRITIQUE					

Attachment 3 EXAMPLE OF END OF SEASON REPORT FORMAT

Figure A3.1. (RCS: PAF-DOT(A)9507)

(Date)

MEMORANDUM FOR HQ PACAF/DOTT

FROM: F-16 Demonstration Team

SUBJECT: F-16 Demonstration Season End Summary for 199X

1. The 199X season summary for the F-16 Demonstration team follows. Attachment 1 contains air show location summaries/remarks. Attachment 2 contains lessons learned/recommendations.

2. Overall summary:

<u>199X Demo</u>	<u>Locations</u>	<u>Actual Demos</u>	<u>Practices</u>	<u>Deployment</u>	<u>Sorties</u>	<u>Crowd Size</u>
Pre-Season						
Mar						
Apr						
May						
Jun						
Jul						
Aug						
Sep						
Oct						
Nov						
Totals						

3. Profiles Breakdown

High:

Low:

Staged:

Weather Canceled:

Maintenance Canceled:

4. Miscellaneous

5. POC is Capt Jones, DSN 226-4915.

CHRIS JONES, Capt, USAF

F-16 Demonstration Pilot

Attachments :

1. Air Show Locations

2. Lessons Learned

cc:

35 OG/CC

Attachment 4

EXAMPLE OF END OF SEASON SUMMARY FORMAT

Figure A4.1. End of Season Summary Format

F-16 Demonstration Team

Air Show Location Summaries for 199X

Date	Location	Profile	Crowd	Rating	Remarks
11 Apr	Osan AB, ROK/ FOD/Ramp Hazard	High	100,000	Fair	F-14/F-18
12 Apr	Misawa AB, JA/	Low	75,000	Excellent	

Attachment 5

EXAMPLE OF DEMO GRADESHEET FORMAT

Table A5.1. Demo Gradesheet Format

PACIFIC AEROSPACE 96 DEMO REVIEW											
SHORT HIGH PROGRAM	ENTRY PARAMETERS			PERFORMANCE REVIEW (HUD TAPE)							REMARKS
	ALTITUDE	AIRSPEED	CLIMB/DIVE	1-JAN	2-JAN*	3-JAN	4-JAN	5-JAN	6-JAN	NOTES	
High Speed Pass	500' AGL(min)	.94M(max)	N/A		N/A		G		G		
Triple Aileron Roll	500' AGL(min)	400-450K	Nose High		G		E	E	E		Abort if nose below horizon on 2nd roll
High G Turn	500' AGL	350K(min)	N/A		G		G	E	G		250K Min/400' AGL min
Point Roll	500' AGL(min)	400-450K	Nose High		G			G	G		Abort if nose below horizon at 180 degree point
Double Immelmann	500' AGL	400-450K	6-8G Pull at start		E		G	E	G		Start second Immelmann w/290K min. End w/150K
											Perform Split-S at 175K and 5000' (min)
Falcon Turn	500' AGL	350K	Nose High					E	E		Reverse turn after 90 degrees->roll "under"->perform
											hard right turn for 270 degrees (min A/S 250K)
Sharks Tooth	500' AGL	350K(min)	Pull to 90 nose high		G		G	G	G		Climb to 4,000" AGL -> limiter pull to inverted ->
											accel to 250K -> 135 degree pull to 45 nose low
Show Exit	500' AGL	N/A	N/A		G		G	G	G		Turn 90 degrees away from crowd at completion of
											Sharks Tooth
Anti-G Strain	N/A	N/A	N/A		E		E	E	E		
*Practice Notes: 1) Started turn nose low, 2) Started w/390K 10K slow, 4) .96Mach				Performances graded on a scale of F->E Fair, G = Good, and E= Excellent							
SHORT LOW PROGRAM	ENTRY PARAMETERS			PERFORMANCE REVIEW (HUD TAPE)							REMARKS
	ALTITUDE	AIRSPEED	CLIMB/DIVE	1-JAN*	2-JAN	3-JAN	4-JAN	5-JAN	6-JAN	NOTES	
High Speed Pass	500' AGL(min)	.94M(max)	N/A	G		G					
Horizontal Cuban 8	500' AGL	350K	N/A	E		G					Normally made after T/O. Turn 225 degrees away
											from crowd -> reverse for 270 degrees -> turn again
Triple Aileron Roll	500' AGL(min)	400-450K	Nose High	E		G					Abort if nose below horizon on 2nd roll
High G Turn	500' AGL	350K(min)	N/A	G		G					250K Min/400' AGL min
Point Roll	500' AGL(min)	400-450K	Nose High	G		G					Abort if nose below horizon at 180 degree point
Knife Edge Pass	500' AGL	425-475K	N/A								Roll 90 degrees (hold until 3K past show ctr)
Show Exit	500' AGL	N/A	N/A	N/A		G					Turn 90 degrees away from crowd at completion of
											Knife Edge Pass
Anti-G Strain	N/A	N/A	N/A	E		E					
*Practice Notes: 1) A/S: 547K, 2) A/S: 580K				Performances graded on a scale of F->E Fair, G = Good, and E= Excellent							

