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Subj: F/A-18 FLEET REPLACEMENT SQUADRON (FRS) TACTICAL AIRCRAFT (TACAIR) FLIGHT DEMONSTRATIONS (TACDEMO)

Ref: (a) COMNAVAIRFORINST 3710.8 (Series)
(b) OPNAVINST 3710.7 (Series)
(c) COMNAVAIRFORINST 3300.53 (Series)
(d) FAA 8700.1 CH-19
(e) FAA Advisory Circular 91-45C
(f) FAA Advisory Circular 91-48
(g) Federal Aviation Regulations, Part 91 Series
(h) CHINFO WASHINGTON DC Applicable Year Document

Encl: (1) F/A-18 Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) FAA / Airshow Graphics
(2) F/A-18C Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Maneuver Descriptions
(3) F/A-18E/F Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Maneuver Descriptions
(4) F/A-18 Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Aircrew Training Requirements
(5) F/A-18 Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Simulator Syllabus
(6) Instruction for Completing Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Gradesheets
(7) F/A-18E/F Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Example Gradesheet
(8) F/A-18C Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Example Gradesheet
(9) Maintenance Fleet Replacement Squadron Tactical Aircraft Flight Demonstration (FRS TACDEMO) Downing Discrepancy Chart (VFA-122)

1. Purpose. This instruction is provided to publish policy and procedures for the conduct of Commander, Strike Fighter Wing U.S. Pacific Fleet (CSFWP) and Commander, Strike Fighter Wing Atlantic (CSFWL) participation in F/A-18 Fleet Replacement Squadron Tactical Aircraft (TACAIR) Flight Demonstration (FRS TACDEMO) as indicated in references (a) through (h).

2. Discussion. FRS TACDEMO, when conducted in a safe and professional manner, project a highly favorable image of Naval air power to the civilian

community, other military services, and members of the Naval establishment unfamiliar with Naval aviation. For the remainder of this document, the designation "F/A-18" refers to all F/A-18 model aircraft. Differences between series demonstration profiles will be designated "F/A-18C" or "F/A-18E/F," as appropriate. As the most recent addition to the Navy's TACAIR inventory, the F/A-18 generates high interest and is a popular and effective airplane for projecting a positive impression of the Navy. In addition, FRS TACDEMOs provide insight into the unique capabilities of the F/A-18 as a multi-mission, tactical, carrier-based aircraft. Current fiscal constraints and the guidance given in references (a) and (b) require that aerial flight demonstrations be conducted in the most efficient and safest manner possible. Enclosure (1) is a graphical depiction of the airshow "box" in which the FRS TACDEMO shall be performed in compliance with Federal Aviation Administration (FAA) regulations. Enclosure (2) is the F/A-18C FRS TACDEMO flight demonstration and maneuver description. Enclosure (3) is the F/A-18E/F FRS TACDEMO flight demonstration and maneuver description. Enclosure (4) contains guidance and procedures for the safe and effective training of FRS TACDEMO candidate aircrew. Enclosure (5) contains the sequence of simulator training for FRS TACDEMO candidate aircrew. Enclosure (6) is a sample gradesheet for the F/A-18C FRS TACDEMO. Enclosure (7) is a sample gradesheet for the F/A-18E/F FRS TACDEMO. For brevity and clarity, Wing refers to the appropriate Type Wing (either Commander, Strike Fighter Wing, U.S. Pacific Fleet (CSFWP) or Commander, Strike Fighter Wing Atlantic (CSFWL)).

4. FRS TACDEMO Schedule and Requests. Commander, Naval Air Force, U.S. Pacific Fleet (CNAP) and Commander, Naval Air Force, Atlantic (CNAL) Operations will solicit input from CSFWP and CSFWL and distribute a demonstration schedule annually prior to the start of the air show season. This allows for Type Commander (TYCOM) approval of magnitude and location of planned participation. Additional requests will be forwarded to the appropriate TYCOM via Type Wing for approval. Request shall include information concerning the name, location and date, CHINFO/NAVCO 2535 request, FAA flight waivers, runway and facility information, attendance expected, and force protection evaluation from the Commanding Officer (CO).

5. Action. Accordingly, the following actions are assigned:

a. Wing Operations

(1) The Wing Operations Officer will ensure appropriate resources are made available to the FRS TACDEMO Team Coordinator.

(2) The Wing Operations Officer will publish a 3700 notice listing the approved FRS TACDEMO aircrew.

(3) When tasked by TYCOM to support an aerial event, the Wing shall coordinate (with appropriate Commanders and Squadron COs) the designation of a squadron to provide aircraft and qualified aircrew in support of the tasking.

(4) FRS TACDEMOs will consist of two aircraft (Primary and Spare) whenever possible.

(5) The Wing Operations Officer shall coordinate an interview with the Type Wing Commander when new FRS TACDEMO aircrews are qualified. This interview shall occur prior to the aircrew's first airshow in order to cover the Commodore's expectations.

b. FRS Commanding Officers

(1) Nominate, train, and certify a minimum of 2 (maximum of 4) F/A-18C FRS TACDEMO pilots. Nominate, train, and certify a minimum of 2 (maximum of 4) F/A-18E/F FRS TACDEMO crews. Coordinate ultimate designation by the Wing Commander. These nominations should occur with a minimum of 1 month remaining in the current FRS TACDEMO season to allow TACDEMO candidate aircrew the opportunity to "shadow" current team members at airshow sites as explained in enclosure (4).

(2) Designate, in writing, the FRS TACDEMO Team Coordinator(s). Although the Demo Coordinator might not participate as actively as the other demonstration aircrew, they will retain their qualifications and may participate in actual demonstrations in order to maintain currency. Every effort should be made to ensure that the Team Coordinator has at least one prior year of FRS TACDEMO aircrew experience.

c. FRS TACDEMO Team Coordinator

(1) Ensure all FRS TACDEMO candidates and aircrew satisfy the minimum syllabus requirements and become proficient in the demonstration as described and illustrated in enclosures (1) through (5). Participants will obtain additional practice as necessary to remain proficient or prepare for a unique show site.

(2) Coordinate with respective East/West Coast FRS TACDEMO Team Coordinator for a semi-annual FRS TACDEMO review. The FRS Stan Conferences shall be the primary event where this occurs.

(3) Coordinate with the local FAA representative to gain necessary written waivers for the conduct of the flight demonstration when performed at locations other than NAS Lemoore/NAS Oceana.

(4) Ensure the FRS TACDEMO team is mindful that any comments made to the media or general population may be interpreted as being representative of the policies and programs of the Navy. Controversial matters will be avoided. Classified information will not be discussed.

(5) Place safety as the foremost consideration throughout the demonstration. It is preferable to conduct a static display than to hazard the Navy's image by performing an unprofessional flight demonstration or worse, injuring personnel and damaging equipment through a mishap. A thorough Foreign Object Damage (FOD) walkdown and thorough inspection of the aircraft, including diving the ducts, will be conducted prior to engine start. This is especially important when launching static display aircraft. Pay special attention to crowd safety in the vicinity of the aircraft with regard to jet blast and noise hazard. If FOD or crowd considerations dictate, the aircraft will be towed to the end of the runway or nearby taxiway prior to start.

(6) Provide a generic narration to the FRS TACDEMO aircrew for presentation at F/A-18 FRS.

(7) Provide the Wing Operations Officer a list of qualified FRS TACDEMO aircrew for placement on the 3700 Notice. Ensure the FAA has received the 3700 Notice prior to commencement of the FRS TACDEMO season.

d. FRS TACDEMO Aircrew

(1) Satisfy the minimum practice requirements and become proficient in the FRS TACDEMO as described in enclosures (1) through (5). Additional simulator practice may be required and is expected for proficiency or unique show requirements.

(2) When nominated by the CO as a FRS TACDEMO candidate, aircrew should endeavor to "shadow" a minimum of one FRS TACDEMO performance weekend prior to completion of the current FRS TACDEMO season.

(3) Plan the arrival at the airfield site during daylight hours to permit familiarity with geographical landmarks and the airshow maneuvering box. If the demonstration aircrew arrives at night or under Instrument Meteorological Conditions (IMC), a familiarization flight or practice performance shall be flown prior to performing before a crowd. A demonstration flight will not be conducted if such a flight cannot be accomplished.

(4) Obtain coordinates, diagrams, or photos of the respective airshow site. Coordinate with the local FAA to obtain a copy of all FAA waivers. Wing minimums shall be adhered to, even if the FAA waivers/minimums are less restrictive.

(5) Prepare and submit to the FRS TACDEMO Team Coordinator a one-page biography (including photo).

(6) Prepare a narrative tailored to the specific airshow site/ airshow aircrew and maintenance crew, containing the following information as a minimum:

(a) General description, capabilities, and mission of your lot F/A-18, stressing dual mission role.

(b) Name of aircrew, hometown, squadron's name, home base, and names and hometowns of enlisted crew members.

(c) Current overseas deployment status of the F/A-18 and recent squadron operational history.

(d) A brief description of each maneuver for the applicable show to be performed, highlighting the F/A-18's unique performance capabilities and how they apply to the combat/ship environment.

(7) Conduct a thorough debrief immediately following all simulator and flight practices and FRS TACDEMOs, utilizing all available materials (e.g., CVRS review and ground video).

6. <u>FRS TACDEMO Aircrew Selection</u>. All nominations for F/A-18 FRS TACDEMO aircrew shall be submitted to the appropriate Wing Commander for initial screening and interview(s). Aircrew maturity shall be the primary discriminator. If the aircrew cannot be counted on to make the correct decisions under potential pressure from family, friends and peers, he/she is not the right individual for the program. The aircrew must have the ability to positively project a favorable image for the U.S. Navy while consistently executing a disciplined, precise and safe FRS TACDEMO flight profile. Aircrew nominated shall have a minimum of 1000 F/A-18 flight hours (150 in series) unless waivered by their respective Commodore.

7. General F/A-18 FRS TACDEMO Procedures. To ensure a safe and successful flight demonstration, participants shall observe the following guidelines:

a. Planning. The FRS TACDEMO is planned in such a manner as to properly demonstrate the capabilities of the F/A-18 and to capture and hold the attention of the spectators. Aircrew shall be intimately familiar with all maneuvers and its proper order in the FRS TACDEMO to present the aircraft in the most effective manner at each specific airshow site. Practice and prior planning are essential for a safe, professional evolution. If the demonstration or any portion of the demonstration profile are to be flown over water, special consideration must be given to the lack of ground rush visual cues. A conservative approach will be taken to avoid placing the aircraft in a hazardous situation. This is particularly important when performing any nose low maneuver, and shall be practiced in the simulator by aircrew scheduled to execute a FRS TACDEMO at an over-water site.

b. Practice. Repeated flight and simulator practice sessions are essential to ensure a crisp, safe, and well-positioned evolution. Aircrew usage of "gouge" documents is prohibited. The contents of this document shall serve as the single-source reference for procedural knowledge and proper execution of all FRS TACDEMO profiles.

c. Flight Discipline. FRS TACDEMO specifics shall be thoroughly briefed and debriefed for all practices (both simulators and flights) and aerial demonstrations to facilitate the consistently accurate, precise and safe execution of all maneuvers. There is very little margin for error in the demonstration altitudes delineated. Any deviations below approved altitudes (or outside any given safety parameters) shall be taken very seriously both during execution and in the debrief. Multiple instances of aircrew operating outside the parameters listed in this document shall be reasons for termination of FRS TACDEMO candidacy or qualification. No additional maneuvers may be added to the High/Low/Flat profile (i.e., "Walls of Fire") unless prior approval is gained by respective chains of command to include the appropriate Wing Commander. Maneuvers may be removed from a High/Low/Flat profile at the discretion of the performing aircrew based on pre-flight or real time assessment of site and environmental conditions.

d. Aircraft Knowledge. Aircrew will be completely familiar with their respective F/A-18 demonstration profiles and the performance, handling and departure characteristics for their series aircraft. It is essential to maintain complete situational awareness and proper energy state management throughout the demonstration profile. The FRS TACDEMO, as outlined, easily provides enough energy throughout the program for aircraft controllability in the event of engine failure or flight control system malfunction. Aircrew will not place their aircraft in a situation which would preclude it from safely executing any emergency procedure.

e. Environmentals. If the weather has been misjudged, it is better to penetrate overcast than to place the aircraft and aircrew in jeopardy with an overly aggressive maneuver with the intent of remaining under the clouds. Aircrew must inform the show officials beforehand of weather minimums. Place the burden on the show officials, not on yourself. If inadvertent IFR conditions are encountered during a FRS TACDEMO, the FRS TACDEMO shall be terminated. FRS TACDEMO aircrew will either adhere to Low Altitude Training(LAT) training rules when using a 500' AGL MINALT for the flight profile and will adhere to Low Altitude Training and Tactics(LATT) training rules when using 200' AGL MINALT. Aircrew need to give special attention to environmental and show site conditions when determining to use a 200' or 500'

AGL MINALT. Executing a safe show is the priority. It is incumbent upon aircrew to use experience and sound judgement when selecting the appropriate MINALT and shall brief the appropriate LAT or LATT training rules prior to execution.

f. Flexibility and Humility. No matter how well the FRS TACDEMO is planned, aircrew may encounter situations where adjustments in the profile must be made, either before or during the presentation. Inability to deal with changing events, especially when they occur during the FRS TACDEMO, can lead to fixation in which the aircrew feels compelled to finish the maneuver and the sequence as planned, no matter what the cost. Judgment and humility are needed to recognize a deteriorating situation before the situation becomes totally unsalvageable. Safety is paramount and must not be sacrificed in order to complete the FRS TACDEMO.

g. FRS TACDEMO Altimeters. Prior to launch, the barometric altimeter will be adjusted so that the Heads-Up Display (HUD) altitude displays zero and BARO will be selected for HUD display. If airshow site elevation is such that the altimeter cannot display zero (dependent on local altimeter setting but anticipated when field elevation exceeds 1,900 ft MSL), the next higher 1,000 ft MSL altitude shall be used. Aircrew shall be aware of this limitation and practice to it prior to a TACDEMO at an airfield with a known higher field elevation.

h. Density Altitude. All airspeeds and altitudes listed in this document are based on a sea level show under standard conditions and contain sufficient margin for a density altitude up to 5,000 ft. To compensate for density altitude above 5,000 ft, the following guidance is provided:

(1) Add 10 KCAS per 1,000 ft of density altitude above 5,000 ft to the entry airspeeds for all vertical maneuvers.

(2) Add 100 ft per 1,000 ft of density altitude above 5,000 ft to the recovery altitudes for all vertical maneuvers.

(3) At 8,000 ft density altitude, add 100 ft AGL to the maneuver altitude for the High Alpha Pass. For every additional 1,000 ft above 8,000 ft density altitude, add an additional 100 ft to the maneuver altitude for the High Alpha Pass.

(4) At airshow sites with density altitude greater than 8,000 ft, aircrew shall not execute the High show, only executing the Low or Flat show for energy/show center management considerations. At airshows with density altitude expected to exceed 5,000 ft, aircrew shall execute a minimum of 1 simulator and practice flight applying the appropriate density altitude corrections prior to a FRS TACDEMO performance.

(5) Aircrew always reserve the right to execute the Low or Flat show instead of the High show if density altitude and aircraft performance are factors.

i. Fuel Management. Proper fuel management is critical. The demonstration shall be immediately terminated if a low fuel indication occurs or total fuel reaches 2000 lbs for an F/A-18C or 2300 lbs for an F/A-18E/F. Aircrew shall plan and brief to the contingency of completion of the FRS TACDEMO with the appropriate amount of fuel to execute a dirty BINGO profile to the airshow divert.

j. Emergencies. At a minimum, inadvertent IMC, aircraft malfunctions that require boldface procedures, degraded flight conditions, degraded displays, or any other situations that have any impact on the safe conduct of the flight shall be case for termination of the FRS TACDEMO. Any emergency encountered shall immediately be handled in accordance with NATOPS. The flight demonstration is absolutely secondary to the safety of the aircrew and spectators. Sound judgment and situational awareness dictate termination of any maneuver considered unsafe by the aircrew. For all practice and demonstration profiles, airfield emergency vehicles, to include as a minimum but not limited to a fire truck and ambulance with qualified rescue personnel, shall be present for the duration of the demonstration flight.

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Commander, Strike Fighter Wing
Atlantic

D. E. KOSS
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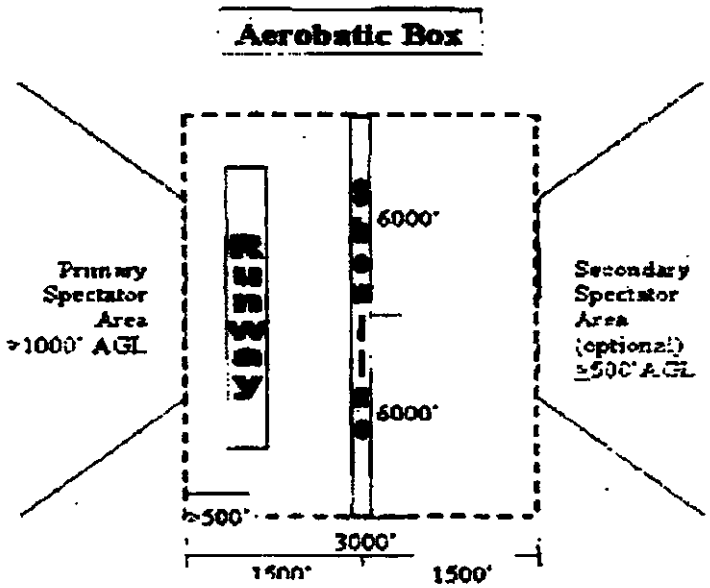
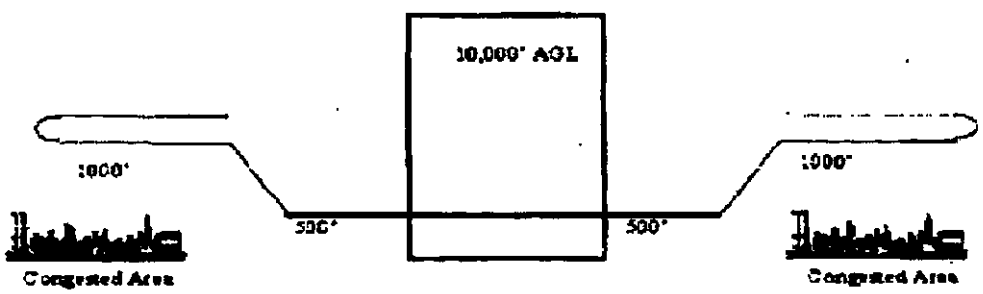
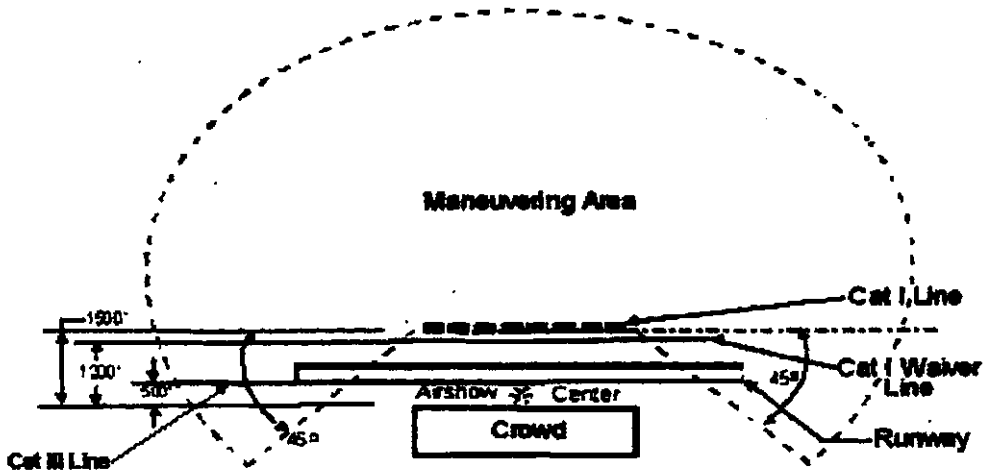
F/A-18 FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) FAA/AIRSHOW GRAPHICS

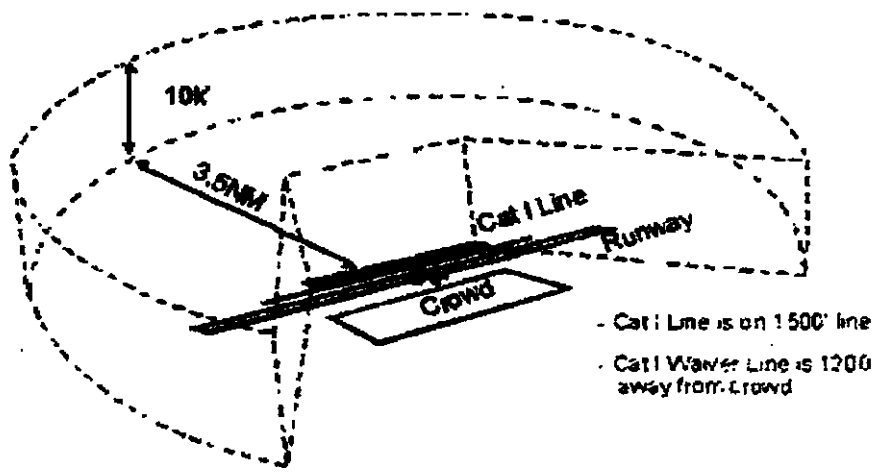




PERFORMANCE AREA
AERIAL VIEW



HORIZONTAL PERSPECTIVE



F/A-18C FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) MANEUVER DESCRIPTIONS

1. General Guidance. The F/A-18C FRS TACDEMO consists of eleven maneuvers by a single aircraft. While no additional maneuvers are authorized, any maneuver may be deleted at the discretion of the aircrew. Minimum altitude on all maneuvers, except takeoffs, landings, is 200 ft AGL. All maneuvers, except takeoffs and landings, are performed outside a show line established parallel to and 500 ft (non-maneuvering passes) or 1,500 ft (maneuvering passes) laterally from the crowd. Lateral offset differs from maneuver to maneuver in order to be in compliance with FAA restrictions and are outlined in the individual maneuver descriptions. Takeoffs and landings are performed no closer than 500 ft laterally from spectators. Maximum distance that the aircraft will ever be from the center point of the show line is 3.5NM. The standard termination of each pass is a high performance turn/climb as the pilot positions the aircraft for the next pass. Throughout this document, when the term MAX A/B is seen, aircrew shall interpret that to mean select MAX A/B and confirm good light-off on both motors prior to continuing with any maneuver. Tapes/RMM shall be utilized to record in-flight execution (the only exception would be if the recorder in the jet is griped inoperative and no other suitable aircraft are available). Unclassified tapes to be used exclusively for FRS TACDEMO debriefing purposes. POS/REC shall be boxed on the Engine Page. Minimum runway length is 6000'. Show sites with shorter runways must be approved by the Commodore.

2. Configuration. For the F/A-18C, the airshow configuration is a slick jet with or without a centerline pylon. External fuel tanks and wing pylons are prohibited. F/A-18C FRS TACDEMO aircraft will be and fueled to max internals (10,500 pounds). Demo flights with BLIN 221 are prohibited.

3. Weather Minimums

a. High demonstration: 10,000 ft ceiling and 5 SM visibility.

b. Medium demonstration: 4,500 ft ceiling and 5 SM visibility.

c. Low demonstration: 1,500 ft ceiling and 5 SM visibility.

d. 360 degree defined horizon.

4. Altitude Restrictions

a. Maximum Altitude: 15,000 ft AGL unless otherwise restricted by FAA/airshow constraints.

b. Minimum Altitude: 200 ft

5. Additional Takeoff Checklist Items. The following items should be checked after completion of the post-start and takeoff checklist in the conduct of flight demonstrations.

a. NAV Master Mode

b. Altimeter - ZERO / BARO (or next whole 1,000 ft altitude if required for higher field elevations)

c. GPWS/TAWS - Unboxed (ensure CFIT advisory displayed); DUAT HAT as appropriate based on proficiency/comfort with dual mode if 23X software (or above) installed.

d. Altitude Bugs

(1) RALT - 180

(2) SBARO - 3000 ft

(3) SRAD -150 ft

e. TIMEUFC -LTOD

f. WYPT/MK/CRSLN - SET

g. RDR - 5nm, no DCLTR on RDDI

h. RUD PED - Adjusted

i. Lap Belts - TIGHT

j. G-suit - Zipped / Tested

k. Gear - STOWED

l. Mirrors - SET

m. FLAPS - HALF

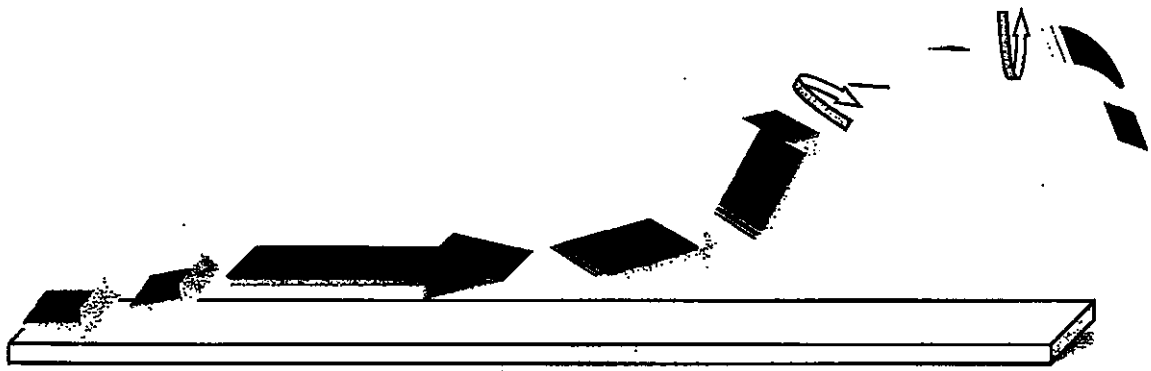
n. Trim - Set for takeoff

o. Guard - Deselect

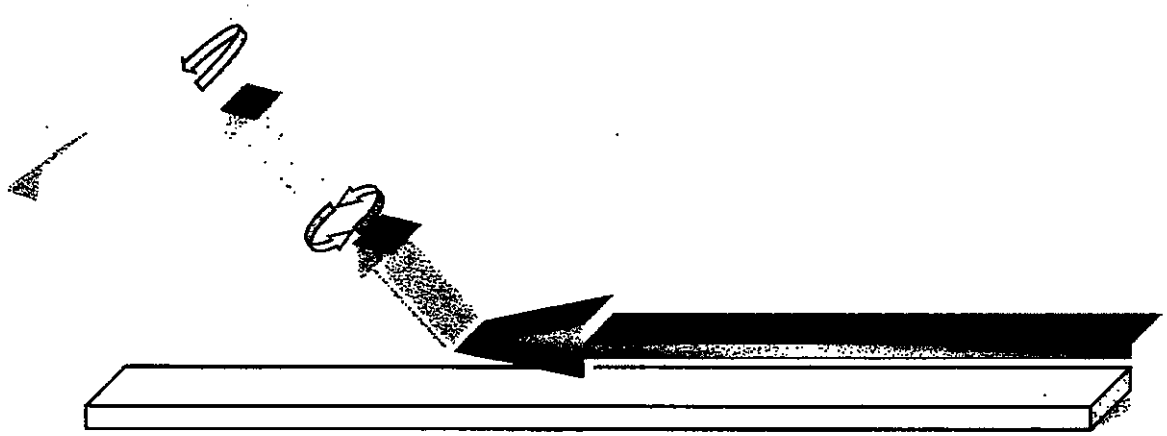
p. TAPES - On (HUD & RDDI)

6. High Show Maneuvers

a. Takeoff to 60/60 Climb. Rotate at 120 Knots Calibrated Airspeed (KCAS), half flaps. Raise the gear when safely airborne. Maintain 50 ft AGL. Flaps AUTO at 180 KCAS. Accelerate to at least 300 KCAS. Abeam show center turn 60 degrees away from show line and pitch up to 60 degrees nose up to show aircraft planform (maximum 5.5 Gs and 12 degrees AOA). Roll 225 degrees away from the CAT I line (tuck-under roll), targeting a minimum of 230 KCAS, and pull nose through horizon (approximately 2.5 Gs). This maneuver will result in a maximum altitude of 4,500 ft AGL, with a minimum airspeed of 185 KCAS at the top. Some extension and unload may be necessary to accelerate for the next pass.



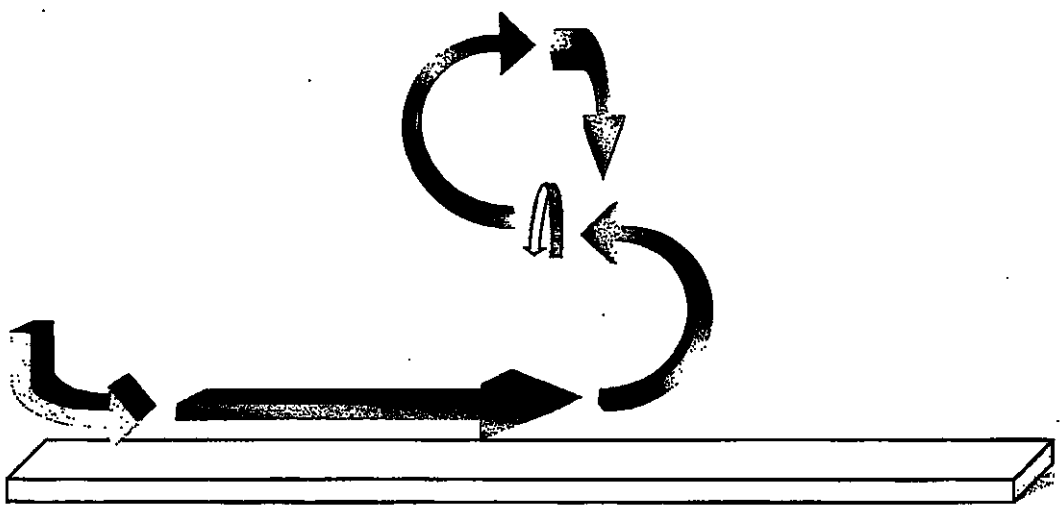
b. High Speed Pass. Align the aircraft with the CAT III show line while maintaining 1 G level flight at 200 AGL. Select RADALT to HUD for this maneuver. Maximum airspeed is 600 KCAS/0.95 IMN, not to exceed .96 IMN. At show center, commence a wings level pull-up not to exceed 7.5 Gs. Continue to pull to 70 (plus or minus 10) degrees nose up, unload and apply full lateral stick in either direction for a 360-degree aileron roll. At the completion of the aileron roll deselect afterburner, roll 180 degrees and apply a 7G pull to level flight, parallel to the CAT I line. Roll upright and extend downwind slowing to 280-300 KCAS. Perform a vertical reversal as described below or a 60-degree offset with an oblique come down. If airspeed is above 350 KCAS when the maneuver is initiated, maneuver to the oblique. Carefully monitor altitude and dive angle to set up for the next maneuver. Modulate power and use speed brake as necessary to maintain airspeed below 400 KCAS.

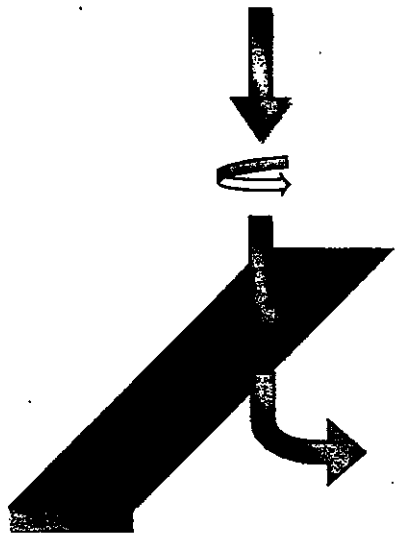


c. Vertical Reversal. At 300 KCAS and not less than 4,000 ft AGL, roll inverted and perform a hard pull. A good reversal should result in attaining an AOA of 12-20 and targeting 5 Gs vice a fast, arcing, high G reversal that risks ground impact. Intercept the dive recovery rules as referenced below in paragraph 10 as an absolute minimum.

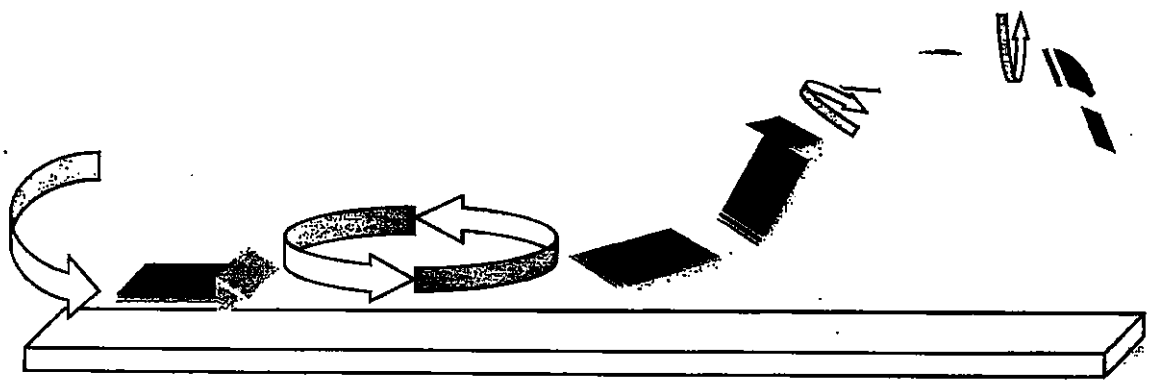
NOTE: Maintaining full afterburner throughout the climb and descent in an EPE jet may result in a very fast, descending pull that will require a steady 6 to 7+ Gs to complete (with associated GLOC risk). Modulate power and use speed brake as required to keep from getting too fast.

d. Double Immelman. Align the aircraft with the CAT I line. At show center 500 ft AGL and 450 KCAS (425 KCAS minimum), select MAX A/B and commence a 5-6.5 G wings level pull using the 1% rule after the first 90 degrees of pull (G should equal 1% of KCAS). When inverted and the nose 20 degrees above the horizon, check airspeed greater than or equal to 280 KCAS, roll aircraft 180 degrees, and continue another wings level pull-up. If less than 280 KCAS, continue pull to 5 degrees above the horizon, roll upright, and accelerate to 280 KCAS before continuing into the second Immelman. Minimum airspeed for second Immelman is 280 KCAS. Aircraft G should equal 1% of KCAS during the second Immelman. At the completion of the second Immelman, continue pull to target show center and 90 degrees nose low, select idle, extend speed brake if required, and at 7300 ft AGL perform an unloaded 270-degree roll into the crowd. Final heading should be perpendicular to the show line away from the crowd. Begin vertical recovery at no later than 4,500 ft AGL or 350 KCAS (whichever occurs first). Target level flight by 1,000 ft AGL to ensure minimum altitude over secondary viewing area. Roll to 80-90 degree bank angle and commence a hard turn to return to show center at 500 ft AGL, 330-350 KCAS. Turn in a direction to ensure the Minimum Radius Turn (MRT) is a left hand turn. It is better to start this turn in the descent (above 1,000 ft AGL) than to get too far away from the show line attempting to get down to 1,000 ft in a wings level recovery.



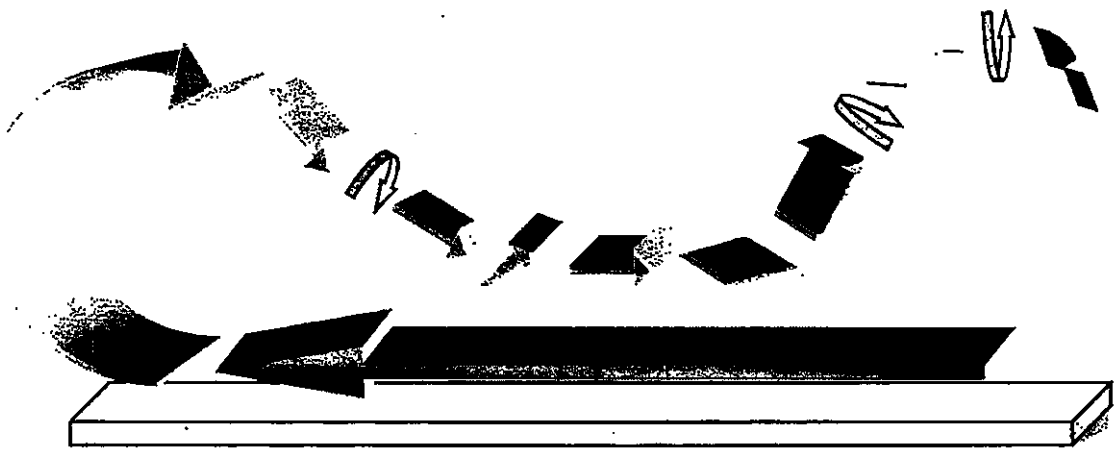


e. Minimum Radius Turn. Align the aircraft to the CAT I line. At show center 500 ft AGL and 350 KCAS, roll to 70-85 degree bank angle away from show line, select MAX A/B, and commence a 360-degree turn. Manage angle of bank, load factor, and velocity vector placement to avoid a nose slice or airspeed increasing above 350 KCAS. To give the impression of a level turn, altitude should be increased by 100 ft AGL on the backside of the turn and then decreased again approaching show center. In an EPE jet, consideration should be given to reducing power during the maneuver if required to control airspeed. Target airspeed to finish the turn is 330 KCAS. Out of the turn, deselect A/B, perform a level 60 degree offset followed by a pull up to 60 degrees nose up (60/60 offset). Roll 225 degrees away from the crowd (tuck under roll) and realign the aircraft with the CAT I line.

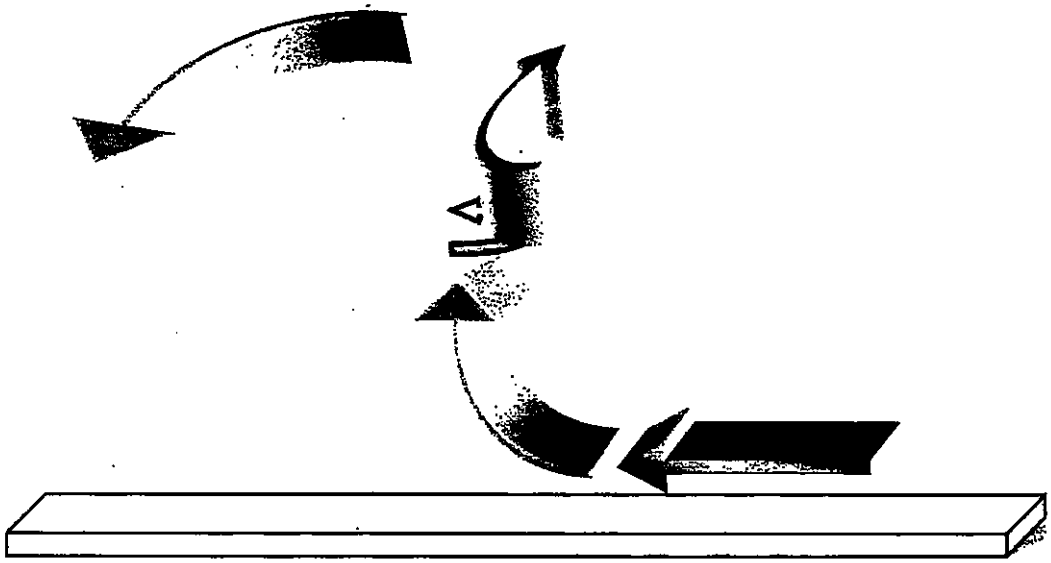


f. Carrier Configuration Pass. Align the aircraft to the CAT III line. At 500 ft AGL, parallel to the crowd and less than 250 KCAS, select gear and hook down with flaps to full prior to reaching start of the crowd. Continue decelerating to no slower than on-speed. Just past show center, select MAX A/B and clean up while maintaining the same nose attitude. Reaching 190 KCAS, smoothly apply 2 to 2.5 Gs to capture 200 KCAS for the initial portion of a Half Cuban-Eight. Capture 25 alpha over the top and begin scanning for alignment on the CAT I line. Continue to pull to arrive 45 degrees nose low (on the velocity vector), reduce power to MIL and apply forward stick as

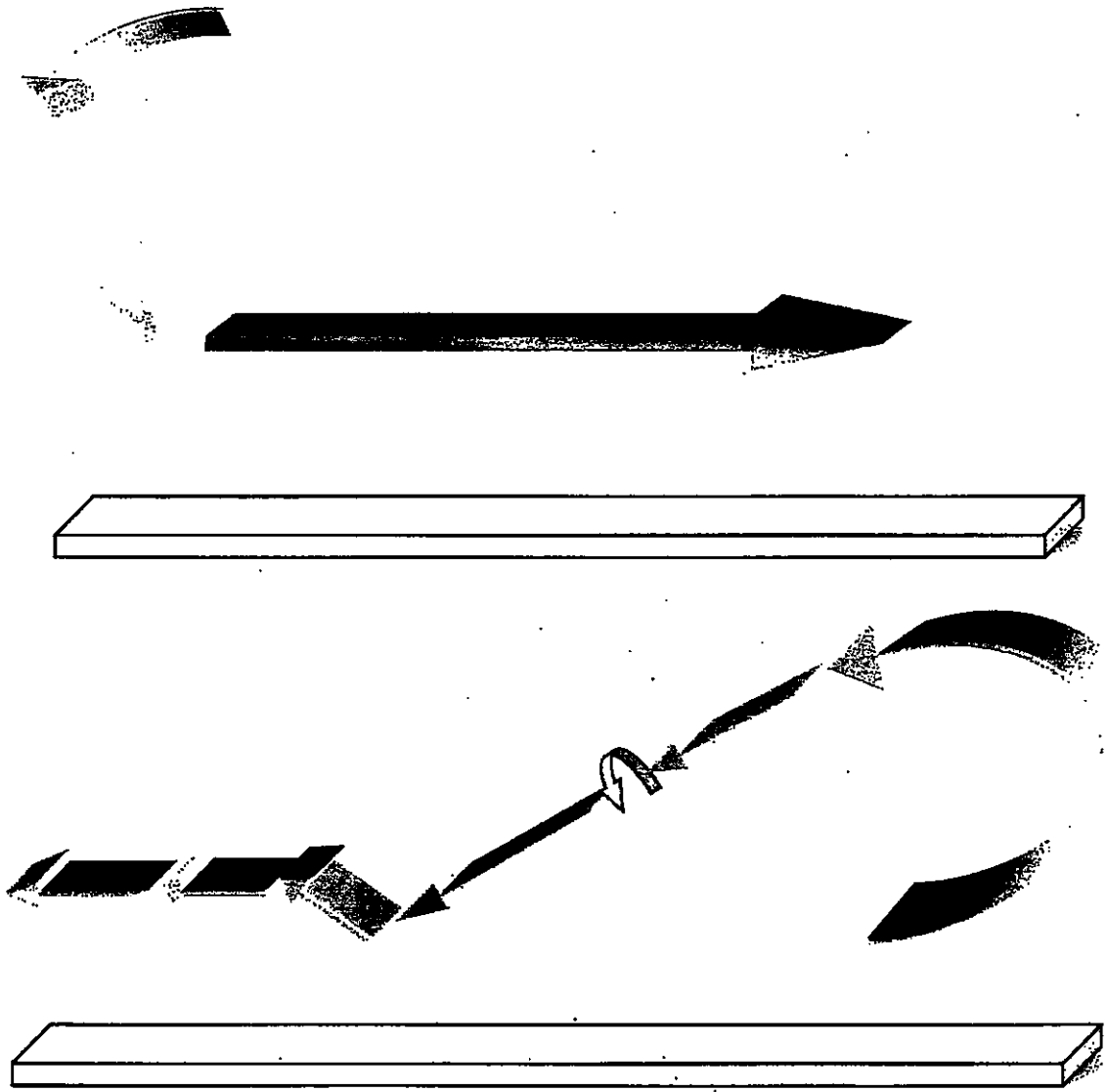
necessary to maintain this pitch angle while accelerating inverted (ideally the velocity vector should be placed on the CAT I line at show center). Reaching 2,300 ft AGL or 230 KCAS (whichever occurs first), perform an unloaded roll maintaining 45 degrees nose, adjusting power as necessary to arrive at 1,200 ft AGL with 300-320 KCAS. At 1,200 ft, select MAX A/B and apply full aft stick until descent rate is arrested (about 25 degrees nose up on the waterline) then unload to establish the aircraft in level flight. Perform a 60/60 reversal.



g. Pitch Rate Demo. Align the aircraft to the CAT I line. Arrive at the start of the maneuver between 280-310 KCAS at 500 ft AGL, parallel to the crowd. Approximately 1,500 ft prior to reaching show center, select MAX A/B. As afterburners stage and acceleration begins, apply full after stick to achieve 95 degrees nose up (on the waterline) at show center and unload to maintain 90 degrees up (on the velocity vector). Reference the mirrors to maintain wings level as the aircraft decelerates in the vertical. Passing 150 KCAS, crisply roll the aircraft 90 degrees to place the lift vector away from the crowd. Again referencing the mirrors to achieve accuracy, smoothly intercept 25 AOA to pull the nose back to the horizon inverted. Once the nose reaches 5 degrees nose up (on the waterline), apply forward stick to maintain level flight (NLT 4000 ft AGL) in the inverted position as the aircraft accelerates to at least 250 KCAS (but no more than 10 seconds), and then reposition the aircraft for the next maneuver.



h. High Alpha Pass. Align the aircraft with the CAT I line. Always perform this pass into the wind. For a safety margin in the event of an engine failure, minimum altitude is 700 ft AGL and 25 AOA. The jet will start to squat around 17 alpha, so stay ahead of the jet and add power as needed. Match the HUD AOA value with the placement of the waterline symbol, monitor the HUD VSI, and decelerate towards your target AOA. Intercept 25 AOA. Do not exceed 26 AOA. Approximate engine RPM is 85-88 percent. A good pass is one where the power remains very steady since the crowd can hear all corrections. Use speed brake as needed during the initial deceleration but retract it prior to 180 KCAS (directional control). Ensure speedbrake is not extended after decel is complete. Aircraft heading may have to be adjusted into the wind as necessary to ensure ground track does not drift towards the crowd. Reaching a position with show center 30-40 degrees past the wing line, select MAX A/B while maintaining pitch attitude of 25 degrees nose up (on the waterline). Visually verify two good nozzle openings on the IFEI. Reaching 190 KCAS, smoothly apply 2 to 2.5 Gs to capture 200 KCAS for the initial portion of a Half Cuban-Eight. Capture 25 AOA over the top and begin scanning for alignment on the CAT I line. Continue the pull to arrive 45 degrees nose low (on velocity vector), reduce power to MIL and apply forward stick as necessary to maintain this pitch angle while accelerating inverted (ideally the velocity vector should be placed on the CAT I line at show center). Reaching 2,300 ft AGL or 230 KCAS (whichever occurs first), perform an unloaded roll maintaining 45 degrees nose low, adjust power as necessary to arrive at 1,200 ft AGL with 300-320 KCAS. At 1,200 ft AGL, select MAX A/B and apply full aft stick until descent rate is arrested (about 25 degrees nose up on the waterline) then unload to establish the aircraft in level flight. Perform a 60/60 reversal.