Attachment 6

F-16 DEMONSTRATION NARRATION

Introduction

Good morning/afternoon, ladies and gentlemen and welcome once again to *event*. I'm Air Force Captain *name* from Pacific Air Force's 35th Fighter Wing at Misawa Air Base Japan and it's my pleasure to describe for you today's flight demonstration by the world's premier multi-role fighter, the F-16 Fighting Falcon. An aircraft that served with great distinction in the Middle East, flying over 16-thousand combat sorties...more than any other aircraft type in the Gulf War.

The F-16 has been a part of the United States Air Force since 1979, assigned to Pacific Air Forces and other Air Force units in Europe, Air Combat Command, our Air Guard and reserve forces, as well as the air forces of many allied nations.

The pilot for today's demonstration is Captain *name*, a veteran fighter pilot with more than *number* hours in jet aircraft, and *number* missions in *operation*. Launching Captain *name* is *name* from *hometown* and *name* from *hometown*.

The F-16 is a dual role fighter, which means it's equally adept at shooting down enemy aircraft and attacking targets on the ground. Today's aircraft is configured for air-to-air combat and weighs in at 25 thousand pounds. That's approximately 12 thousand pounds less than its ground attack weight ...which usually includes bombs, missiles and extra fuel. Any way it's configured, the F-16 is one of the world's most maneuverable, versatile and lethal fighter aircraft.

Helping give it that winning edge is...a fly-by-wire flight control system, similar to the one used in the space shuttle...a side-stick controller unique to the F-16 that responds to gentle hand pressure...a 30 degree reclined seat so the pilot can better withstand the massive G-forces sustained in air combat... and a high visibility canopy that gives the pilot a virtually unrestricted view of the aerial battlefield. The F-16's powerful general electric *type* engine produces *number* thousand pounds of thrust, translating into more horsepower than the entire starting lineup at the Indianapolis 500.

For Low Profiles: Because of this afternoon's/morning's low cloud cover, we can't show you those maneuvers that involve high altitude climbs. However, I can assure you that our low show will be just as impressive as America's Fighting Falcon shows you what it can do.

Simulated Takeoff (High, Staged Profile Only)

Ladies and gentlemen, the F-16 Fighting Falcon. (*F-16 ARRIVES*) Captain *name* took off this morning/afternoon from *location*. He is now setting up to simulate a takeoff and then he will pull the Fighting Falcon's nose up into a classic aerobatic maneuver....the Cuban eight. Watch as Captain *name* traces a figure eight over the field/demo area.

Simulated Takeoff (Low, Staged Profile Only)

Ladies and gentlemen, the F-16 Fighting Falcon. (*F-16 ARRIVES*) Captain *name* took off this morning/afternoon from *location*. He is now setting up to simulate a takeoff and then he will pull the Fighting Falcon's nose up into a classic aerobatic maneuver....the horizontal Cuban eight. Watch as Captain *name* traces a figure eight over the field/demo area.

Takeoff (High, Non-Staged Profile Only)

Today, Captain *name* will demonstrate the F-16's remarkable power by pulling up into a (half) Cuban eight after only a 1 thousand foot takeoff roll. In this maneuver, Captain *name* will inscribe (the first half of) a figure eight above the field. Ladies and gentlemen, from your left/right.... Captain *name* and the F-16 Fighting Falcon!

Takeoff (Low, Non-Staged Profile Only)

Today Captain *name* will demonstrate the F-16's remarkable power by pulling up into a horizontal Cuban eight after only a 1-thousand foot takeoff roll. In this maneuver, Captain *name* will inscribe a horizontal figure eight above the field. Ladies and gentlemen, from you left/right...Captain *name* and the F-16 Fighting Falcon!

Flat Pass

Captain *name* is now repositioning his aircraft as he prepares to demonstrate the low altitude, high speed capability of the F-16 Fighting Falcon. As he passes show center he will be traveling over 600 miles per hour, less than half the Falcon's top speed.

Aileron Rolls

As Captain *name* returns to show center he will accelerate rapidly and snap the fighting Falcon through three aileron rolls. Ladies and gentlemen, from your left, Captain *name* and the triple roll.