(1) **Emergency Procedures:**

(a) Engine Failure (during High Alpha Pass) is recoverable from 30 AOA and 500 ft AGL. Recovery procedures:

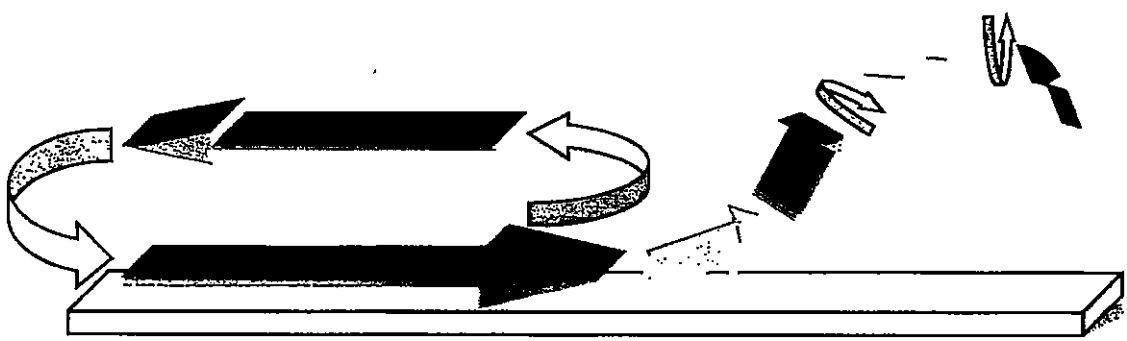
1. Simultaneously advance both throttles to military, lower nose, and counter yaw with rudder.

2. Continue military power acceleration (unload) until AOA is **15 degrees or less**.

3. Climb out in balanced flight with AOA of **15 degrees or less** (afterburner if desired).

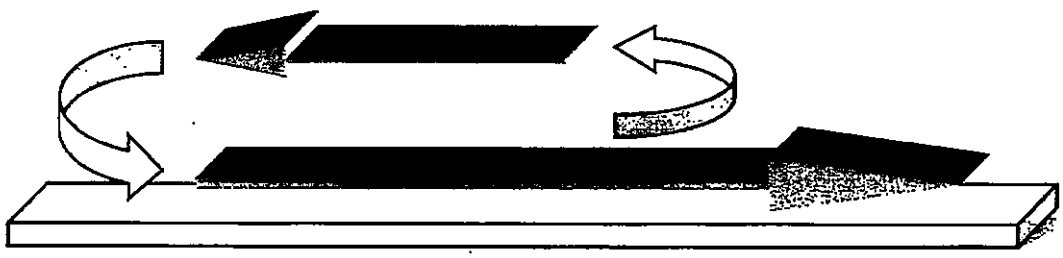
(2) **WARNING:** Immediate selection of full afterburner with AOA above 15 degrees will most likely result in an unrecoverable condition due to directional departure or rate of descent caused by high AOA. Descend as needed to keep aircraft in balanced flight and AOA of 15 degrees or less.

i. Carrier Break, Touch & Go Show Center. Align the aircraft to the CAT III line. At 500 ft AGL, 450 KCAS, initiate a normal decelerating break turn at show center with throttles at idle. Use full lateral stick to ensure crisp rolls into and out of angle of bank. Once established on downwind, perform a full landing checklist with gear down and flaps full once below 250 KCAS. A normal on-speed 700 ft per minute rate of descent touch and go just prior to show center then select MAX A/B and execute a 60 degree climbing turn away from the crowd while cleaning up the aircraft. Do not exceed 2 Gs with gear in transit. Accelerate to 310 KCAS then execute a 60-degree climb.



j. Photo Pass. Target NLT 200 ft AGL and .95 IMN, not to exceed .96 IMN. Select RADALT to HUD and plan to intercept an inbound heading along the lateral show limit(corner markers), nominally 30-40 degrees from the CAT I show line. Just prior to the near corner marker roll to 50-70 degrees AOB for an arcing turn around the crowd to the CAT III line. Set your altitude at 200 ft prior to rolling past the limits of the RADALT. If beyond the RADALT limits, maintain the velocity vector on the horizon line until returning to level flight. Select MAX A/B when in front of the crowd and targeting the far corner marker as the no closer than point.

k. Carrier Break, Full Stop. Execute the Carrier Break as discussed in (i). **When slow, exit the runway, come to a complete stop and open the canopy. Taxi in front of the crowd with mask off and visor down. Return** to parking when complete.



7. Medium Altitude FRS TACDEMO Maneuvers ("Medium Show").

a. The medium show is the same as the high show with the exception of the Immelman described below (which is executed in place of the Double Immelman in the show sequence). All vertical maneuvers shall be performed or modified so as to prevent cloud entry. Any IMC is cause for termination of the demonstration and execution of unusual attitude recovery procedures. An airborne start to the show should be considered if the actual ceiling is in question.

b. Single Immelman. Approaching the show line at 450 KCAS and 500 ft AGL, select MAX A/B and commence a 6-7.5 G wings level pull. Once inverted with the nose 10-15 degrees above the horizon (on the waterline) roll the aircraft 180 degrees and climb to 4,000 ft AGL. Open to 1.5 NM from show center. No lower than 4,000 ft AGL and no faster than 280-300 KCAS perform vertical reversal.

8. Low Altitude FRS TACDEMO Maneuvers ("Low Show").

a. Takeoff to Modified 60/60 Climb. Rotate at 120 KCAS, half flaps. Raise the gear when safely airborne. Maintain 50 ft AGL. Flaps AUTO at 180 KCAS and accelerate to at least 300 KCAS. Abeam show center turn 60 degrees away from the showline and pitch up to a climb angle that will show aircraft planform but prevent cloud entry (maximum of 5.5 Gs, and 12 degrees AOA). Perform a 225 degrees tuck under roll away from the show line to position aircraft for high-speed pass.

b. High Speed Pass. Same as the High Show except a modified 60/60 reversal to stay below the cloud deck.

c. Minimum Radius Turn. Same as the High Show.

d. Maximum Pitch Rate Demo. At 500 ft AGL, parallel to the crowd and on the CAT I line, the target airspeed for this maneuver is 280 KCAS. Approximately 1,500 ft prior to reaching show center, select MAX A/B. As the afterburners stage and acceleration begins, apply full lateral stick to roll to 80-85 degrees angle of bank and apply 6-7 Gs for 90 degrees of heading change away from the crowd. Roll out wings level at 500 ft AGL.

Accelerating past 300 KCAS apply full aft stick for 60 degrees of pitch. Unload, roll 135 degrees angle of bank in either direction, and apply full aft stick to parallel the show line. Unload, roll wings level, and descend to 500 ft AGL with throttles as necessary to intercept 240 KCAS at the 180 degree position and 180 KCAS at the 90 degree position with the speedbrake retracted.

e. High Alpha Pass. Same as the High Show with a modified 45/45 reversal in place of the Half Cuban-Eight.

f. High Speed Whisper Pass. Same as paragraph 8.b. except pull throttles to idle approximately 2,000 ft prior to reaching crowd.

g. Carrier Configuration Pass. Set up to be 250 KCAS and by start of show line. Slow to 150 KCAS, gear down, flaps full, hook down, 500 ft AGL. Once show center is 40 degrees past the wing line, select MAX A/B, clean up the aircraft and set up for the Carrier Break.

h. Carrier Break, Touch & Go Show Center, Photo Pass, Full Stop. Same as maneuvers in paragraph 6.i,j,k.

9. Maneuver Sequence. Typical FRS TACDEMO show sequence is as follows:

High Show (Wx 10,000'/5SM)	Medium Show (Wx 4,500'/5SM)	Low Show (Wx 1,500'/5SM)
1) Takeoff & 60/60	1) Takeoff & 60/60	1) Takeoff & Mod 60/60
2) High speed pass to Vertical Reversal	2) High speed pass to Vertical Reversal	2) High speed pass
3) Double Immelman	3) Immelman	3) Min Radius Turn
4) Min Radius Turn	4) Min Radius Turn	4) Carrier Config
5) Carrier Config to ½ Cuban Eight	5) Carrier Config to ½ Cuban Eight	5) Max Pitch Rate Demo
6) Pitch Rate Demo	6) Pitch Rate Demo	6) Hi Alpha Pass
7) Hi Alpha Pass	7) Hi Alpha Pass	7) High speed whisper pass
8) ½ Cuban Eight	8) ½ Cuban Eight	8) Carrier Break & T&G
9) Carrier Break & T&G	9) Carrier Break & T&G	9) Photo Pass
10) Photo Pass	10) Photo Pass	10) Carrier Break & Full Stop
11) Carrier Break & Full Stop	11) Carrier Break & Full Stop	

10. Contingencies. If there is a remote launch site or a weather minimum check is required, the show will be commenced at 300 KCAS at show center. The sequence should then continue as appropriate for site constraints and/or weather. For a remote site with no runway or an overwater show, the show sequence will remain the same with the final maneuver being the photo pass.

11. Dive Recovery Rules. For all vertical maneuvers, aircrew shall intercept the following dive recovery rules as an absolute minimum:

Attitude	Altitude (AGL)	Min KCAS
-80 degrees	4,000'	200
-60 degrees	3,000'	250
-40 degrees	2,000'	300
-25 degrees	1600'	300
-20 degrees	1200'	300
-15 degrees	800'	300
-10 degrees	500' (Level at 500')	300
-5 degrees	300'	300
Level	200'	300

F/A-18E/F FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) MANEUVER DESCRIPTIONS

1. General Guidance. The F/A-18E/F FRS TACDEMO will consist of several maneuvers designed to continually keep the aircraft visible to the spectators while illustrating various tactical performance capabilities unique to the F/A-18E/F. All maneuvers performed shall be conducted on or outside of the show centerline, or outside the lateral limits of the show line. All turns shall be made away from the crowd. The crowd will not be overflown at any time. Supersonic flight is prohibited. The maneuvers described represent the maximum flight envelope and airspeeds, which shall not be exceeded. If required, the minimum altitudes may be increased and the maximum airspeeds decreased in order to perform the flight demonstration. Minimum field runway length will be 5000 feet for flight demonstrations originating and ending at that field. Throughout this document, when the term MAX A/B is seen, aircrew shall interpret that to mean select MAX A/B and confirm good light-off on both engines prior to continuing with any maneuver. CVRS shall be utilized to record in-flight execution from takeoff to landing. Aircraft availability for use shall comply with Up/Down matrix attached(VFA-122 only). POS/REC shall be boxed on the ENG page from takeoff to landing.

2. Configuration. The demonstration aircraft shall be a clean F/A-18E/F with no wing pylons and no external fuel tanks (centerline pylon acceptable). Demonstration aircraft will normally be fueled to 12,500 lb internal fuel. In specific circumstances, more fuel may be required for post-demonstration bingo considerations (i.e., aircraft not terminating at demonstration airfield). No waivers to the aforementioned configuration are authorized. F/A-18FT (Trainer) configurations are not authorized.

3. Weather Minimums

a. High demonstration: 10,000 ft ceiling and 5 SM visibility.

b. Low demonstration: 3,000 ft ceiling and 5 SM visibility.

c. Flat demonstration: 1,500 ft ceiling and 5 SM visibility.

d. 360 degree defined horizon.

4. Altitude Restrictions

a. Maximum Altitude: 10,000 ft AGL unless otherwise restricted by FAA/airshow constraints.

b. Minimum Altitude: 200 ft AGL.

5. Additional Takeoff Checklist Items. The following items should be checked after completion of the post-start and takeoff checklist in the conduct of flight demonstrations.

a. NAV Master Mode

b. Altimeter - ZERO / BARO (or next whole 1,000ft altitude if required for higher field elevations)

c. GPWS/TAWS - Unboxed (ensure CFIT advisory displayed); DUAT HAT as appropriate based on proficiency/comfort with dual mode if 23X/H6E software (or above) installed.

d. Altitude Bugs

(1) RALT - 180 ft.

(2) SBARO - Aircrew Discretion.

(3) SRAD - 150 ft.

e. TIMEUFC - LTOD.

f. WYPT/MK/CRSLN - SET.

g. RDR - 5nm, no DCLTR on RDDI.

h. RUD PED - Adjusted.

i. Lap Belts - TIGHT.

j. G-suit - Zipped / Tested.

k. Gear - STOWED.

l. Mirrors - SET.

m. FLAPS - HALF.

n. Trim - Set for takeoff.

o. Guard - Deselect.

p. CVRS - On (HUD & RDDI).

q. Internal fuel page displayed on EFD.

6. Standard Demonstration Maneuvers ("High Show"). The following maneuvers define the standard F/A-18E/F FRS TACDEMO. No additional maneuvers are authorized. Any maneuver, however, may be deleted at the discretion of performing aircrew. Aircrew may elect to begin the show performing either the Dirty Roll to Half Cuban-8 or Low Transition to Dirty Roll Airstart based on weather and/or airshow site limitations. Aircrew may elect to close the show at the completion of the Horizontal Pitch Rate demo if a Legacy Flight exists or for fuel considerations. In addition, aircrew may elect to close the show at any point, for fuel considerations or specific airshow site limitations.

a. Dirty Roll to Half Cuban-8.

b. Low Transition to Dirty Roll Airstart to Half Cuban-8.

c. Flat Pirouette.

d. Minimum Radius Turn / Tail Stand.

e. High Speed Pass to Abrupt Pull-Over Reversal.

f. Vertical Pirouette.

g. Square Loop to 90/40 Reversal.

h. Inverted Whisper Pass.

i. High Alpha Pass to Split-S.

j. Horizontal Pitch Rate Demo.

k. CV Break to Full-Stop.

l. CV Break to Low Transition.

m. Photo Pass.

7. Low Altitude FRS TACDEMO Maneuvers ("Low Show"). The following maneuvers define the low altitude F/A-18E/F FRS TACDEMO. No additional maneuvers are authorized. Any maneuver, however, may be deleted at the discretion of performing aircrew. It is strongly recommended that when weather concerns force a low altitude demonstration, the show begin with a normal takeoff and determination of actual ceiling and visibility before executing the initial maneuver. Exceptions to this would be where the previous performer is able to relay accurate ceiling and visibility information prior to takeoff. In all cases, it is ultimately the responsibility of the demonstration aircrew to ensure weather minimums are satisfied. Any encountering of IMC is cause for termination of the demonstration and execution of unusual attitude recovery boldface and/or emergency dive recovery boldface procedures. If due to higher density altitude, even with high show weather criteria, aircrew may elect to execute the low show with regard to aircraft performance at show site and aircrew proficiency.

a. Dirty Roll.

b. Low Transition.

c. High Speed Pass.

d. Minimum Radius Turn/Tail Stand.

e. Carrier Configuration Pass.

f. Horizontal Pitch Rate Demo.

g. Inverted Whisper Pass.

h. High Alpha Pass.

i. Photo Pass.

j. CV Break to Full-Stop.

8. Flat Altitude FRS TACDEMO Maneuvers ("Flat Show"). The following maneuvers define the flat altitude F/A-18E/F FRS TACDEMO. No additional maneuvers are authorized. Any maneuver, however, may be deleted at the discretion of performing aircrew. It is strongly recommended that when weather concerns force a flat altitude demonstration, the show begin with a normal takeoff and determination of actual ceiling and visibility before

executing the initial maneuver. Exceptions to this would be where the previous performer is able to relay accurate ceiling and visibility information prior to takeoff. In all cases, it is ultimately the responsibility of the demonstration aircrew to ensure weather minimums are satisfied. Any encountering of IMC is cause for termination of the demonstration and execution of unusual attitude recovery boldface and/or emergency dive recovery boldface procedures.

a. Low Transition

b. High Speed Pass

c. Minimum Radius Turn

d. Carrier Configuration Pass

e. Horizontal Pitch Rate Demo

f. Inverted Whisper Pass

g. High Alpha Pass

h. Photo Pass

i. CV Break to Full Stop

9. Remote Airfield Considerations. The following shall be considered when demonstration flights originate and terminate at a remote airfield, or when the show site is over water:

a. Aircraft shall be fueled to facilitate landing at the remote field with no less than 2,300 lb fuel remaining, but no greater than that which would result in commencing the performance with greater than 12,500 lb fuel.

b. Plan to begin the performance (weather dependent) with one of the following
maneuvers:

(1) Airstart Dirty Roll to Half Cuban-8 from on-speed at an altitude of NLT 300′ AGL, pulling to 40 deg NU with FLAPS in AUTO prior to commencing the roll.

(2) CV Break to Dirty Roll airstart to Half Cuban-8.

(3) High Speed Pass to Abrupt Pull-Over.

c. Depart after the Photo Pass or CV Break in which case flow to a 500 ft AGL carrier configuration flyby and then depart.

10. Dive Recovery Rules. For all vertical maneuvers, aircrew shall intercept the following dive recovery rules as an absolute minimum:

Attitude	Altitude (AGL)	Min KCAS
-80 degrees	4,000'	200
-60 degrees	3,000'	250
-40 degrees	2,000'	300
-25 degrees	1600'	300
-20 degrees	1200'	300
-15 degrees	800'	300
-10 degrees	500' (Level at 500')	300
-5 degrees	300'	300
Level	200'	300

11. Demonstration Maneuver Descriptions. The following pages contain the F/A-18E/F FRS TACDEMO maneuver descriptions listed above for the high, low, and flat altitude shows.

12. Emergency Dive Recovery

"Roll wings level (unloaded to less than 90° then a loaded roll)
Apply Max G to Positive Rate of Climb.
If airspeed > 350kts -Throttles Idle
If airspeed < 350kts -Throttles MIL"

F/A-18E/F FRS TACDEMO HIGH SHOW MANEUVERS

1. Dirty Roll to Half Cuban-8

(1) Entry:
·Max 15 KT tailwind component. Initial position approximately 0.6 nm (no wind) from show center. Takeoff with **FLAPS HALF** and **4 deg nose up trim.**
·Roll maneuver will always be to the left, away from the crowd.
·Hold brakes and select MIL power.
As engines reach MIL RPM -
·Release brakes and select MAX A/B
·

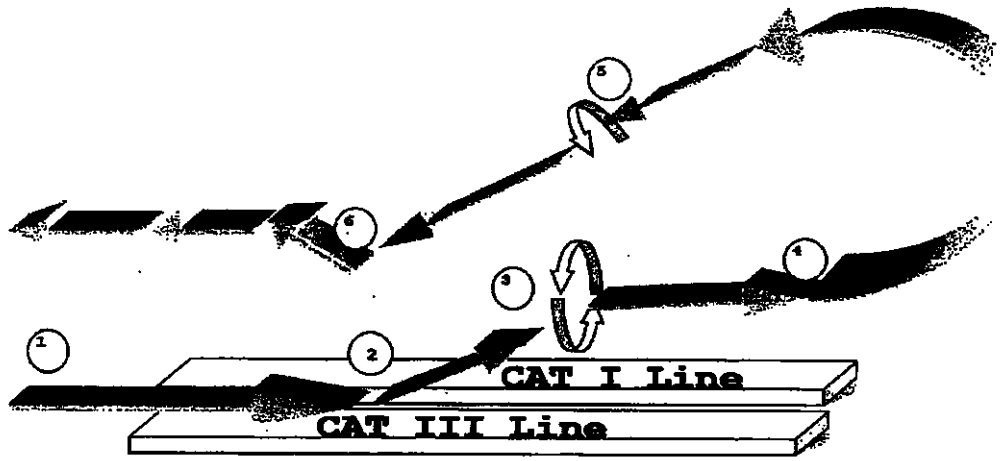
(2) At 130 KCAS -
·Smoothly rotate with approximately ½ to ¾ aft stick.
Once airborne -
·FLAP switch - AUTO
·Smoothly pull to and set 40° NU with waterline.

(3) Passing 300 feet AGL, with FLAPS in AUTO -
·LDG GEAR handle - UP then
·Roll 360° AWAY from the crowd using ½ to ¾ lateral stick only.
·Scan AOA and G during maneuver.

(4) With 3 up & locked and 250 KCAS minimum in MAX A/B-
·Pull 2.0-3.0 G to intercept and maintain 25° AOA over-the-top for a Half
·Cuban-8.
·Scan for alignment on the CAT I line, using rudder to make heading corrections.
·Capture and maintain 40° NL with waterline, inverted and
·Reduce power to IDLE when nose breaks horizon.

(5) At 3,500 ft AGL -
·Apply aft stick required to break negative AOA
·Roll upright, 40° NL, modulating throttles to intercept 300 KCAS.

(6) At 1,500 ft AGL or 300 KCAS (whichever occurs first) -
·Select MAX A/B then,
·Apply full aft stick to arrest descent rate
·Apply forward stick to capture straight-and-level flight, not to exceed 0.2 G.
·Accelerate momentarily along the CAT I line and then turn 45 degrees away from the crowd.
·Unload momentarily to NLT 800 ft AGL, accelerating to 350 KCAS to set up for the next maneuver.



Maximum Performance Takeoff to Dirty Roll to Half Cuban-Eight Notes:

- If appropriate (wind, airshow site limitations, show-center limitations, etc.), aircrew have the option to choose either the Dirty Roll on Takeoff or Low Transition with Reversal to Airstart the Dirty Roll at 300 ft AGL.

- Aircrew must pay particular attention while rotating and climbing to 40 degrees nose up, emphasizing a smooth pull. An overly aggressive rotation and climb may result in unacceptable airspeed decay (below 140 KCAS).

- Aircrew shall not start the rolling portion of the maneuver until positive confirmation is made that the aircraft's FLAPS are in the AUTO condition.

- 0.5-1.5 G shall be maintained during the rolling part of the Dirty Roll to comply with NATOPS rolling G limits during gear transition (0.0 to 2.0 G acceptable if flown under the current Interim Flight Clearance).

- Safe execution of the dirty roll is very much dependent on aircraft AOA during the maneuver, as negative AOA values at this flight condition negatively affect your roll performance. Aircrew must ensure that forward stick pressure is avoided while established in the dirty roll. If forward stick is applied, aircrew must immediately incorporate AOA into their scan. Negative AOA while at slow speeds will result in a loss of lateral stick authority, requiring an immediate recovery through use of pitch and rudder only, until AOA increases above 0 degrees.

WARNING:

With AUTO flaps selected, flight control software control law lateral stick gain reduction engages with negative AOA. Between 0 and -8 degrees AOA, the gain sharply decreases from 100% to 25%. When AOA transitions back to positive values, lateral authority is regained. Thorough aircrew understanding of these flight control limitations is paramount to safe execution of the dirty roll on takeoff. Negative AOA values as a result of forward stick inputs and/or excessive combined lateral/longitudinal stick inputs while at slow airspeeds in the Dirty Roll and Half Cuban-8 may result in complete loss of aileron authority, a stagnation of roll rate, and potential for an unrecoverable regime of flight.

- Safe and proper execution of the dirty roll is entirely possible with the use of ½ to ¾ lateral stick alone without the need for longitudinal stick inputs in order to exit the maneuver at an acceptable altitude. The nose will fall towards the horizon naturally during the maneuver and this should be accepted (no correction shall be made to maintain the 40 deg NU pitch attitude from which the maneuver was commenced). Aircrew must prioritize maintaining a positive AOA value and constant, timely roll rate at the expense of landing gear position as viewed from the airshow crowd (i.e., do not delay selection of LDG GEAR UP prior to commencing lateral roll).

- Anticipate a minimum of 800 ft AGL with a positive FPA at Dirty Roll completion.

- When entering the Half Cuban-8 and climbing in the vertical, aircrew shall concentrate on ensuring a wings-level pull.

- Through correct and consistent Half Cuban-8 entry parameters, expect to see ~200-220 KCAS at the top of the maneuver. A pull into the vertical of more than 3 G may result in unacceptable airspeed decay over the top and less than 3,500 ft AGL requiring a termination of the maneuver.

- Once push-over complete at end of Half Cuban-8 maneuver, expect to see no less than 1000' feet AGL at wings level flight.

- The Dirty Roll shall only be executed from stopped or from an airstart. Under no circumstances shall the Dirty Roll be executed from a roll & go / option.

- Aircrew have the option of extend along the CAT III and pirouette towards the CAT I line if show site conditions allow.

2. Flat Pirouette

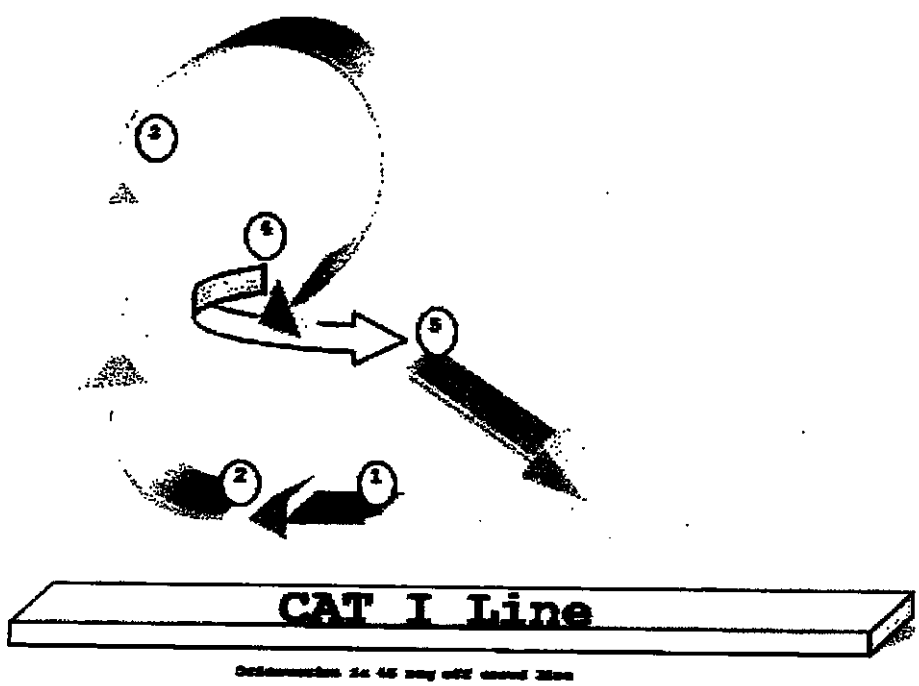
(1) Entry: NLT 800 ft AGL, 350 KCAS, 45° heading off the CAT I line.

(2) Maneuver:
At 350 KCAS -
·In MAX A/B,
·Apply 5-6 G aft stick pull to capture and maintain 90° nose up with the
·velocity vector.

(3) At 5,000 ft AGL -
·Apply full aft stick to capture and maintain 35 degrees AOA, then
·Continue to maintain 35 degrees AOA (initially decelerating through the first half of a constant AOA loop, and then accelerating through the backside of a constant AOA loop as the nose tracks up and airspeed increases).

(4) As nose tracks up and airspeed increases -
·Reaching 175 KCAS (expected at 40-50 degrees nose low with the waterline symbol), apply pirouette inputs while maintaining 35 degrees AOA.

(5) After 180° of heading change, but in all cases no lower than 3,000 ft AGL-
·Remove pirouette inputs,
·Smoothly recover from pitch down attitude by intercepting the dive recovery rules,
·Position the aircraft 90° (perpendicular) to the CAT I line, modulating power and pull to arrive on the CAT I line at 500 ft AGL to enter the next maneuver.



Flat Pirouette Notes:

- If initial pull up airspeed into the maneuver is less than 350 KCAS or if less than 5 G is maintained, the 35 AOA and 175 KCAS intercept for pirouette inputs is more likely to occur at an unacceptably shallow (less than 20 degrees nose low) pitch attitude.

- If initial pull up airspeed into the maneuver is greater than 360 KCAS or if greater than 6 G is maintained, the 35 AOA and 175 KCAS intercept pirouette inputs are more likely to result in a steep (greater than 50 degrees nose low) pitch attitude, resulting in intercept of the 3,000 ft AGL maneuver termination altitude prior to achieving the desired 180 degree heading change and/or the pirouette will have a tendency to occur in the vertical vice horizontal axis.

- If pitch attitude at 35 AOA / 175 KCAS intercept is assessed to occur at an unacceptably steep attitude, airspeed may be allowed to accelerate to a maximum of 200 KCAS at 35 AOA as long as pirouette inputs are initiated at a pitch attitude of no less than 20 deg nose down.
- When passing through 5,000+ ft AGL after the full aft stick pull, aircrew can expect to intercept 35 AOA approximately when nose meets the horizon, inverted.

- With proper execution, aircrew should expect the 35 AOA and 175 KCAS intercept to occur when the nose rises through 40-50 degrees nose low pitch.

- If 175 KCAS is intercepted at a pitch angle shallower than 20 degrees low, aircrew shall discontinue the maneuver.

- It is imperative that 35 degrees AOA is maintained throughout the pirouette maneuver for proper and safe execution. The longitudinal stick input to hold 35 degrees AOA should be maintained. Full aft stick application during a pirouette maneuver will degrade pirouette performance by eliminating the differential stabilator contribution to roll.

- Optimum pirouette performance will be obtained at 175 KCAS while sustaining 35 degrees AOA and the application of full lateral stick and full rudder in the direction of the maneuver. Hold longitudinal stick position required to maintain 35 degrees AOA while inputting lateral stick and rudder application in same direction to perform the heading reversal.

- Aircrew have the option of extend along the CAT III and pirouette towards the CAT I line if show site conditions allow.

- In all cases, aircrew shall not delay the intercepting of dive recovery rules passing 3,000+ ft AGL. Priority shall be given to recovering from the maneuver at the expense of canopy position and completion of the 180 degree heading change. Dive recovery rules are as follows:

Attitude	Altitude (AGL)	Min KCAS
-80 degrees	4,000'	200
-60 degrees	3,000'	250
-40 degrees	2,000'	300
-25 degrees	1600'	300
-20 degrees	1200'	300
-15 degrees	800'	300
-10 degrees	500' (Level at 500')	300
-5 degrees	300'	300
Level	200'	300

NOTE:

Aircrew should never see airspeeds below 100 KCAS during any portion of pirouette maneuvering to mitigate the potential for entering a stall or spin condition. If aircrew at any time see airspeed decrease through 100 KCAS during execution of the flat or vertical pirouette, they shall immediately terminate the maneuver.

Emergency Dive Recovery

Roll wings level (unloaded to less than 90° then a loaded roll)
Apply Max G to Positive Rate of Climb.
If airspeed > 350kts -Throttles Idle
If airspeed < 350kts -Throttles MIL

3. Minimum Radius Turn to Tail Stand

(1) Entry: 500 ft AGL, 320 KCAS, on the CAT I line.

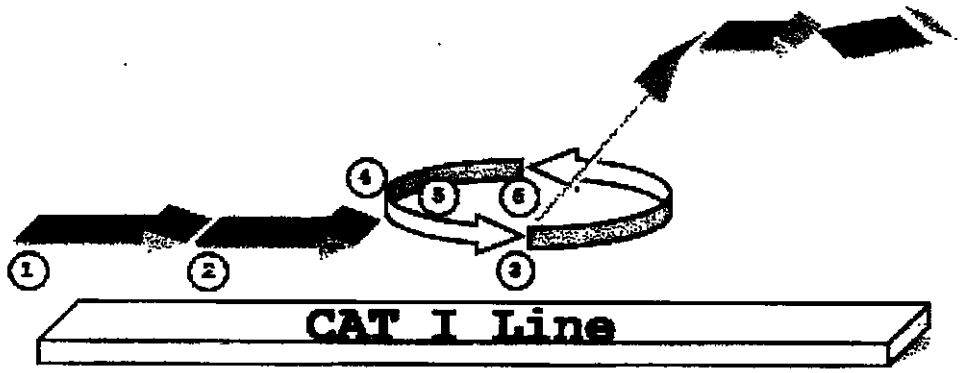
(2) Maneuver:
Just prior to show center -
·Select MAX A/B.

(3) At show center, 320 KCAS min, burners staged -
·Roll 70-85° away from crowd, then,
·Apply 6-7g to maintain 325 to 365 KCAS.
·Set a positive 3-5 degrees with the waterline symbol to execute a level, or slightly climbing turn.
·After 90° of turn select MIL (when cans clear).

(4) With 90 degrees of turn to go -
·Select MAX A/B.

(5) With 30-45 degrees of turn to go -
·Modulate pull to ensure that the CAT I line is not overshot.
·Modulate pull and alpha to target maintain 325 - 365 KCAS at show center and entry heading.
·Exit maneuver on entry heading and at or above entry altitude.

(6) At Show center -
·Unloaded roll to wings level.
·Once wings level and between 270-280-KCAS, apply full aft stick to capture and maintain 60° pitch up with the waterline symbol.
·Passing NLT 1000 ft AGL, apply full forward stick to arrest climb and establish level flight.
·When level, check 60 degrees away from the crowd.
·Smoothly descend and level out at 1,000 ft AGL.
·Continue to fly the new heading until 1.2 NM lateral separation from the CAT I line.
·At 1.2 NM, begin a turn back toward the extended 500 ft show line modulating power and pull (typically 6.0-6.5 G) to attain .75-.80 IMN in the turn.
·Maintain 1,000 ft AGL until the CAT III line is in sight.



Minimum Radius Turn Notes:

- G loads during the Minimum Radius Turn are high. Aircrew shall brief and execute a proper Anti-G Straining Maneuver (AGSM) during all applicable portions of the FRS TACDEMO, with particular emphasis during this maneuver.

- Aircrew shall pay particular attention to G during the pushover portion of the exit maneuver, as the aircraft will be negatively overstressed if -3.2 G is exceeded (MSP 925).

4. High Speed Pass to Abrupt Pull-Over Reversal

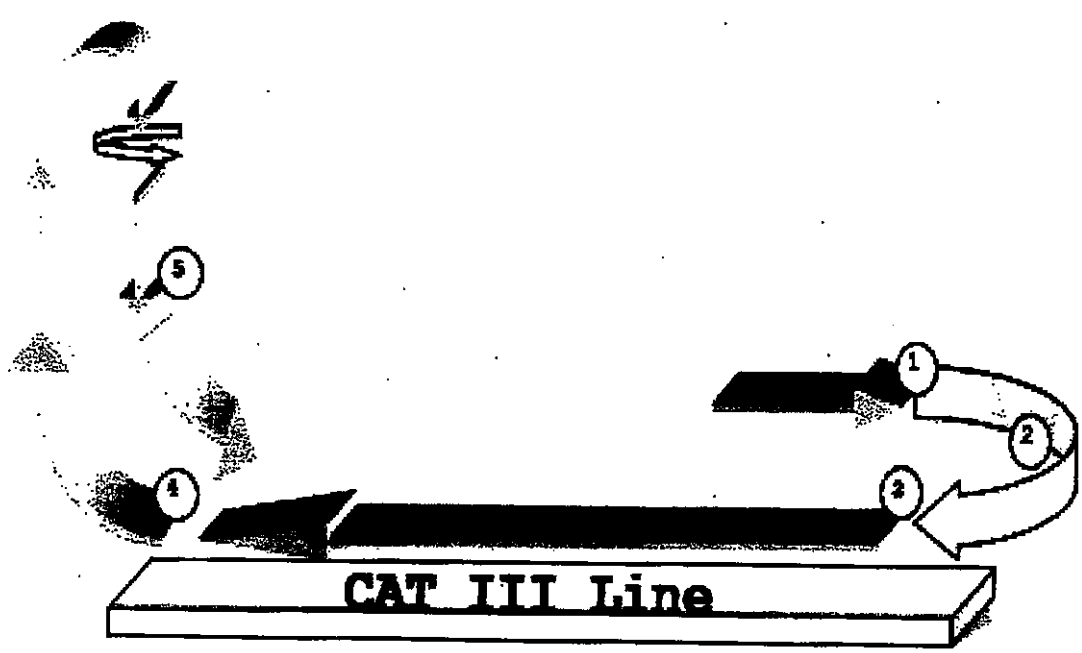
(1) Entry: **0.75-0.80 IMN**, descending arc for alignment on the CAT III line.

(2) Maneuver:
Approaching the CAT III line -
·ALT switch - RDR (N/A with DUAL boxed).
·Select MAX A/B and descend to NLT 200 ft AGL while accelerating toward 0.95IMN.

(3) Approaching 0.95 IMN -
·Select MIN A/B and modulate as required to maintain 0.95 IMN, not to exceed 0.96 IMN.

(4) At 45 degrees past show center -
·Reduce power to IDLE.
·ALT switch - BARO (N/A with DUAL boxed).
·Apply 6 G pull until IMN is 0.88 or below, then
·Apply full aft stick to 90° nose up with the velocity vector.
·**NLT 4,000 ft AGL**, execute a maximum G pull to intercept 30 degrees AOA over-the-top to arrive 90 degrees nose low with the velocity vector.
·With a minimum of 150 KCAS, roll the aircraft 180 degrees and realign with the CAT I line.

(5) At 3,000 ft AGL or 300 KCAS (whichever occurs first)-
·Modulate throttles and intercept the dive recovery rules to arrive at wings level flight prior to show center for the next maneuver.



High Speed Pass to Abrupt Pull-Over Reversal Notes:

- Aircrew shall pay particular attention to IMN during the maneuver so as to not go supersonic. Mach accuracy can vary aircraft with aircraft and environmental conditions. Errors of up to 0.02M (Truth>HUD) have been observed during decels, i.e. 0.98M in the HUD would actually be 1.0M.

- G loading during the initial setup of the High Speed Pass and during the Abrupt Pull-Over Reversal are high. Aircrew shall brief and execute a proper AGSM during all applicable portions of the FRS TACDEMO, with particular emphasis during this maneuver.

- In all cases, aircrew shall not delay the intercepting of dive recovery rules passing 3,000± ft AGL. Dive recovery rules are as follows:

Attitude	Altitude (AGL)	Min KCAS
-80 degrees	4,000'	200
-60 degrees	3,000'	250
-40 degrees	2,000'	300
-25 degrees	1600'	300
-20 degrees	1200'	300
-15 degrees	800'	300
-10 degrees	500' (Level at 500')	300
-5 degrees	300'	300
Level	200'	300

Emergency Dive Recovery

Roll wings level (unloaded to less than 90° then a loaded roll)
Apply Max G to Positive Rate of Climb.
If airspeed > 350kts -Throttles Idle
If airspeed < 350kts -Throttles MIL

5. Vertical Pirouette

(1) Entry: 500 ft AGL, 350 KCAS, on the CAT I line.

(2) Maneuver:
Approximately 0.4-0.6 NM from show center -
·Select MIL
·Apply a 3-4 aft stick pull to capture and maintain 90° NU with the velocity vector at show center.

(3) Once established at 90° NU -
·Reference mirrors and/or wingtip and unloaded roll 90° to place canopy toward crowd.
·Check airspeed.

(4) Monitor airspeed after completion of roll and NLT 220 KCAS -
·Simultaneously select MAX A/B and push and hold full forward stick to 10°-15° nose low with the waterline.

(5) At 10°-15° NL -
·Accelerate to 200 KCAS (if required).

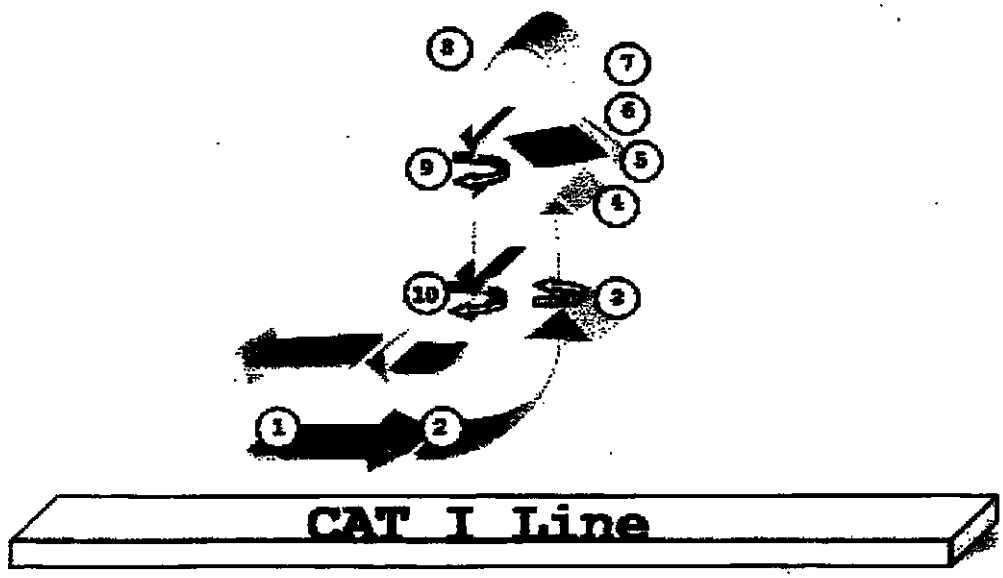
(6) At 200 KCAS -
·Initiate smooth pull towards 35° AOA.

(7) Holding 25-35° AOA and at 175-225 KCAS -
·Altitude - check to ensure above 5,000 ft AGL, then,
·Execute pirouette inputs, ensuring pitch attitude less than 60 deg NU at initiation, otherwise discontinue the maneuver.

(8) When the nose breaks the horizon with Pirouette inputs applied, -
·Reduce power to IDLE.

(9) At 70°-90° nose low -
·Remove pirouette inputs and roll the canopy to the crowd.

(10) At 3500 ft AGL-
·Unloaded roll 135 degrees to a heading 45 degrees off the CAT I line.
·Modulate power and intercept the dive recovery rules in a descending oblique turn to intercept the CAT I line for the next maneuver.



Vertical Pirouette Notes:

- Entry parameters for the Vertical Pirouette should be met to the max extent possible but priority should be given to airspeed and distance from show center so not to be slow in the vertical or execute the maneuver past show center.

- If initial pull up airspeed and G into the maneuver is less than 350 KCAS and/or greater than 4 G, aircrew are likely to be less than 220 KCAS after completion of the 90 degree roll necessitating in termination of the maneuver.

- Should the 35 degrees AOA pull up from 10-15 degrees nose low be initiating at an airspeed of less than 200 KCAS, the maneuver shall be terminated.

- Should the 35 degree AOA / 200 KCAS intercept occur at a pitch attitude greater than 60 degrees nose up with the waterline, the maneuver shall be terminated

- During the pull up for pirouette execution, at 40°-50° pitch attitude with the waterline symbol (in all cases no more than 60°), if altitude is less than 5,000 ft AGL, aircrew shall terminate the maneuver.

- It is up to aircrew discretion to execute pirouette portion of the maneuver to the right or to the left.

- It is imperative that 35 degrees AOA is maintained throughout the pirouette maneuver for proper and safe execution. The longitudinal stick input to hold 35 degrees AOA should be maintained. Full aft stick application during a pirouette maneuver will degrade pirouette performance by eliminating the differential stabilator contribution to roll.

- The use of rudder and/or lateral stick may be necessary to place the canopy on the crowd when established at 70-90 degrees nose low.

- Optimum pirouette performance will be obtained at 175 KCAS while sustaining 35 degrees AOA and the application of full lateral stick and full rudder in the direction of the maneuver. The maneuver is designed to be initiated at 200 KCAS so that the aircraft will decelerate through the optimal airspeed for maximum roll/yaw response.

- AOA will increase as airspeed decays during the nose up portion of the vertical pirouette. Continue to refine longitudinal stick position required to maintain 35 degrees AOA while inputting lateral stick and rudder application in the direction of the vertical pirouette.

- Delay of selecting IDLE after the nose passes through the horizon during the pirouette may result in unacceptable acceleration in a nose down attitude towards the ground.

- In all cases, aircrew shall not delay the intercepting of dive recovery rules passing 3,000 ft AGL. Priority shall be given to recovering from the maneuver at the expense of canopy position and completion of the 135 degree roll away from the crowd. Dive recovery rules are as follows:

Attitude	Altitude (AGL)	Min KCAS
-80 degrees	4,000'	200
-60 degrees	3,000'	250
-40 degrees	2,000'	300
-25 degrees	1600'	300
-20 degrees	1200'	300
-15 degrees	800'	300
-10 degrees	500' (Level at 500')	300
-5 degrees	300'	300
Level	200'	300

NOTE:

Aircrew should never see airspeeds below 100 KCAS during any portion of pirouette maneuvering to mitigate the potential for entering a stall or spin condition. If aircrew at any time see airspeed decrease through 100 KCAS during execution of the flat or vertical pirouette, they shall immediately terminate the maneuver.

Emergency Dive Recovery

Roll wings level (unloaded to less than 90° then a loaded roll)
Apply Max G to Positive Rate of Climb.
If airspeed > 350kts -Throttles Idle
If airspeed < 350kts -Throttles MIL

6. Square Loop to 90/40 Reversal

(1) Entry: 500 ft AGL, 330 KCAS, on the CAT I line.

(2) Maneuver:
At show center -
·Select MAX A/B.