High G Turn

In a dogfight the ability to turn tight is crucial. Watch now as Captain *name* shows you just how exceptional the F-16 is in a nine G turn. At show center he will bank sharply into a tight turn capable of pressing the pilot into the seat with a force of nine times his normal weight. In the full 360 degree turn, the F-16 has a turn radius of less than 14-hundred feet. (PAUSE) It's this kind of performance that gives the F-16 its reputation as the most maneuverable fighter in the world today.

Four-Point Roll

Captain *name* will now demonstrate the F-16's crisp handling characteristics as he performs a four-point roll at show center (PAUSE) Ladies and gentlemen.... the F-16 Fighting Falcon and the four point roll.

Double Immelmann (High Profile Only)

After he returns to show center, Captain *name* will perform a classic World War I maneuver... the Immelmann. (PAUSE) To further demonstrate how powerful and maneuverable the Fighter Falcon is, Captain *name* will perform a double Immelmann, and complete it in less than 6 thousand feet.

Falcon turn/Sharks Tooth (High Profile Only)

As Captain *name* approaches the end of the runway, he will perform a split-S and set up for a series of maneuvers that will show how quickly the Falcon can transition from a horizontal fight into the vertical. Ladies and gentlemen, from your left, the Falcon turn followed by the shark's tooth (PAUSE - ON TOP OF LOOP) It's the F-16's fly-by-wire flight control system that allows the jet to draw such precise corners.

Falcon Turn (Low Profile Only)

Captain *name* is now setting up to demonstrate the Falcon's ability to maneuver tight and stay unpredictable, a trait that helps the Falcon survive against low altitude threats. Ladies and gentlemen, from the right, the Falcon turn.

Slow-Speed Pass

Captain *name* is now slowing the Fighting Falcon to prepare for a slow speed pass. While the F-16 can fly at more than twice the speed of sound, low speed controllability is just as important to those who fly

it. (PAUSE) As he approaches show center, notice the gray paint scheme of the Fighting Falcon...one that's designed to make it more difficult to pick up visually.

Max Climb With Rolls (High Profile Only)

Captain *name* is now setting up for a maximum performance climb with a series of aileron rolls. As he pulls back on the stick you will see the Falcons exceptional power and rolling capability as he climbs from 500 feet to more than 15 thousand feet.

Descent (High Profile Only)

Captain *name* has begun a descending turn in preparation for his last maneuver. While today's demonstration shows you how well the F-16 can maneuver in combat, what it cannot show is its striking power or the accuracy and lethality of the weapons it carries. The Falcon can hit targets well outside of visual range...while flying faster than the speed of sound. Add the superb view provided by its bubble canopy, and you have the world's best multi-role fighter.

Knife Edge Pass (Low Profile Only)

Captain *name* is now approaching from your left/right for the knife edge pass. While today's demonstration shows you how well the F-16 can maneuver in combat, what it cannot show you is its striking power or the accuracy and lethality of the weapons it carries. The Falcon can hit targets well outside of visual range...while flying faster than the speed of sound. Add the superb view provided by its bubble canopy, and you have the world's best multi-role fighter.

Departure (Staged Profile Only)

Captain *name* is now returning to *location* for landing. As he approaches the runway he will decelerate to about 150 miles per hour. Unlike the supersonic fighters of the 50s and 60s, the F-16 doesn't need a drag chute to slow down...and it can stop in less than 3-thousand feet if necessary. Add its ability to take off from relatively short runways and you have a fighter that can operate from thousands of airfields in virtually every country in the world.

Tactical Pitch Up (Non-Staged Profile Only)

Captain *name* is now approaching from you left/right for his last maneuver -- a tactical pitch-up to landing. He will cross the runway at 500 feet and perform a rolling pitch-up as he turns to the downwind leg of the landing pattern.

Downwind and Final Approach (Non-Staged Show Only)

Captain *name* has lowered his landing gear and as he approaches the runway he will decelerate to about 150 miles per hour. Unlike the supersonic fighters of the 50's and 60's, the F-16 does not need a drag chute to slow down...and it can stop in less than 3 thousand feet, if necessary. Add its ability to take off from relatively short runways and you have a fighter that can operate from thousands of airfields in virtually every country in the world.

Conclusion

Ladies and gentlemen...the F-16 Fighting Falcon played a vital role in the defense of this nation during the Gulf War. It has greatly increased Pacific Air Force's ability to meet its commitments, helping to give the Air Force its global reach, global power...and ensuring its ability to meet any challenge, anywhere, under any circumstances. On behalf of the commander of the Pacific Air Forces, General *full name*, I hope that you have enjoyed this brief look at the F-16 Fighting Falcon. If you have any questions about this remarkable jet, about Pacific Air Forces, or about the United States Air Force, please feel free to ask either myself, Captain *name*, or any of our maintenance professionals. We will be happy to talk to you. Thank you and have a good day.