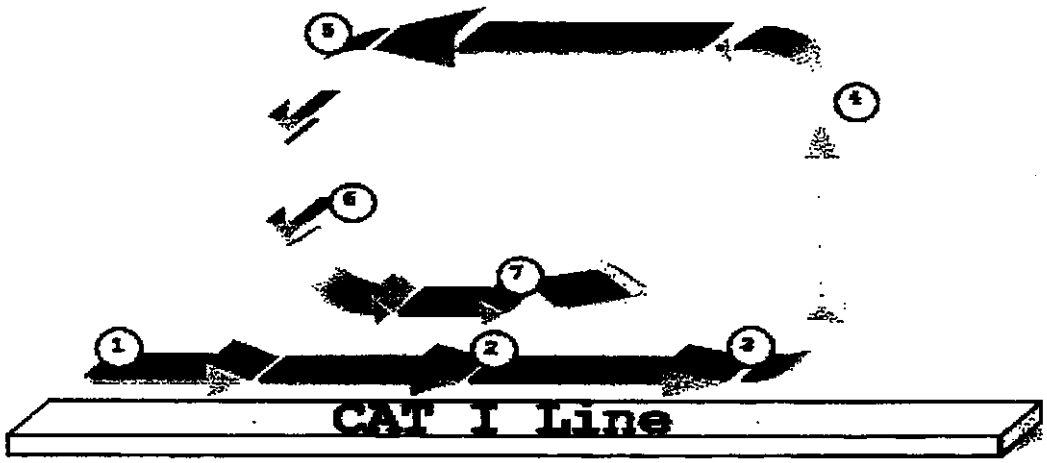
(3) At 350 KCAS with burners staged -
·Apply full aft stick, targeting 5.0-6.0 G to 90° NU with the velocity vector.
·Use mirrors and/or wingtip reference to minimize roll angle.

(4) At 3,500 ft AGL -
·Apply full aft stick to capture and maintain 5-10° NU with waterline symbol and hack the clock in the HUD.
·Apply forward stick as required to maintain inverted, level flight.
·Adjust heading with rudder as required to parallel CAT I line.
·Modulate power to remain between 240-260 KCAS.

(5) Above 4,500 ft AGL, between 240-260 KCAS, and at 8 seconds inverted -
·Reduce power to IDLE.
·Apply full aft stick to capture 90° NL.
·Modulate throttles to intercept 300 KCAS

(6) At 3,000 ft AGL or 300 KCAS (whichever happens first) -
·Select MAX A/B.
·Apply full aft stick to arrest descent then,
·Ease stick forward to level flight, not to exceed 0.2 G.
·Accelerate along the CAT I line to achieve 250-300 KCAS.

(7) Reversal: 90 / 40
At show center, NLT 1,000' AGL and targeting 300 KCAS (NLT 250 KCAS)-
·Roll 90° away from crowd.
·Pull and maintain a 4.0-5.0 G turn to 90 degrees off CAT I line.
·Unload the aircraft, then
·Roll wings level, then
·Crisp aft stick pull to 40° nose up with velocity vector.
·Check altitude above 1,000 ft AGL.
·Tuck-under roll in the appropriate direction to setup for next maneuver with wind at the aircraft's tail.
·Modulate power and pull as required to extend and arc to target 420 KCAS and 3.0 nm in a descending oblique turn to 500 ft AGL and realignment along the CAT I line.



Square Loop Notes:

- Aircrew shall select IDLE and initiate the max-performance pull down at the completion of 8 seconds inverted. In no case shall they exceed the 10 second inverted limitation of NATOPS.

- After executing a max performance pull at 3,000 ft AGL or 300 KCAS (whichever occurs first) on "backside" of the square loop, aircrew can anticipate a bottom-out altitude of approximately 1,000 ft - 1,200 ft AGL.

- While it is optimal to begin the 90/40 reversal at show center, aircrew shall not sacrifice airspeed and/or altitude, prioritizing a minimum of 250 KCAS and 1,000 ft AGL before rolling into the maneuver.

7. Inverted Whisper Pass

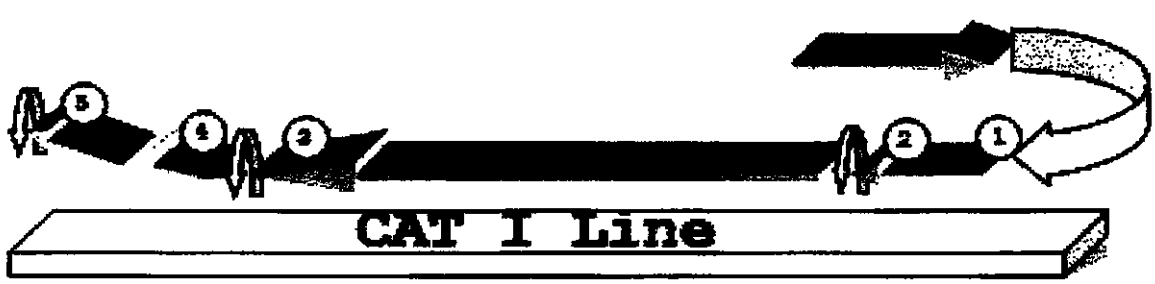
(1) Entry: 500 ft AGL, 420 KCAS, on the CAT I line.

(2) Maneuver:
At 1.0 NM prior to show center -
·Pitch-up 5° then,
·Crisply execute a unloaded roll 180° towards the crowd to wings level inverted flight referencing the velocity vector and hack the clock in the HUD.
·Reduce power to IDLE.

(3) Just past show center but in no case at no more than 8 seconds inverted -
·Apply forward stick to 5° above horizon with the velocity vector.
·Select MIL power.
·Apply aft stick required to break negative AOA.
·Crisply unloaded tuck-over through 270° of roll.

(4) Reversal: 60 / 10
·Smoothly max perform for 60° of heading change away from the crowd.
·With sufficient separation to decelerate for the next maneuver,
·Unloaded roll to wings level.
·Pull to capture and maintain 10° NU with velocity vector.

(5) At 1000+ ft AGL and with sufficient lateral separation -
·Crisply unloaded tuck-under through 225° of roll towards the crowd.
·Pull nose through horizon then,
·Reduce power to IDLE.
·Modulate power and pull in a descending oblique turn for realignment on
·the CAT III line for the next maneuver.



Inverted Whisper Pass Notes:

- This maneuver should always be performed with a tailwind to ensure headwind for the high-alpha pass.

- Aircrew shall initiate the tuck-over roll at completion of 8 seconds inverted. In no case shall they exceed the 10 second inverted limitation of NATOPS.

- A good rule-of-thumb to ensure sufficient lateral separation during the 60/10 reversal is to extend for no less than 2 seconds prior to conducting the tuck-under roll towards the crowd.

- To setup for the high alpha pass, after the tuck-under roll target 150-200 KCAS at 90 degrees off the 500 ft show line when turning back in. Aircrew have the option to extend the speedbrakes after the tuck-under roll to expedite slowing for the high-alpha pass, but shall retract them prior to 150 KCAS.

- Safe execution of the inverted whisper pass is very much dependent on aircraft AOA during the maneuver, as negative AOA values at this flight condition negatively affect your roll performance. Aircrew must ensure that forward stick pressure is avoided while exiting the inverted whisper pass. If forward stick is applied during exit, aircrew must immediately incorporate AOA into their scan. Negative AOA while may result in a loss of lateral stick authority, requiring an immediate recovery through use of pitch and rudder only, until AOA increases above 0 degrees.

- Aircrew shall pay particular attention to G during the exit portion of this maneuver, as the aircraft will be negatively overstressed if -3.2 G is exceeded (MSP 925).

WARNING:

With AUTO flaps selected, flight control software control law lateral stick gain reduction engages with negative AOA. Between 0 and -8 degrees AOA, the gain sharply decreases from 100% to 25%. When AOA transitions back to positive values, lateral authority is regained. Thorough aircrew understanding of these flight control limitations is paramount to safe execution of the inverted whisper pass. Negative AOA values as a result of forward stick inputs and/or excessive combined lateral/longitudinal stick inputs while inverted may result in complete loss of aileron authority, a stagnation of roll rate, and potential for an unrecoverable regime of flight.

8. High Alpha Pass to Split-S

(1) Entry: 700' AGL, approximately 150 KCAS, on the CAT III line.
ALWAYS PERFORM THIS MANEUVER INTO THE WIND

(2) Maneuver:
Passing 150 KCAS -
·Ensure speedbrakes retracted.

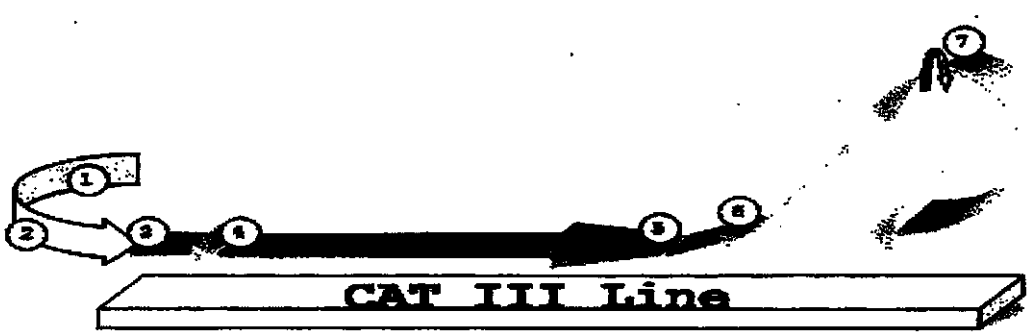
(3) Above 12° AOA -
·Shift scan to RDR ATTK format (RDDI) for airspeed, altitude, horizon line, and velocity vector trends. Scan HUD for AOA and VSI trends.
·Continue to decelerate to 23-24 degrees AOA prior to reaching start of crowd.

(4) When level at 23 degrees AOA -
·Maintain 23 degrees AOA for duration of maneuver.
·Waterline should be 23-24° NU.
·Airspeed should be approximately 110-120 KCAS.
·RPM should be approximately 88 - 92%.
·Adjust heading into wind to counter drift into crowd.

(5) Reversal: Split-S
With show center 30-40° past wingline -
·Select MAX A/B.
·Maintain 23-24° NU pitch attitude with the waterline symbol while accelerating to 150 KCAS.
·Allow velocity vector to "catch-up" to pitch attitude with waterline symbol.

(6) At 150 KCAS and velocity vector alive-
·Pull to and set 50° NU with the velocity vector.

(7) At 50° NU, 150 KCAS, and 3,000 ft AGL-
·Smoothly roll inverted, then,
·Pull 34 AOA to 90 degrees nose low.
·At 90 degrees nose low smoothly ease the pull to 25 AOA, then
·Modulate power and intercept the dive recovery rules to level off and setup for the next maneuver.



High Alpha Pass to Split S Notes:

- The jet will start to "squat" around 17 AOA, so aircrew should anticipate the need for power addition from IDLE to 88-92% as required.

- A good high alpha pass from the crowd's perspective is one where the power remains relatively steady. Aircraft heading may have to be adjusted into the wind as necessary to ensure ground track does not drift towards the crowd. The aircraft's ground track marker on the HSI should be referenced as a trend indicator since the show line will be difficult to see due to the aircraft's attitude.

- At 8,000' ft density altitude, add 100' ft AGL to the entry altitude for the High Alpha Pass. For every additional 1,000' ft above 8,000' ft density altitude, add an additional 100' ft to the entry altitude for the High Alpha Pass.

- In all cases, aircrew shall not delay the intercepting of dive recovery rules passing 3,000' ft AGL. Priority shall be given to recovering from the maneuver at the expense of canopy position and completion of the 135 degree roll away from the crowd. Dive recovery rules are as follows:

Attitude	Altitude (AGL)	Min KCAS
-80 degrees	4,000'	200
-60 degrees	3,000'	250
-40 degrees	2,000'	300
-25 degrees	1600'	300
-20 degrees	1200'	300
-15 degrees	800'	300
-10 degrees	500' (Level at 500')	300
-5 degrees	300'	300
Level	200'	300

HIGH ALPHA PASS EMERGENCY PROCEDURES

Engine failures during the high AOA pass is recoverable with early recognition and an immediate response.

1. ***Stick - Forward to less than 15 degrees AOA.***
2. ***Throttles - MIL.***
3. ***Rudder - FULL AGAINST YAW/ROLL.***
4. ***Flaps - HALF.***

When AOA below 15 degree AOA

5. ***Throttles - MAX.***
6. ***Maintain below 15 degrees AOA.***
   ·Do not exceed 15 degree AOA.

WARNING

Selecting max A/B while AOA is still above 15 degree AOA may result in a yaw off departure and loss of aircraft.

NOTES

Simulator training is critical to ensure rapid and correct reaction time. Recovery procedures should be briefed before every flight and pilots should be expecting an engine failure on every pass. Do not use lateral stick to counter yaw/roll. The first indication of an engine failure and/or malfunction in the high alpha pass may be unexplained heading change, or increased power required to maintain altitude. Engine failures may appear as wind shear and may be difficult to recognize. Gusty conditions may make recognition more difficult. Associated engine cautions may lag the actual failure by a considerable amount of time. Waiting for engine cautions to execute emergency procedures will likely result in loss of control. It is recommended to practice these single engine emergency procedures in the simulator prior to adopting them for flights.

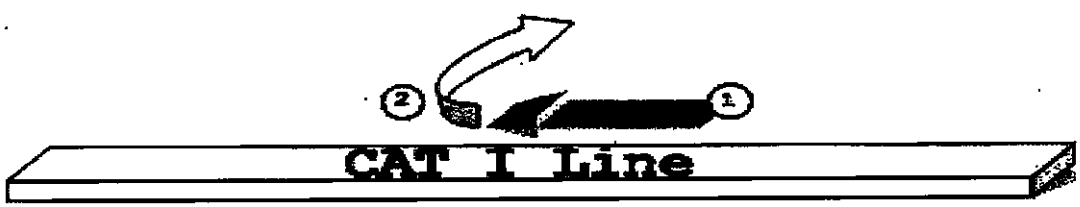
Emergency Dive Recovery

Roll wings level (unloaded to less than 90° then a loaded roll)
Apply Max G to Positive Rate of Climb.
If airspeed > 350kts -Throttles Idle
If airspeed < 350kts -Throttles MIL

9. Horizontal Pitch Rate Demo

(1) Entry
·**500 ft AGL, 300 KCAS** on the CAT I line

(2) Maneuver:
·**Approximately 0.2-0.3 NM prior to reaching show center, select MAX A/B.**
·Prior to showcenter, apply full lateral stick to roll to 80 degrees angle of bank, then
·Execute a maximum performance turn for 90 degrees of heading change away from the crowd.
·After 90 degrees of heading change, unload the aircraft, roll out wings level, and accelerate to a minimum of 250 KCAS.
·At a minimum of 250 KCAS, execute an aft stick pull to 40 degrees nose up with the velocity vector.
·Passing no lower than 1,000 ft AGL,
·Unload then execute a 225° tuck-under roll in the desired direction in a descending, oblique turn to setup for the next maneuver.
·Modulate power and pull to parallel the show line and extend to approximately 3.0 NM before turning inbound for the next maneuver.



Horizontal Pitch Rate Demo Notes:

- At the completion of the Horizontal Pitch Rate Demo, aircrew have the following options to execute at their discretion based on fuel considerations and/or airshow site limitations:

·Rejoin for the Legacy Flight.
·Continue to reposition for the CV Break to Full Stop.
·Reposition for the Photo Pass to Full Stop.
·Enter downwind and execute the Touch & Go to Low Transition to Photo Pass.
·Reposition for the Photo Pass to CV Break to Full Stop.
·Reposition for the CV Break, Touch & Go, Low Transition, Photo Pass to a Full Stop.

NOTE:

Abrupt, full aft stick inputs (full aft stick input in less than 0.5 seconds) with less than 3,500 pounds of fuel is prohibited.

10. Low Transition

(1) Entry:

·With aircraft safely under control at completion of the CV Break or Horizontal Pitch Rate Demo.

(2) Maneuver:

With aircraft safely under control -

·GEAR - DOWN.
·FLAPS - HALF.
·Touchdown on runway.
·Select MIL power
·Rotate with a minimum of 120 KCAS.
·Set 4-5 degrees nose up attitude with the waterline symbol and maintain no lower than 50 ft AGL.
·LANDING GEAR - UP (when safely airborne).
·Throttles - modulate as necessary during gear transition as to not overspeed.

(3) At 180 KCAS -

·FLAPS - AUTO.

(4) With landing gear up and locked and FLAPS in AUTO -

·Select MAX A/B
·Accelerate to and modulate throttles to maintain 330 KCAS.

(5) At minimum of 310 KCAS -

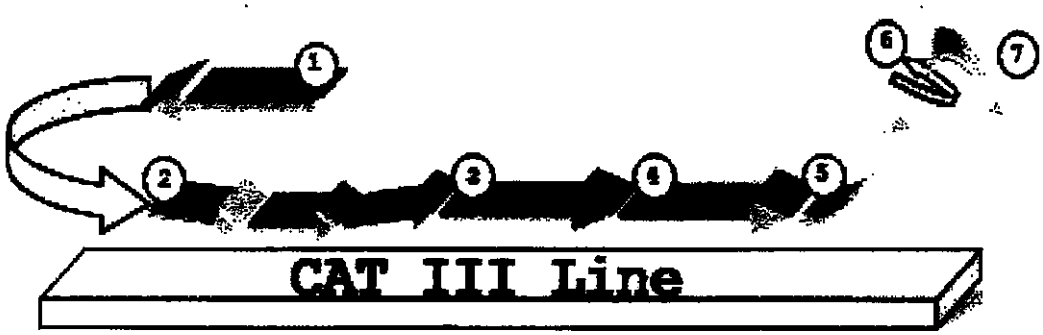
·Full aft stick pull to 60 degrees nose up on the waterline symbol.

(6) Passing no lower than 1,000 ft AGL -

·Unloaded roll 250 degrees into the crowd (tuck-under).
·Execute a full aft stick pull in the oblique to intercept a heading 60 degrees away from the CAT I line and a nose position approximately 30 degrees low at pull completion.

(7) At completion of tuck-under roll -

·Reposition through "tear-drop" maneuver behind crowd to setup for Photo Pass.



Low Transition Notes:

- The Low Transition may be executed to open the FRS TACDEMO profile based on airshow site limitations.

- The Low Transition may be executed after the completion of the Legacy Flight or after completion of the Horizontal Pitch Rate Demo.

- Following the CV break, aircrew may elect to land with FLAPS HALF instead of FULL in order to avoid configuration changes while on the runway and entry into the Low Transition.

- Aircrew must be aware of the fact that the RADALT will continuously be annunciating during execution of the Low Transition, as the RADALT will be set to 450 ft. Proper attention shall be given to ensuring a MINALT of 50 ft AGL is maintained throughout the maneuver.

- At completion of the tuck-under roll, nose position will be approximately 30 degrees nose low at pull completion. Maximum altitude at the top of the low transition will be approximately 2,500 ft AGL, with a minimum airspeed of 185 KCAS over the top.

NOTE:

Abrupt, full aft stick inputs (full aft stick input in less than 0.5 seconds) with less than 3,500 pounds of fuel is prohibited.

- If aircrew are executing the Low Transition at the beginning of the TACDEMO profile, the following procedure shall be used:

Entry:
·Position the aircraft 6,000 ft/1 nm (if able) from show center in the normal takeoff configuration (FLAPS - HALF, 4 degrees up stabilator trim).

Maneuver:
·Hold brakes.
·Select MIL power.
·Allow engines to spool up, then release brakes and select MAX A/B.
·Rotate with a minimum of 120 KCAS.
·Set 4-5 degrees nose up attitude with the waterline symbol and maintain no lower than 50 ft AGL.
·LANDING GEAR - UP (when safely airborne).
·Throttles - modulate as necessary during gear transition as to not overspeed.

At 180 KCAS -
·FLAPS - AUTO

With landing gear up and locked -
·Select MAX A/B
·Accelerate to and modulate throttles to maintain 330 KCAS.

At show center and at 330 KCAS -
·Full aft stick pull to 60 degrees nose up on the waterline symbol.

Passing no lower than 1,000 ft AGL -
·Roll 250 degrees into the crowd (tuck-under).

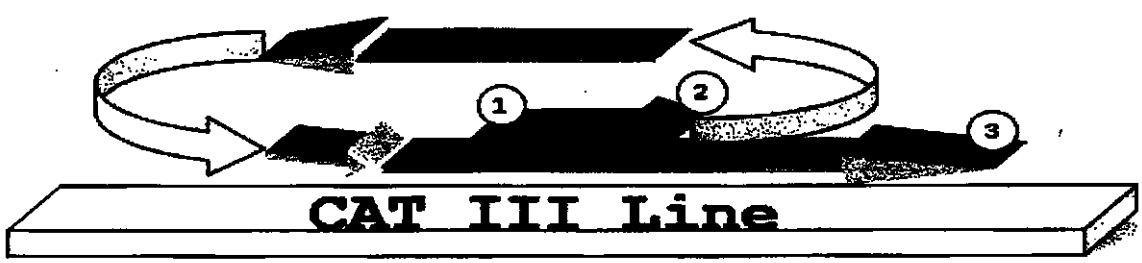
·Execute a full aft stick pull in the oblique to intercept a heading 60 degrees away from the CAT I line and a nose position approximately 30 degrees low at pull completion.

11. CV Break to Full Stop

(1) Entry:
·**500 ft AGL, 400 KCAS** on the CAT III line.

(2) Maneuver:
·ALT switch - RDR (N/A with DUAL boxed).
·Accel to 400 KCAS.
·Initiate a break turn at show center with throttles at MAX A/B.
·After 135 degrees of turn, crisply roll to 30-45 degrees AOB.
·Select IDLE and extend speedbrakes.
·Maintain an arcing turn and use a series of "squats" to achieve 250 KCAS by the 45.
·Complete landing checklist.
·Fly a FULL flap, on-speed, 3 degree / 700 FPM rate of descent landing.

(3) Once clear of the runway:
·Complete the post-landing checklist.
·Bring aircraft to a complete stop.
·CANOPY switch - OPEN.
·Mask - OFF.
·Visor - DOWN.
·When taxiing past crowd (if applicable), WINGFOLD switch - FOLD.



CV Break to Full Stop Notes:

- The CV Break to Full Stop may be executed to close out the FRS TACDEMO after the completion of either the Legacy Flight, Low Transition, Photo Pass, or Horizontal Pitch Rate Demo.

- Aircrew should plan to touch down approximately 2,500 ft from show center, but in no case at the violation of minimum runway lengths for landing of respective squadron SOPs.

NOTE:

Abrupt, full aft stick inputs (full aft stick input in less than 0.5 seconds) with less than 3,500 pounds of fuel is prohibited.

WARNING:

- G loading during the execution of the CV Break are high. Aircrew shall brief and execute a proper AGSM during all applicable portions of the FRS TACDEMO, with particular emphasis during this maneuver. [If symptoms of grey-out or "soda-straw" effect are experienced, immediately Knock-It-Off, reduce G, and roll to wings level.]

12. Photo Pass

(1) Photo Pass Entry
·200 ft AGL, 400 KCAS - .95IMN
·Plan to intercept an inbound heading along the lateral show limits (corner markers), nominally 30-40 degrees from the CAT I show line.

(2) Maneuver:
Just prior to the edge of crowd -
·Roll to between 50-70 AOB for arcing turn around the crowd on the 500 ft show line.
·Select MAX A/B.

(3) Past the lateral limits (corner markers) of the show -
·De-select MAX A/B and level wings.
·Extend from crowd.
·With sufficient separation, execute a turn back towards the CAT III line for entry into the CV Break or enter a downwind/base leg to land.

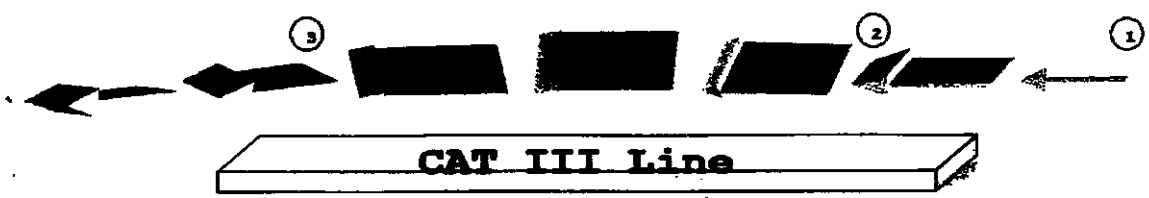


Photo Pass Notes:

- The Photo Pass should ideally be executed after completion of the Low Transition, but may be executed after completion of the Horizontal Pitch Rate Demo. Aircrew have the option to determine when/if to complete the Photo Pass based on fuel considerations or other airshow site limitations.

- After extending from the crowd at completion of the Photo Pass and with sufficient lateral separation, aircrew may execute a tuck-under roll to enter the landing pattern to land as long as the maneuver is executed at a minimum of 1,000+ ft AGL.

F/A-18E/F FRS TACDEMO LOW SHOW MANEUVERS

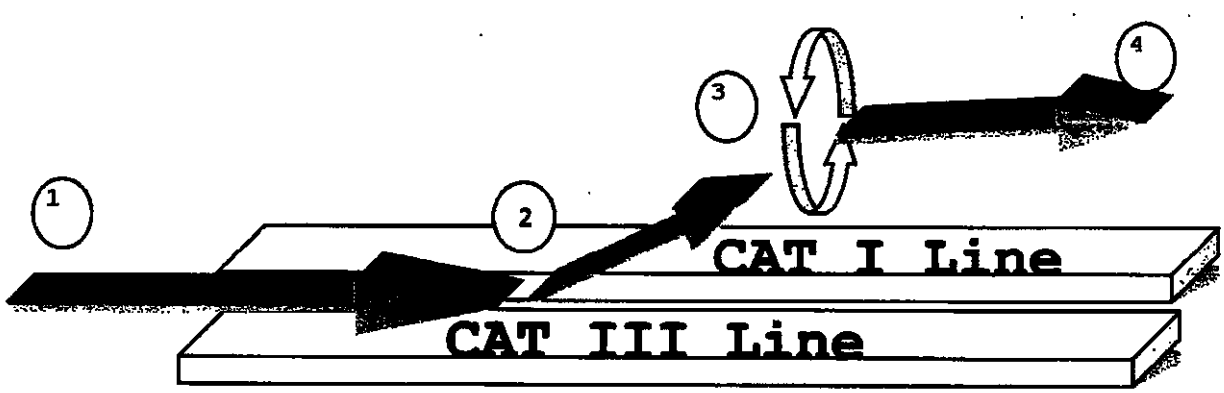
1a. Dirty Roll to 60/60 Reversal or Low Transition

(1) Entry:
·Same as High Show
Maneuver:
·Same as High Show, except:

(2) Upon completion of Dirty Roll with 3 up and locked -
·Accelerate to 250 KCAS.

(3) At 250 KCAS -
·Maintain MAX A/B, then,
·Roll to 70-80 degrees angle of bank away from the crowd.
·Execute a 34 degrees AOA turn for 60 degrees of heading change.
·Continue to fly the new heading while slowly leveling at 1,000 ft AGL.
·Maintain the 60 degree off heading until 1.2 NM laterally away from the CAT I line.

(4) At 1.2 NM -
·Begin a turn back toward the extended CAT I line modulating power and pull to attain 0.75-0.80 IMN in the turn.
·Maintain 1,000' ft AGL until the show line is in sight.

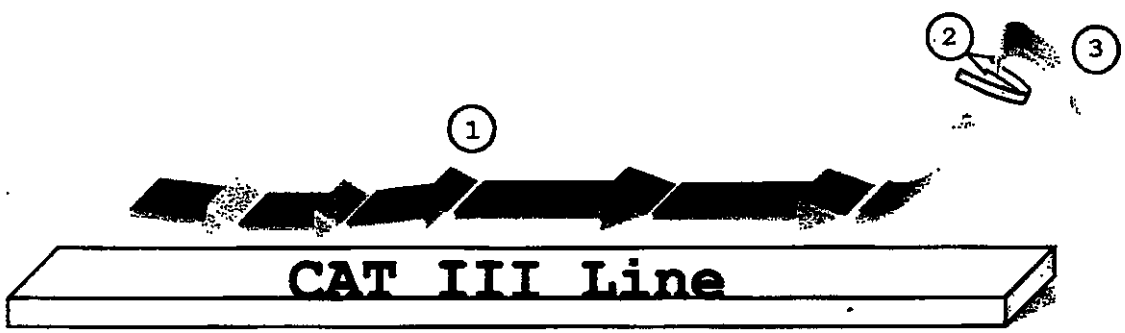


1b. Low Transition

(1) Entry:
·Same as High Show
Maneuver:
·Same as High Show, except:

(2) Upon completion of tuck-under roll -
·Intercept a heading 60 degrees away from the CAT I line.
·Continue to fly the new heading while slowly leveling at 1,000 ft AGL.
·Maintain the 60 degree off heading until 1.2 NM laterally away from the CAT I line.

(3) At 1.2 NM -
·Begin a turn back toward the extended CAT I line modulating power and pull to attain 0.75-0.80 IMN in the turn.
·Maintain 1,000 ft AGL until the show line is in sight.



2. High Speed Pass

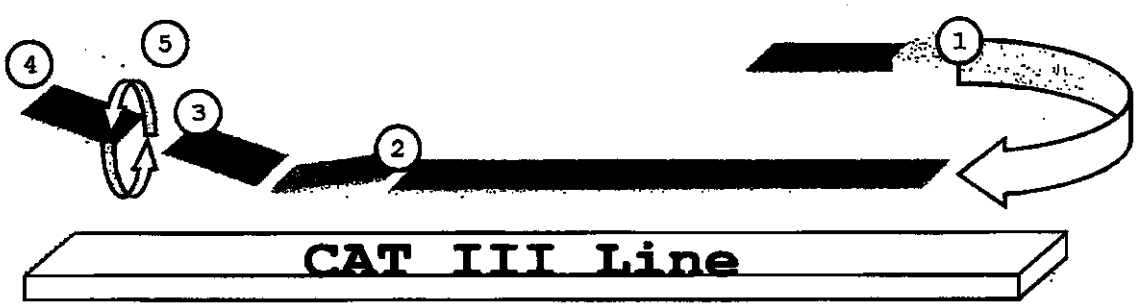
(1) Entry:
·Same as High Show
Maneuver:
·Same as High Show, except:

(2) At show center -
·ALT switch - BARO (N/A with DUAL boxed).
·Reduce power to IDLE, and apply a 6 G pull to 20 degrees nose up with the velocity vector.
·Climb to 1,000 ft AGL.

(3) At 1,000 ft AGL -
·Unload, and apply full lateral stick in either direction for a 360 degree roll.

(4) Upon completion of the roll -
·Roll to 135 degrees angle of bank away from the crowd.
·Apply 7 Gs for 90 degrees of heading change (nose position should be approximately 20 degrees nose low at pull completion).
·Maintain altitude above 1,000 ft AGL.

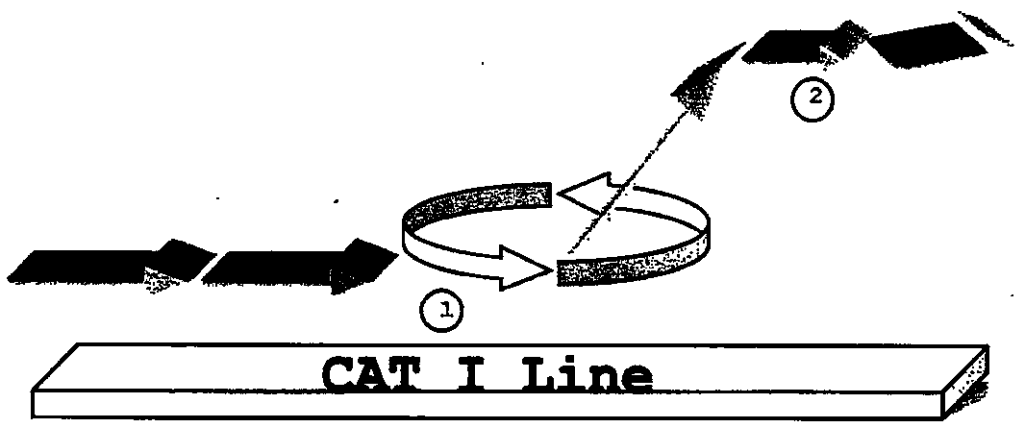
(5) At 90 degrees off -
·With sufficient lateral separation,
·Set 10 degrees nose up attitude,
·Check altitude above 1,000 ft AGL, then,
·Execute a tuck-under roll to approximately 100 degrees angle of bank in the opposite direction.
·Modulate power and pull in a descending oblique turn to realign on the CAT I line.



3. Minimum Radius Turn

(1) Entry:
·Same as High Show
Maneuver:
·Same as High Show, except:

(2) At completion of the Minimum Radius Turn tail stand -
·Manage energy package to setup for the Carrier Configuration Pass.



4. Carrier Configuration Pass

(1) Entry: 500 ft AGL, On-speed, on the 500 ft showline.
Maneuver:
Prior to reaching the start of the crowd -
·LANDING GEAR - DOWN.
·HOOK handle - DOWN.
·FLAPS - FULL.
·Continue decelerating to no slower than on-speed.
·Complete landing checklist

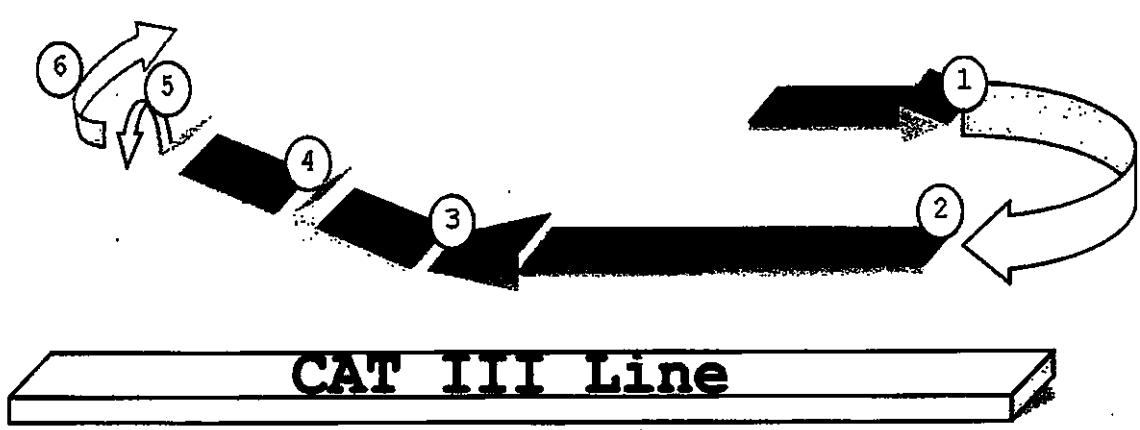
(2) When on-speed on the CAT III showline -
·Fly by crowd until just past show center.

(3) Just past show center -
·Select MAX A/B.
·Smoothly raising nose to 10 degrees up with the velocity vector.
·LANDING GEAR - UP.
·HOOK handle - UP.
·Accelerate to 180 KCAS.

(4) At 180 KCAS -
·FLAPS - AUTO.
·Continue 10 degree nose up attitude, climbing to 1,000 ft AGL.

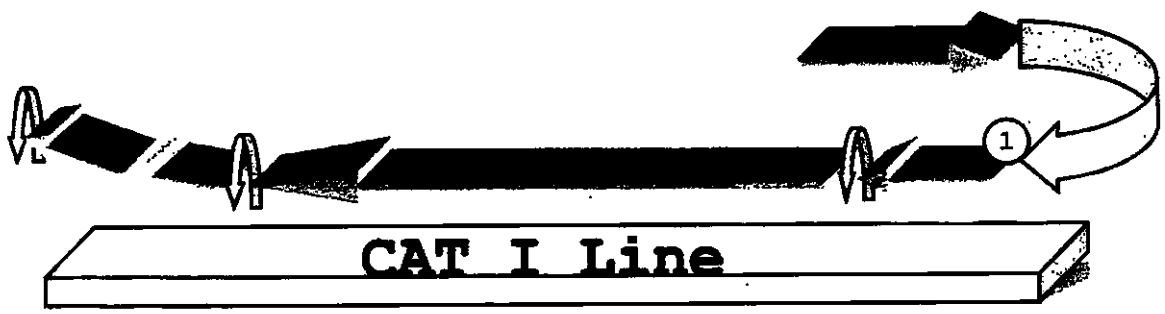
(5) When clean and above 1,000 ft AGL -
·Execute an unloaded tuck-under roll to turn away from the crowd.

(6) At completion of tuck-under -
·Perform a 3-4 G turn to 60 degrees away from the showline.
·With sufficient separation, execute a tuck-under roll in the appropriate direction to begin a turn back towards the CAT I line to setup for the next maneuver.



5. Inverted Whisper Pass

(1) Entry:
·Same as High Show
Maneuver:
·Same as High Show



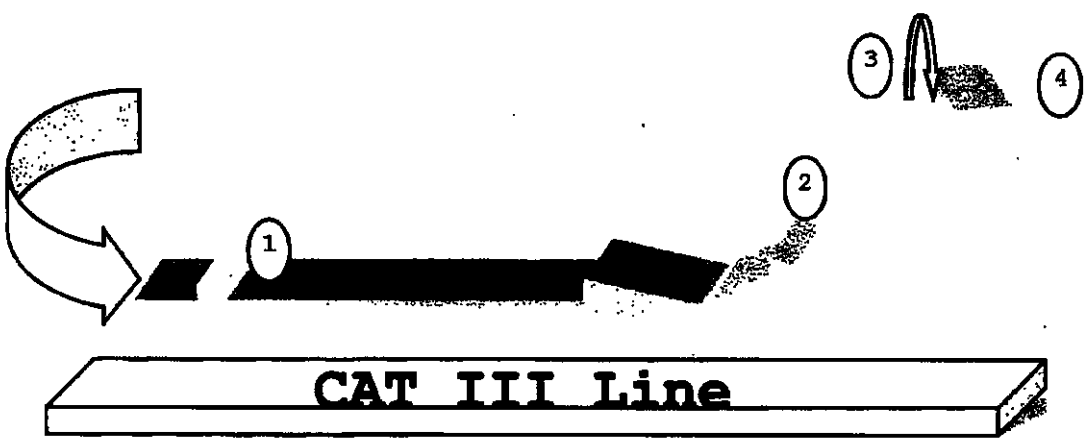
6. High Alpha Pass

(1) Entry:
·Same as High Show
Maneuver:
·Same as High Show, except the Split-S is replaced by an oblique turn away:

(2) When climbing away, at no lower than 1,000 ft AGL and 150 KCAS -
·Roll to 135 degrees angle of bank away from the crowd.

(3) When roll complete -
·Execute a 25 degrees AOA turn to 60 degrees away from the crowd.

(4) When turn complete -
·Accelerate and level off at 500 ft AGL.
·With 1.0 NM lateral separation begin a turn back to the CAT III line.



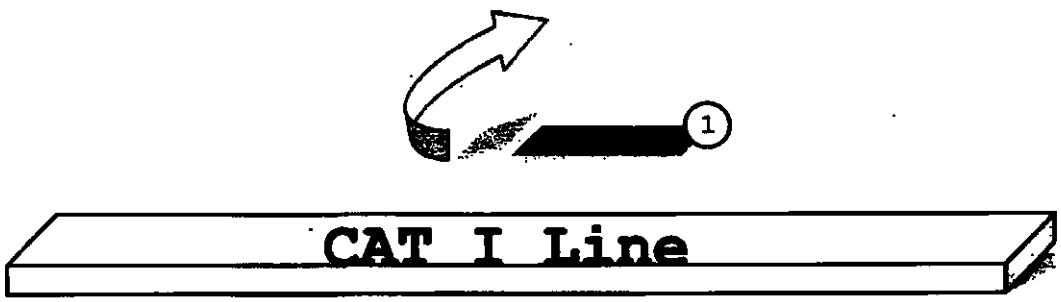
7. Horizontal Pitch Rate Demo

(1) Entry:

- Same as High Show

Maneuver:

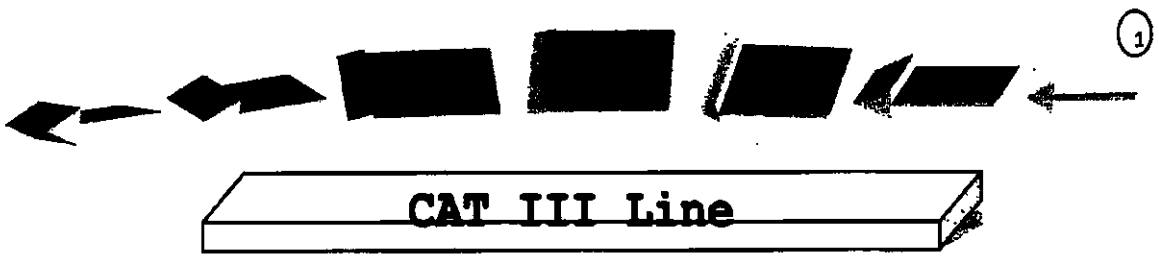
- Same as High Show



8. Photo Pass

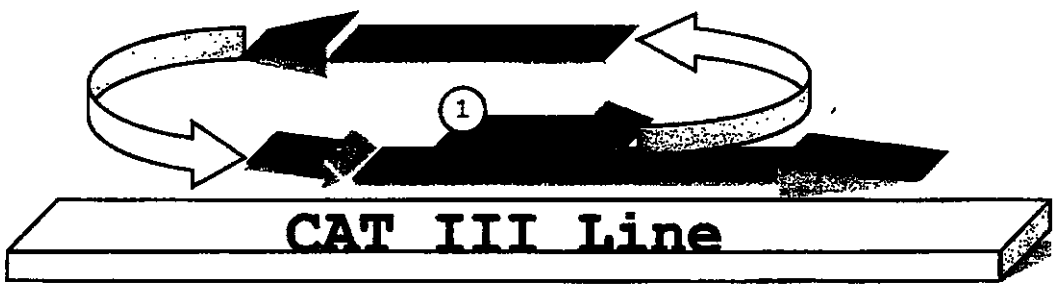
(1) Entry:
- Same as High Show

Maneuver:
- Same as High Show



8. Carrier Break to Full Stop

(1) **Entry:**
·Same as High Show
Maneuver:
·Same as High Show



F/A-18E/F FRS TACDEMO FLAT SHOW MANEUVERS

1. Low Transition

(1) Entry:
·Same as Low Show
Maneuver:
·Same as Low Show, except:

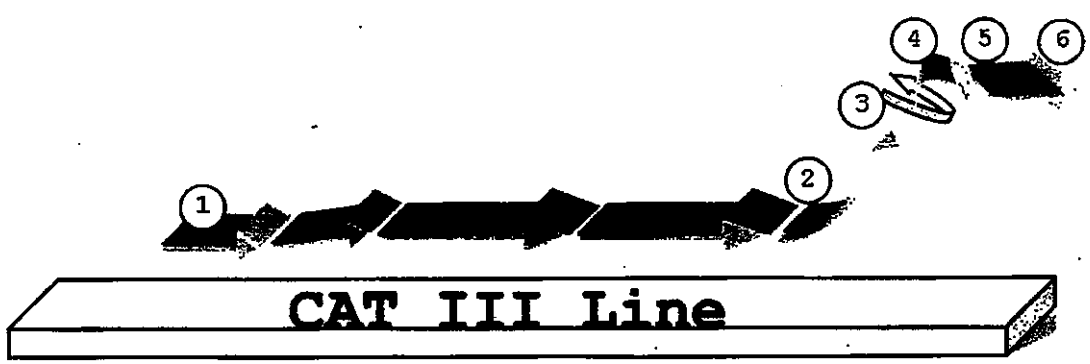
(2) At show center and NLT 330 KCAS -
·Execute a full aft stick pull to 40 degrees nose up with the waterline symbol.

(3) Passing 500 ft AGL -
·Roll inverted and execute a full aft stick pull to level flight.

(4) Once level and inverted -
·Roll to 60 degrees angle of bank away from the crowd, then,
·Execute a full aft stick pull to intercept a heading 60 degrees away from the CAT I line.

(5) When established 60 degrees away from the CAT I line -
·Perform a crisp unloaded roll to wings level.
·Continue to fly the new heading while slowly leveling off at 800 ft AGL.
·Maintain the 60 degrees off heading until 1.2 NM laterally from the CAT I line.

(6) At 1.2 NM -
·Begin a turn back toward the extended CAT III line modulating power and pull to attain 0.75-0.80 IMN in the turn.
·Maintain 800 ft AGL until the show line is in sight.



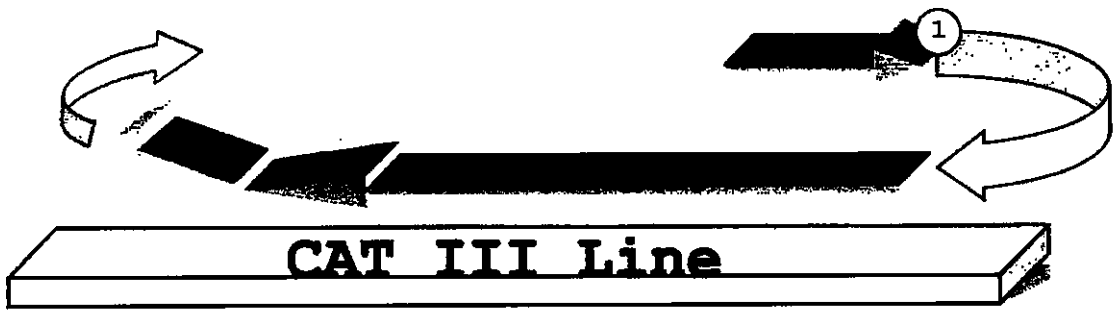
2. High Speed Pass

(1) Entry:

- Same as Low Show

Maneuver:

- Same as Low Show, except a level reversal to stay below the cloud deck.



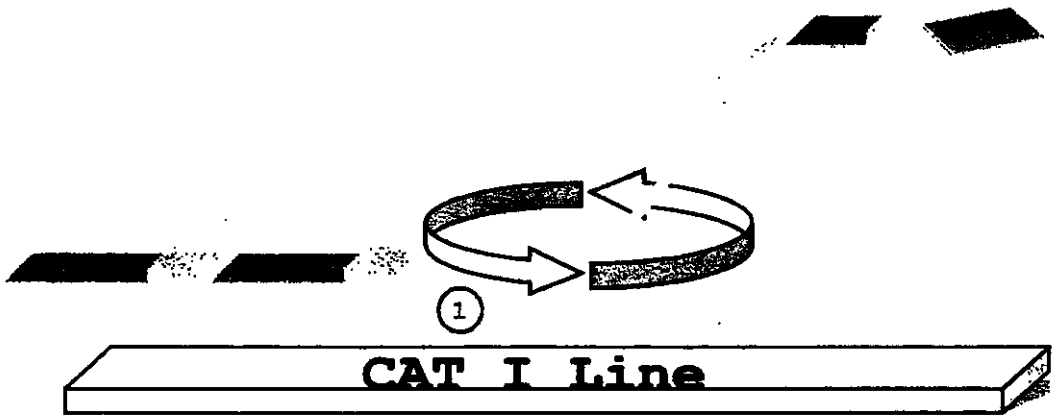
3. Minimum Radius Turn

(1) **Entry:**

·Same as Low Show

Maneuver:

·Same as Low Show, except a level reversal to stay below the cloud deck. Depending on the weather, the Tail Stand might need to be removed.



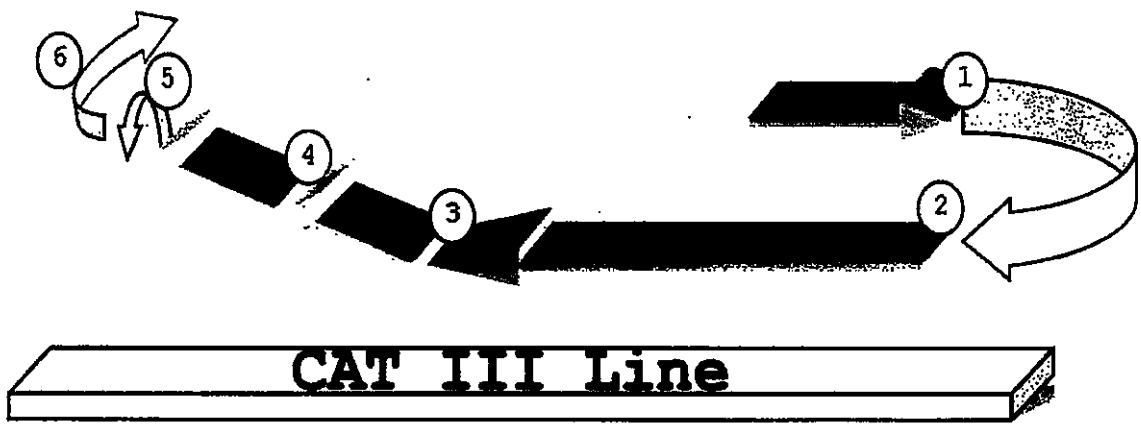
4. Carrier Configuration Pass

(1) Entry:

- Same as Low Show

Maneuver:

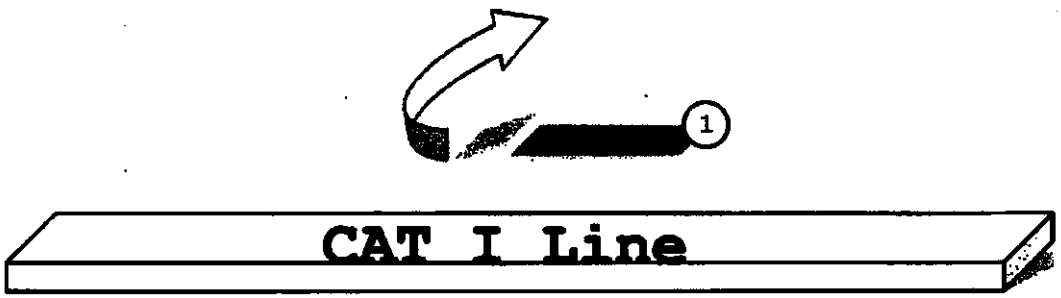
- Same as Low Show, except a level reversal to stay below the cloud deck.



5. Horizontal Pitch Rate Demo

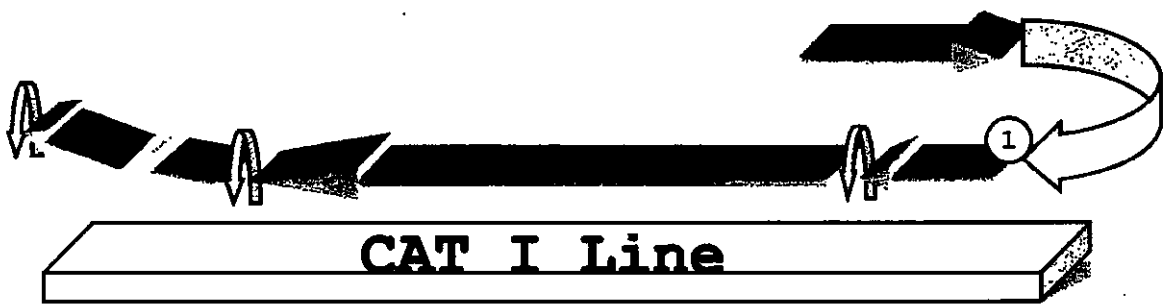
(1) Entry:
- Same as High Show

Maneuver:
- Same as High Show



6. Inverted Whisper Pass

(1) Entry:
-Same as Low Show
Maneuver:
-Same as Low Show



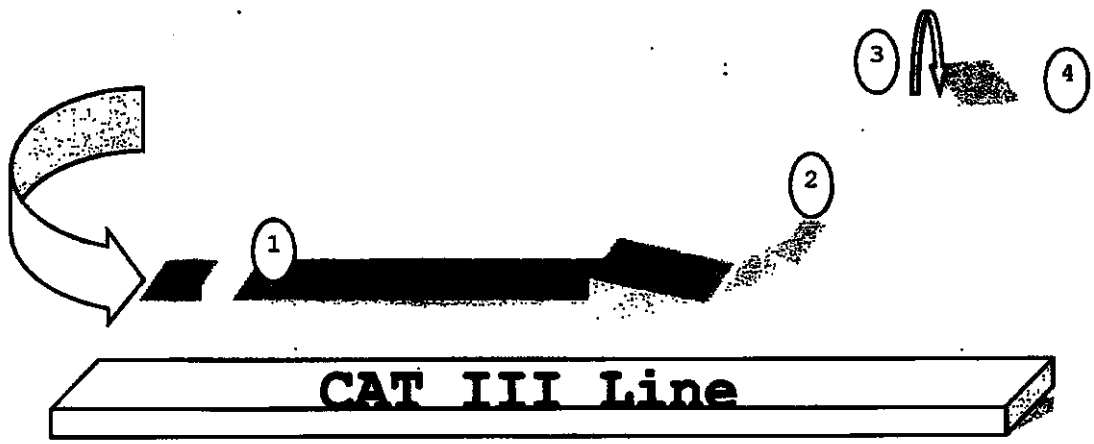
7. High Alpha Pass

(1) Entry:

- Same as Low Show

Maneuver:

- Same as Low Show.



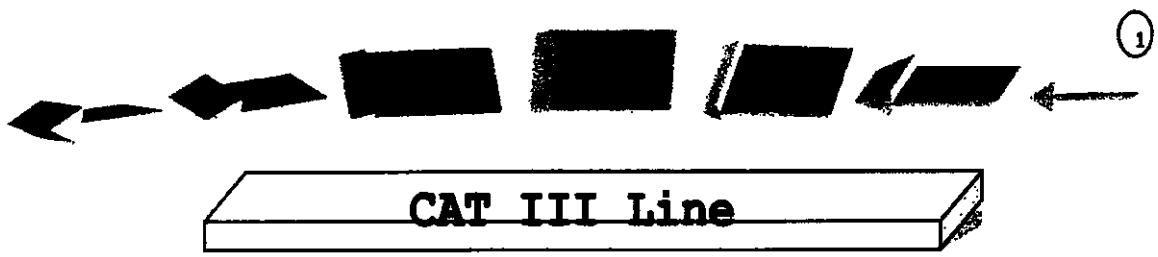
8. Photo Pass

(1) Entry:

·Same as Low Show

Maneuver:

·Same as Low Show.



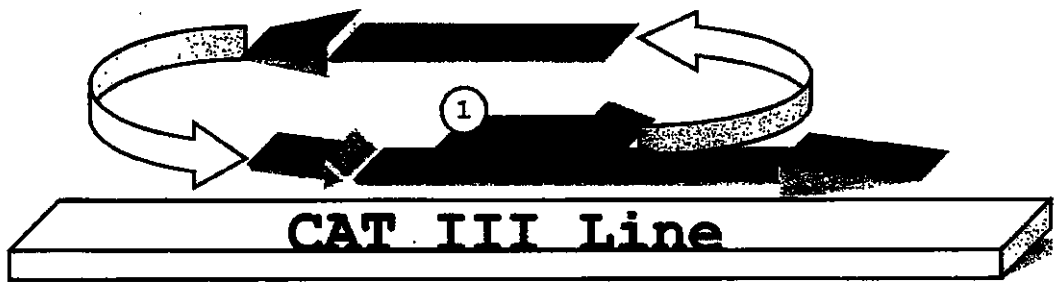
9. Carrier Break to Full Stop

(1) Entry:

- Same as Low Show

Maneuver:

- Same as Low Show



F/A-18 FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) AIRCREW TRAINING REQUIREMENTS

1. FRS TACDEMO Aircrew Training Sequence

a. Upon nomination as an F/A-18 FRS TACDEMO candidate, aircrew should "shadow" (i.e., in the airshow spare aircraft) currently qualified FRS TACDEMO aircrew at a minimum of one airshow prior to the end of the current FRS TACDEMO season in order to gain exposure to the process and procedures involved at an airshow site.

b. Individual commands will ensure nominated aircrew complete the FRSTACDEMO maneuvers as described and depicted in this instruction in an appropriate type simulator. Once the aircrew are academically proficient with all maneuvers, the simulator syllabus shall be completed with a currently qualified FRS TACDEMO pilot/crew observing and grading from the simulator console. Instruction will include techniques and safety factors, and emergencies unique to the FRS TACDEMO sequence will be practiced. The candidate FRS TACDEMO aircrew executing the simulators shall brief and debrief the events, with the qualified FRS TACDEMO aircrew interjecting as necessary. Each simulator shall be scheduled for no less than one hour of box time, as well as 30 minutes for brief & debrief. Each simulator syllabus event will be completed in its entirety in order for aircrew to move on to the next event. If simulator functioning issues or time constraints prevent aircrew from completing the required training or prevent aircrew from having at least one hour of box time, that simulator shall not count towards completion of the training syllabus.

c. Following completion of the simulator syllabus, aircrew shall complete the airborne FRS TACDEMO syllabus. Observed practice sessions may be conducted at an overland target area, or at the home base airfield. Observers may be located on the ground or airborne (low safe), but in all cases the observer shall have two-way radio communications and constant visual contact with the practicing aircrew. Qualified observers for practice sessions may be any qualified FRS TACDEMO aircrew, and will take thorough notes of each maneuver during the profile for aircrew debrief, as well as review the CVRS for the event. Individuals accompanying the observer shall be on official business only. Each flight profile shall be completed in its entirety in order for aircrew to move on to the next event. If weather, aircraft functioning issues, airspace, scheduling, aircrew performance or other constraints prevent aircrew from completing the required training, that flight shall not count towards completion of the training syllabus.

d. After completion of adequate practice sessions, each candidate FRS TACDEMO aircrew will perform the entire high show at home field in order to be observed by his/her CO and Wing Commander (or their designated representative). The Wing Operations Department will assist in arranging this demonstration flight. If the FRS TACDEMO checkride and personal interview with the Commodore are acceptable, the aircrew's name will be placed on the 3700 Notice and the aircrew will receive their FRS TACDEMO qualification letter.

e. When requested, FRS COs will provide in writing the names of qualified FRS TACDEMO aircrew and date of last flown demonstration flight to the Wing. The 3700 Notice will be updated as required. Participation in an

actual FRS TACDEMO or observation by the CO and/or Wing Commander will extend aircrew qualification currency for another year.

2. Performance Evaluation

a. Gradesheets

(1) All FRS TACDEMO syllabus and airshow events, simulated and airborne, shall be graded utilizing the standard FRS TACDEMO gradesheet format.

(2) During the initial qualification phase grade sheets will be completed on all simulator and flight events using the standard grade sheet format. Aircrew trends shall be tracked and briefed appropriately. Tape debrief will be conducted on syllabus flight events

(3) Aircrew shall conduct tape/RMM reviews and complete gradesheets after each syllabus event (simulator and/or flight) as well as after each FRS TACDEMO practice or performance at an airshow site. Aircrew shall review their tapes upon return to home field and then fill out applicable gradesheets for each event. The gradesheet will be filled out by the qualified simulator or flight observer for the respective syllabus event. Qualified FRS TACDEMO aircrew may fill out their own gradesheet once their name appears on the 3700 Notice. The FRS TACDEMO Coordinator will complete the gradesheet for all simulator and flight progress checks and checkrides.

(4) Upon completion of the TACDEMO syllabus grade sheets will be completed on the first simulator and flight of each month of the TACDEMO season. Additionally, grade sheets shall be completed for events with gross deviations. Aircrew trends shall be tracked and briefed appropriately. Qualified FRS TACDEMO aircrew may fill out their own grade sheet once their name appears on the 3700 Notice. The FRS TACDEMO Coordinator will complete the gradesheet for all simulator and flight progress checks and checkrides.

(5) For all simulator and flight progress checks, the FRS TACDEMO Coordinator shall review the simulator playback or flight CVRS and fill out the respective gradesheet.

(6) Aircrew shall conduct debriefs following each TACDEMO related event. Debriefs shall be conducted as soon after an event as possible. Tape debriefs may be conducted in squadron spaces upon RTB following performances at remote locations.

(7) Aircrew should not complete a syllabus event until the gradesheet from the previous event has been completed and reviewed. Exceptions may be made in the case of back-to-back simulator sessions.

(8) All gradesheets shall be routed through the FRS TACDEMO Coordinator for review and filing into FRS TACDEMO aircrew's respective training jackets. Aircrew trends shall be tracked and briefed appropriately.

b. Training Jackets

(1) All FRS TACDEMO candidates and qualified aircrew shall have individual training jackets to be maintained and updated by the FRS TACDEMO Coordinator. The FRS TACDEMO Coordinator shall be responsible for presenting these training jackets to the FRS CO and/or Wing Commander for periodic review to discuss individual aircrew performance trends.

(2) All completed FRS TACDEMO gradesheets will be posted in respective aircrew training jackets.

(3) FRS TACDEMO syllabus progression shall be logged in respective aircrew training jackets.

(4) All simulator practice sessions (observed and unobserved) shall be logged in the respective aircrew training jackets.

3. Briefing and Debriefing

a. Simulator Briefing/Debriefing

(1) All FRS TACDEMO syllabus simulator event briefs shall be scheduled for a minimum of 30 minutes prior to box time. Debriefs are expected to take a minimum of 30 minutes after completion of box time. FRS TACDEMO aircrew candidates shall be responsible for conducting the brief, with the qualified FRS TACDEMO aircrew observer interjecting as required. In the case of a F/A-18F, one aircrew shall conduct the brief, while the other conducts the debrief, flip-flopping roles on subsequent events.

(2) Briefs shall include at a minimum a review of the maneuvers and/or flight profile to be executed, weather conditions, NOTAMS, specific briefing items outlined in the syllabus event guide, crew coordination to include ejection criteria, and mandatory briefing items to include unusual attitude recover boldface and emergency dive recovery boldface. Aircrew conducting the brief shall be able to recite the procedures of all applicable maneuvers by memory, and demonstrate knowledge of all the relevant execution notes for each maneuver. The simulator observer will interject with appropriate knowledge and/or technique, and will ultimately be responsible for determining if the FRS TACDEMO candidate's procedural knowledge is adequate to conduct the simulator event.

(3) Debriefs shall include a thorough review of aircrew performance in the simulator, questions about procedures and/or techniques, and what to expect on the next event. At a minimum, aircrew shall review playback of the simulated maneuvers when the capability exists to discuss procedures and technique. Ultimately, the qualified simulator observer will be responsible for determining if aircrew performance is adequate for progression to the next simulator event.

(4) The FRS TACDEMO Coordinator shall be present during the entirety of the debrief for the SDEMO-008 and SDEMO-012.

b. Flight Briefing/Debriefing

(1) All FRS TACDEMO syllabus flight event briefs shall be scheduled for a minimum of two hours prior to scheduled takeoff. Debrief completion shall be scheduled for a minimum of two hours after scheduled land time. The FRS TACDEMO candidate aircrew as well as a qualified FRS TACDEMO observer will be present for the duration of the brief. FRS TACDEMO aircrew candidates shall be responsible for conducting the brief, with the qualified FRS TACDEMO aircrew observer interjecting as required. In the case of a F/A-18F, one aircrew shall conduct the brief, while the other conducts the debrief, flip-flopping roles on subsequent events.

(2) Briefs shall include at a minimum a review of the maneuvers and/or flight profile to be executed, weather conditions, NOTAMS, specific briefing items outlined in the syllabus event guide, mandatory briefing items to include unusual attitude recover boldface and emergency dive recovery boldface. Aircrew conducting the brief shall be able to recite the procedures of all applicable maneuvers by memory, and demonstrate knowledge of all the relevant execution notes for each maneuver. The observer will interject with appropriate knowledge and/or technique, and will ultimately be responsible for determining if the FRS TACDEMO candidate's procedural knowledge is adequate to conduct the flight event.

(3) Debriefs shall include a thorough review of aircrew performance in the aircraft, questions about procedures and/or techniques, and what to expect on the next event. Aircrew shall review tape/RMM playback of the maneuvers to discuss procedures and technique, in addition to reviewing MFOQA. Ultimately, the qualified observer will be responsible for determining if aircrew performance is adequate for progression to the next flight event. The FRS TACDEMO Coordinator shall be present during the entirety of the debrief for the FDEMO-004 and FDEMO-009.

4. Currency Requirements and Restrictions for FRS TACDEMO Aircrew

a. Currency for Practice

(1) Must have flown one flight in 6 days, two flights in 14 days, one of which must contain dynamic maneuvering.

(2) The aircrew must have flown the FRS TACDEMO maneuvers in an appropriate flight simulator within the previous 6 days (two days if not a currently qualified FRS TACDEMO aircrew).

(3) If more than 21 days since the last demonstration or practice, demonstration aircrew shall fly a minimum of two one-hour simulator practices (at least one of which is observed by FRS TACDEMO qualified aircrew, to include emergency procedure training) prior to a practice airshow at 500' ft AGL MINALT.

(4) If more than 30 days since the last demonstration or practice, demonstration aircrew shall fly a minimum of three one-hour simulator practices (at least one of which is observed by FRS TACDEMO qualified aircrew, to include emergency procedure training) prior to a practice airshow at 500' AGL MINALT.

(5) If more than 30 days since the last demonstration or practice, demonstration aircrew shall fly a minimum of three sim with six full profiles in the simulator (at least one of which observed by FRS TACDEMO qualified aircrew, to include emergency procedure training) prior to a practice airshow at 200' AGL MINALT.

(6) If more than 60 days since the last demonstration or practice, demonstration aircrew shall complete a tailored re-qualification syllabus as determined and set forth by the FRS TACDEMO coordinator and approved by respective squadron Commanding Officer.

b. Currency for Demonstration

(1) Must have flown one flight in 6 days, two flights in 14 days, one of which must contain dynamic maneuvering. In addition, aircrew must be Low Altitude Training current, having flown in the Low Altitude Training environment (<1,500 ft AGL) for a minimum of 10 minutes within 30 days of a FRS TACDEMO flight (except the FDEMO-001).

(2) Must have flown a practice or FRS TACDEMO flight within the previous 10 days. If the FRS TACDEMO crew is unable to meet this requirement, they may fly a practice at the airshow site provided it doesn't occur during a show open to the general public and they meet the currency requirements in paragraph 4a. If the FRS TACDEMO flight is to be flown over water, a practice or FRS TACDEMO must be flown within the previous 6 days.

c. FRS TACDEMO Practice and Flight Restrictions

(1) The absolute minimum altitude for all F/A-18 FRS TACDEMO maneuvers is 200 ft AGL. Takeoffs and landings are exceptions.

(2) All syllabus and practice flights at home field must include a ground or airborne (low safe) observer. In all cases, the observer shall have two-way radio communications and constant visual contact with the practicing aircraft. Qualified observers for practice sessions may be any qualified FRS TACDEMO pilot or WSO.

(3) Unless performed in the carrier/ship environment, syllabus flights over-water are not authorized, with the exception of the FDEMO-001. Aircrew scheduled to perform a FRS TACDEMO over water shall execute a minimum of two simulator sessions over water prior to the over-water performance.

(4) F/A-18C weather minimums are 10,000 ft / 5 SM for the High Show, 4,500 ft / 5 SM for the Medium Show, and 1,500 ft / 5 SM for the Low Show, all with a 360 degree defined horizon.

(5) F/A-18E/F weather minimums are 10,000 ft / 5 SM for the High Show, 3,000 ft / 5 SM for the Low Show, and 1,500 ft / 5 SM for the Flat Show, all with a 360 degree defined horizon.

5. F/A-18 FRS TACDEMO Syllabus

a. Simulator Syllabus

(1) SDEMO-001: High Show Part Task Training
(2) SDEMO-002: High Show Part Task Training
(3) SDEMO-003: High Show Part Task Training
(4) SDEMO-004: High Show Part Task Training
(5) SDEMO-005: High Show Sequence Training
(6) SDEMO-006: High Show Sequence Training
(7) SDEMO-007: High Show Sequence Training
(8) SDEMO-008: High Show Sequence Progress Check
(9) SDEMO-009: Low/Flat Show Sequence Training
(10) SDEMO-010: Emergency Procedures Training
(11) SDEMO-011: Emergency Procedures Training
(12) SDEMO-012: High Show Checkride

(a) The use of "crash override" during FRS TACDEMO syllabus simulator events is prohibited. If an aircrew "crashes" in the simulator without initiating the ejection sequence, then that simulator event will be considered a FAILURE and will be re-flown. The singular exception to this is during EP training for SDEMO-010 and SDEMO-011 when refining recovery techniques. In all cases, however, by the end of the simulator period emergencies should be consistently handled successfully without "crashing" the simulator during practice failures to complete the session.

(b) The FRS TACDEMO Coordinator shall be present at the simulator console during the entirety (brief/conduct/debrief) of the SDEMO-008 and SDEMO-012.

(c) All FRS TACDEMO simulator syllabus events will be scheduled for a brief time 30 minutes prior to box time, a box time of one hour, and a debrief time of 30 minutes with the exception of the SDEMO-009 through SDEMO-011 which necessitate a 45 minute brief time, 1.5 hour box time, and 45 minute debrief time.

b. Flight Syllabus

(1) FDEMO-001: High Demo Flight Introduction (5,000 ft AGL MINALT)
(2) FDEMO-002: High Demo Flight Introduction (1,000 ft AGL MINALT)
(3) FDEMO-003: High Demo Flight Practice (1,000 ft AGL MINALT)
(4) FDEMO-004: High Demo Flight Introduction (500 ft AGL MINALT)
(5) FDEMO-005: High Demo Flight Practice(500 ft AGL MINALT)
(6) FDEMO-006: High Demo Flight Progress Check (500 ft AGL MINALT)
(7) FDEMO-007: Low/Flat Show Flight Practice (200 ft AGL MINALT)
(8) FDEMO-008: High Demo Flight Practice (200 ft AGL MINALT)
(9) FDEMO-009: High Demo Flight Checkride (200 ft AGL MINALT)

(a) FRS TACDEMO candidate pilots are required to complete all flights in the syllabus. FRS TACDEMO candidate WSOs will begin the flight syllabus beginning at the FDEMO-003.

(b) FDEMO-007, FDEMO-008, and FDEMO-009 shall be conducted at the DEMO candidates' home airfield or a suitable alternate airfield complex.

(c) The FRS TACDEMO Coordinator shall be present during the entirety (brief/conduct/debrief) of the FDEMO-001, FDEMO-002, FDEMO-004, FDEMO-005, FDEMO-008, and FDEMO-009.

c. FRS TACDEMO Syllabus Flight Aircrew Composition/Platform

(1) FDEMO-001: F/A-18C - FRS TACDEMO candidate front cockpit (F/A-18D)
- FRS TACDEMO qualified pilot aft cockpit (F/A-18D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18F)
- FRS TACDEMO qualified pilot aft cockpit (F/A-18F)
Note: FDEMO-001 only, FS or FT allowed.

(2) FDEMO-002: F/A-18C - FRS TACDEMO candidate front cockpit (F/A-18D)
- FRS TACDEMO qualified pilot aft cockpit (F/A-18D)
FA-18E/F - FRS TACDEMO candidate front cockpit (F/A-18FS)
- FRS TACDEMO qualified aircrew aft cockpit (F/A-18FS)

(3) FDEMO-003: F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/FS)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

(4) FDEMO-004 :F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/FS)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

(5) FDEMO-005: F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/F)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

(6) FDEMO-006: F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/FS)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

(7) FDEMO-007: F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/FS)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

(8) FDEMO-008: F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/FS)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

(9) FDEMO-009: F/A-18C - FRS TACDEMO candidate (F/A-18A-D)
F/A-18E/F - FRS TACDEMO candidate front cockpit (F/A-18E/FS)
- FRS TACDEMO candidate WSO aft cockpit (F/A-18FS)

F/A-18 FRS TACDEMO SIMULATOR SYLLABUS

SDEMO-001

Mission: Introduce the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Discuss pre-takeoff checks unique to flight demonstrations

b. F/A-18 dive recovery rules

c. Dirty Roll negative AOA notes and warnings (F/A-18E/F only)

d. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Execute as a part task trainer, repeating specific maneuvers as required for practice and proficiency

a. <u>F/A-18C FRS TACDEMO High Show Maneuvers</u>

(1) Maximum performance takeoff to 60/60 climb
(2) High Speed Pass
(3) Vertical Reversal

b. <u>F/A-18E/F FRS TACDEMO High Show Maneuvers</u>

(1) Dirty Roll to Half Cuban-8
(2) Flat Pirouette
(3) Minimum Radius Turn

SDEMO-002

Mission: Introduce the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-001

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Weather contingencies

b. FOD prevention measures

c. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Execute as a part task trainer, repeating specific maneuvers as required for practice and proficiency

a. <u>F/A-18C FRS TACDEMO High Show Maneuvers</u>

(1) Double Immelman
(2) Minimum Radius Turn
(3) Carrier Configuration Pass

b. <u>F/A-18E/F FRS TACDEMO High Show Maneuvers</u>

(1) High Speed Pass to Abrupt Pull-Over Reversal
(2) Vertical Pirouette
(3) Square Loop to 90/40 Reversal

SDEMO-003

Mission: Introduce the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT OR TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-002

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Conditions which require an immediate FRS TACDEMO knock-it-off

b. Aircrew currency for FRS TACDEMO practice

c. High Alpha Pass Emergency Procedures

d. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Execute as a part task trainer, repeating specific maneuvers as required for practice and proficiency

a. <u>F/A-18C FRS TACDEMO High Show Maneuvers</u>

(1) Pitch Rate Demo
(2) High Alpha Pass
(3) Carrier Break, Touch & Go Show Center, Full Stop

b. <u>F/A-18E/F FRS TACDEMO High Show Maneuvers</u>

(1) Inverted Whisper Pass
(2) High Alpha Pass to Split-S
(3) Horizontal Pitch Rate Demo

SDEMO-004

Mission: Introduce the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-003

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Aircrew currency for FRS TACDEMO performance

b. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Execute as a part task trainer, repeating specific maneuvers as required for practice and proficiency

a. F/A-18C FRS TACDEMO High Show Maneuvers. Practice any maneuvers at discretion of FRS TACDEMO candidate aircrew and/or simulator observer

b. F/A-18E/F FRS TACDEMO High Show Maneuvers

(1) Photo Pass
(2) Low Transition
(3) CV Break to Full-Stop

SDEMO-005

Mission: Introduce the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-004

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. FRS TACDEMO Observer responsibilities

b. FRS TACDEMO weather minimums

c. CSFWP 3700 Notice

d. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Perform a minimum of three Standard Demonstration profiles. With minimal coaching during the routine. Emphasis to be placed on crisp execution of maneuvers and adherence to minimum altitudes and target airspeeds

a. <u>F/A-18C FRS TACDEMO High Show Maneuvers</u>. All maneuvers

b. <u>F/A-18E/F FRS TACDEMO High Show Maneuvers</u>

(1) All maneuvers
(2) Airstart to Dirty Roll to Half Cuban-8

SDEMO-006

Mission: Practice the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction.
(2) SDEMO-005

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU, Winds 300 / 15

Brief:

a. Effects of wind on FRS TACDEMO profile

b. Airshow site limitations resulting in profile adjustment

c. Aircrew options to close the FRS TACDEMO profile

d. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Perform a minimum of three Standard Demonstration profiles with thorough familiarity and without coaching during the routine. Emphasis to be placed on crisp execution of maneuvers and adherence to minimum altitudes and target airspeeds

a. F/A-18C FRS TACDEMO High Show Maneuvers. All maneuvers

b. F/A-18E/F FRS TACDEMO High Show Maneuvers. All maneuvers

SDEMO-007

Mission: Practice the F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction.
(2) SDEMO-006

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Describe each maneuver in sequence to include airspeed, altitude, and "G" parameters and directions of approach

b. Unusual attitude boldface and emergency dive recovery boldface

Flight Conduct: Perform a minimum of three Standard Demonstration profiles with thorough familiarity and without coaching during the routine. Emphasis to be placed on crisp execution of maneuvers and adherence to minimum altitudes and target airspeeds

a. F/A-18C FRS TACDEMO High Show Maneuvers. All maneuvers

b. F/A-18E/F FRS TACDEMO High Show Maneuvers. All maneuvers

SDEMO-008

Mission: F/A-18 FRS TACDEMO High Show Maneuvers

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction.
(2) SDEMO-007

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS OCEANA
F/A-18E/F 12,500 pounds of fuel
WX CAVU, Winds 310 / 10

Brief:

a. Describe each maneuver in sequence to include airspeed, altitude, and "G" parameters and directions of approach

b. Unusual attitude boldface and emergency dive recovery

Flight Conduct: Perform a minimum of three Standard Demonstration profiles with thorough familiarity and without coaching during the routine. Emphasis to be placed on crisp execution of maneuvers and adherence to minimum altitudes and target airspeeds. The Demo Coordinator shall be present during the entirety (brief/conduct/debrief) of this event

a. F/A-18C FRS TACDEMO High Show Maneuvers. All maneuvers

b. F/A-18E/F FRS TACDEMO High Show Maneuvers. All maneuvers

SDEMO-009

Mission: Introduce the F/A-18E/F FRS TACDEMO Low and Flat Maneuvers

Mission time: 1.5
Brief time: 0.8
Debrief time: 0.8

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-008

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS Oceana
F/A-18E/F 12,500 pounds of fuel
F/A-18E/F Low profile WX 4000' / 5 SM; Winds 160 / 10
F/A-18E/F Flat profile WX 2000' / 5 SM; Winds 160 / 10

Brief:

a. Describe each maneuver in sequence to include airspeed, altitude, and "G" parameters and directions of approach

b. Low altitude weather criteria

c. Inadvertent IMC procedures

d. Unusual attitude boldface and emergency dive recovery

Flight Conduct: F/A-18E/F: Perform a minimum of two Low Altitude FRS TACDEMO Profiles with minimal coaching. Perform a minimum of two Flat Altitude Demonstration profiles with minimal coaching

a. <u>F/A-18C FRS TACDEMO Medium/Low Altitude Maneuvers</u>

(1) All Medium Altitude Maneuvers
(2) All Low Altitude Maneuvers

b. <u>F/A-18E/F FRST TACDEMO Low/Flat Altitude Maneuvers</u>

(1) All Low Altitude Maneuvers
(2) All Flat Altitude Maneuvers

SDEMO-010

Mission: To demonstrate proficiency with the FRS TACDEMO High Show profile and in handling emergencies in the FRS TACDEMO environment

Mission time: 1.5
Brief time: 0.8
Debrief time: 0.8

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-009

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS Oceana
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Engine loss

b. FCS failures

c. 50 NM BINGO dirty BINGO profile, dual engine

d. Unusual attitude boldface and emergency dive recovery

Flight conduct: The following emergencies will be given during the conduct of the Standard demonstration profile(s):

a. Loss of thrust at rotation

b. Unsafe landing gear after takeoff

c. INS failure

d. Radar altimeter failure

e. Loss of engine during Half Cuban-8

f. Loss of engine during high alpha pass

g. HUD failure

h. Inadvertent IMC

i. Planing link failure to divert with arresting gear 50 NM away

j. Other emergencies at IP discretion

SDEMO-011

Mission: To demonstrate proficiency with the FRS TACDEMO High Show profile and in handling emergencies in the FRS TACDEMO environment

Mission time: 1.5
Brief time: 0.8
Debrief time: 0.8

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-010

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS Oceana
F/A-18E/F 12,500 pounds of fuel
WX CAVU

Brief:

a. Engine loss

b. FCS failures

c. Unusual attitude boldface and emergency dive recovery boldface

Flight conduct: The following emergencies will be given during the conduct of the Standard demonstration profile(s):

a. Unsafe landing gear after takeoff

b. Flight control surface failures (i.e. rudder, aileron, stab) during Dirty Roll on take off

c. Four channel AOA failure

d. Flight control surface failures (i.e. rudder, aileron, stab) during Minimum Radius Turn

e. Leading Edge Flap failure on Tail Stand

f. Loss of engine during high alpha pass (loss of engine or VEN failure)

g. Flight control surface failures (i.e. rudder, aileron, stab) during Flat Pirouette

h. Flight control surface failures (i.e. rudder, aileron, stab) during Vertical Pirouette

i. Flight control surface failures (i.e. LEF, stab) just prior to final pull of Square Loop.

j. Other emergencies at IP discretion

SDEMO-012

Mission: F/A-18 FRS TACDEMO High Show profile check ride. To demonstrate proficiency with the Standard Demonstration profile and in handling emergencies in the flight demonstration environment

Mission time: 1.5
Brief time: 0.5
Debrief time: 0.5

Simulator: C/D or E/F DMT or TOFT

Prerequisites: (1) Review current FRS TACDEMO instruction
(2) SDEMO-011

Set-up: DEMO IC Simulator Set; RWY 32L NAS Lemoore / RWY 5R NAS Oceana
F/A-18E/F 12,500 pounds of fuel
WX CAVU; Winds 310 / 10

Brief:

a. Describe each maneuver in sequence to include airspeed, altitude, and "G" parameters and directions of approach

b. FRS TACDEMO emergency procedures

c. Unusual attitude boldface and emergency dive recovery

Perform a minimum of three High Altitude Demonstration profiles without coaching. Airborne emergencies shall be presented at the discretion of the simulator observer and/or Demo Coordinator. The Demo Coordinator shall be present for the entire event (brief/conduct/debrief)

a. F/A-18C FRS TACDEMO High Show Maneuvers. All maneuvers

b. F/A-18E/F FRS TACDEMO High Show Maneuvers. All maneuvers

INSTRUCTIONS FOR COMPLETING FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) GRADESHEETS

GRADING CRITERIA:

Maneuver Grades

GRADE 0 -- Altitude below minimum, or airspeed out of limits

GRADE 1 -- Altitude >1/2X below target, and airspeed within limits

GRADE 2 -- Altitude ≤1/2X below target or >1/2X above target, and airspeed within limits

GRADE 3 -- Altitude ≤1/2X above target, and airspeed +/- 25 knots of target

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

Notes:

X = the distance between target and minimum altitudes.

Airspeed criteria do not apply to A-10 unless airspeed is below minimum.

Overall Grade = Average Maneuver Score (limited as follows):

any maneuver grade of 0 limits overall grade to 1

more than two maneuvers graded 0 limits overall grade to 0

0 = Dangerous performance

1 = Safe performance, but trend is low

2 = Average performance

3 = Outstanding performance

4 = Perfect performance; no deviations

Demo Pilot and Observer:

1. Review HUD tape and ground tape of every practice and demonstration and forward to Demo Coordinator.

Demo Coordinator:

1. Review gradesheets.
2. Add remarks for maneuvers in appropriate cells. Any maneuver graded zero must have. Any demonstration graded zero must have remarks with recommended additional training.
3. Sign, date, and file grade sheet.

HOW TO INCLUDE REMARKS IN 'Remarks' COLUMN

1. Right click appropriate cell in remarks column.
2. Choose "Insert Comment"
3. Type in your rank/name, followed by remarks.

ADDITIONAL REMARKS AT END OF GRADE SHEET

Use this remarks section as applicable; for Heritage Flights; and for other comments.

TO PRINT INSERTED REMARKS ON GRADE SHEETS

1. Right click on cell and select "show comment". Leave it in place or move it to where you prefer.
2. Select "File", then "Page Set-up", then

F/A-18E/F FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) EXAMPLE GRADESHEET

F/A-18E-F FRS TACDEMO Rhino Gradesheet	Date	22-Jan-15			Reviewed	Name				Date	Initials
	Location	Sim			Demo Aircrew	Rhigans					
	Profile	High			Observer	Fonda					
	Weather	CAVU			Coordinator						
	Field Elev	20'									
	Legacy Flight?	N/A			Graded by:						
	Density Alt	20'			Filed by:						
Maneuver	Target Alt (AGL)	Minimum Alt (AGL)	Actual Alt (AGL)	Δ	Target A/S / AOA / G / Angle / HDG	Min A/S / AOA / G / Angle / HDG	Max A/S / AOA / G / Angle / HDG	Actual A/S / AOA / G / Angle / HDG	Δ	Remarks / Safety?	Grade
Dirty Roll Initiation	300	300									
Half Cuban-8 Entry A/S & Altitude	1000	800			250	240	270				
Half Cuban-8 G					3.0	2.0	3.0				
Tail Stand	1500	1400			<300						
Flat Pirouette Entry A/S					330	340	370				
Flat Pirouette Entry G					5.0 - 6.0	4.5	6.5				
Over the top AOA					35	33	37				
Pirouette A/S					175	165	185				
Pirouette AOA					35	33	37				
Recovery Altitude	3000	2900									
MRT Entry A/S & Altitude	500	450			320	315	330				
MRT A/S					325-365	315	375				
MRT Altitude	500-700	450									
Tail Stand Entry A/S					270-280	270	300				
Tail Stand Exit Altitude	1200	1000									
HB Pass Entry A/S & Altitude	500	450			0.95	0.94	0.98				
Pitch Over Recovery A/S & Altitude	3000	2900			300	290	320				
Vertical Pirouette Entry A/S & Altitude	500	450			350	340	360				
Vertical Pirouette Entry G					3.0-4.0	3.0	4.0				
Push-over A/S					220	220	250				
Pirouette Altitude	5000	4900									
Pirouette Pitch NU					60	70	40				
Pirouette Initiation A/S					220	190	210				
Pirouette AOA					35	33	37				
Recovery Altitude	3500	3300									
Square Loop Entry A/S & Altitude	500	450			350	340	360				
1st Corner Altitude	3500	3400									
2nd Corner A/S & Altitude	4500	4400			250	240	260				
Inverted Time					8	6	10				
Recovery A/S & Altitude	3000	2900			300	290	310				
90/40 A/S & Altitude	1000	900			250-300	290	310				
90/40 Pitch NU					40	35	45				
Inverted Whisper Entry A/S & Altitude	500	450			420	410	430				
Inverted Attitude (pitch)					5	3	8				
Inverted Attitude (roll)					180	175	185				
Inverted Time					8	6	10				
Tuck Under Altitude	1000	900									
High-Alpha Pass Entry Altitude	700	670									
High-Alpha Pass AOA					23	22	25				
Split-S Entry A/S					150	140	160				
Split-S Pitch Attitude NU					50	55	45				
Split-S Altitude	3000	2900									
HPR Entry A/S & Altitude	500	450			300	290	320				
Vertical Pitch NU					40	35	45				
Tuck Under A/S & Altitude	1000	900			300	290	320				
CV Break A/S & Altitude	500	450			400	380	430				
Photo Pass Entry A/S & Altitude	500	450			400	380	430				
Low Transition A/S & Altitude	50	40			330	310	350				
Low Transition Pitch Attitude NU					60	40	70				
Tuck Under Altitude	1000	900									
										Overall Grade:	

Aircrew remarks:

Observer Remarks:

Demo Coordinator Remarks:

F/A-18C FLEET REPLACEMENT SQUADRON TACTICAL AIRCRAFT FLIGHT DEMONSTRATION (FRS TACDEMO) EXAMPLE GRADESHEET

F-18 TACDEMO Hornet Gradesheet			Reviewed	Name	Date	Initials
	Date		Demo Aircrew			
	Location		Observer			
	Profile		Coordinator			
	Weather					
	Field Elev		Graded by:			
	Legacy Flight?	Y/N	Filed by:			
	Density Alt					

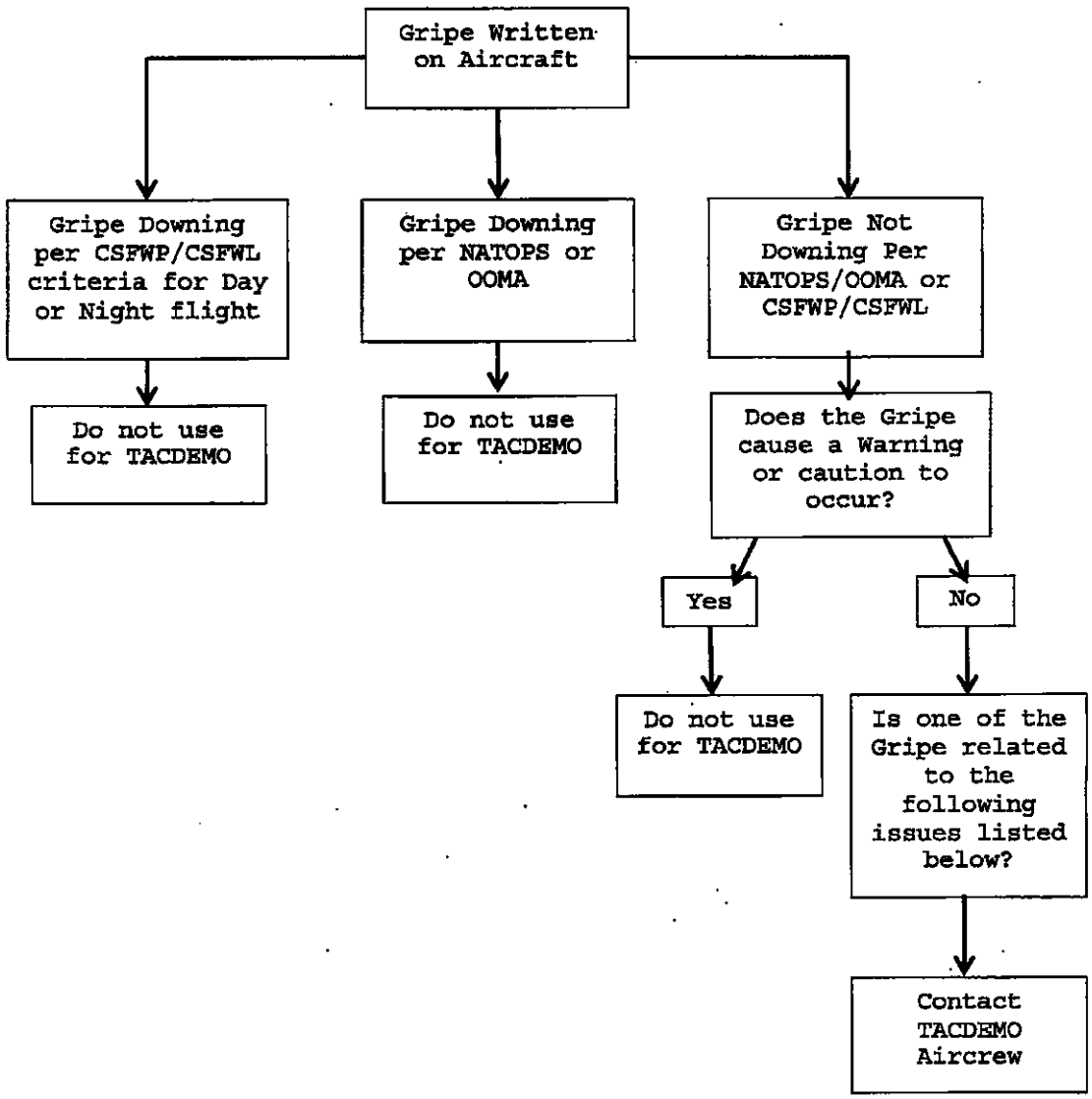
Maneuver	Target Alt (AGL)	Minimum Alt (AGL)	Actual Alt (AGL)	Δ	Target A/S / AOA / G / Angle / HDG	Min A/S / AOA / G / Angle / HDG	Max A/S / AOA / G / Angle / HDG	Actual A/S / AOA / G / Angle / HDG	Δ	Remarks / Safety?	Grade
LOW TRANSITION 90/90	50	50			310						
HIGH SPEED PASS	300	300			.95	.93	.96				
Pull up G							7.5G				
Vertical Reversal		4000			12-20 AOA/ 5G						
DOUBLE IMMELMAN	500	500			450	425	470				
Wings Level Pull						5G	6.5G				
Second Immelman entry					280	280					
Roll	7300				270-280	270	300				
Vertical Recovery	4500	4500			350	350					
Level flight	1000	1000									
MIN RADIUS TURN	500	450			350	340	360				
CARRIER CONFIG PASS	500	500			<250						
Cuban Eight Entry					200	190	220				
					25 AOA						
Unloaded Roll Altitude	2300	2200	2400		230	300	320				
Recovery A/S & Altitude	1200				310	70	40				
PITCH RATE DEMO	500	450	550		310	300	320				
High-Alpha Pass Entry Altitude	700	670	750								
High-Alpha Pass AOA					25	23	27				
1/2 CUBAN EIGHT Recovery	2300	2200	2400								
Level @ 1000	1000	1000	1000								
CV Break A/S & Altitude	500	450	550		450	420	470				
Photo Pass Entry A/S & Altitude	500	450	550		300	290	330				
Low Transition A/S & Altitude	50	40	80		330	310	350				
Low Transition Pitch Attitude NU					60	40	70				

Aircrew remarks:

Observer Remarks:

Overall Grade:

MAINTENANCE TACDEMO DOWNING DISCREPANCY CHART (VFA-122)



Advisories: ABLIM, ACI, CONFG, FADEC, F-QTY, HEAT(Crossed out), Skid and VVEL
Each jet shall have one TACDEMO profile/practice to be taken to a show.