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Flying Operations

AIRCRAFT DEMONSTRATIONS (C-17, C-130, KC/NKC-135)

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This manual implements Air Force Policy Directive (AFPD) 11-2, *Aircrew Operations*, and Air Force Instruction (AFI) 11-209, *Participation in Aerial Events*. It designates Air Mobility Command (AMC), as lead command, to standardize aircraft demonstrations and capabilities demonstrations applicable to C-17, C-130 (all variants), and KC-135 (all variants) mobility aircraft. This manual applies to civilian employees and uniformed members of the Regular Air Force, Air Force Reserve and Air National Guard. Ensure all records generated as a result of processes prescribed in this publication are maintained in accordance with Air Force Instruction 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. MAJCOMs, field operating agencies and direct reporting units may supplement this manual. Forward one copy to AMC/A38 after publication. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional's chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. Refer to DAF Instruction (DAFI) 33-360, *Publications and Forms Management*, **Table 1.1** for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's commander for non-tiered compliance items. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply

endorsement by the Air Force. Compliance with the attachments in this publication is mandatory.

SUMMARY OF CHANGES

This publication is substantially revised and must be reviewed in its entirety. This update accomplished the following: changes AFI to Air Force Manual (AFMAN); removed selected references to the C-9, C-135, C-141, E-4, and UH-1 which are no longer in AMC's inventory; incorporated Interim Change 2004-1; implements Tier waiver authorities; added **Chapter 2** on Roles and Responsibilities; updated points of contact and associated hyperlinks; added approved demonstration profiles for C-17, C-130, and KC/NKC-135; capabilities demonstrations replaces the term capabilities exercise.

Chapter 1

INTRODUCTION

1.1. *Aerial Demonstrations.* Aircraft demonstrations and capabilities demonstrations, see **Chapter 5**, are performed during military or public events to increase public understanding of Air Force roles and missions. This manual prescribes procedures for oversight and performance of aircraft demonstrations and capabilities demonstrations for mobility aircraft. It establishes approved aircraft demonstrations profiles to be used when conducting aircraft demonstrations in C-17, C-130, and KC/NKC-135. Aircraft demonstration profiles are listed in **Attachments 2**, **3** & **4** of this manual. Aircraft demonstrations for the C-5, C-12, C-20, C-21, C-32, C-37, C-38, KC-10, and VC-25 are not authorized. **(T-1).** Performance of flyovers, aerial reviews and single maneuver events are governed by AFI 11-209 and are not covered by this manual. Nothing in this manual constitutes authority to deviate from AFI 11-209, AFMAN 11-2 *Mission Design Series* (MDS), Vol 1, *MDS Aircrew Training*, AFMAN 11-2 MDS, Vol 3, MDS *Operations Procedures*, AFMAN 11-202, Vol 3, *Flight Operations*, and Technical Order (T.O.) 1C-MDS-1, *Flight Manual* for the cited aircraft.

1.2. *Aircraft Demonstration Program Execution. The Aircraft Demonstration Program is planned and executed by AMC, Air Education and Training Command (AETC), and Pacific Air Forces (PACAF) aircrews only. As lead command, the AMC Commander designates two teams per designated base per AMC Major Weapons System and one team for PACAF and AETC-designated bases per Major Weapons Systems responsible to perform aerial demonstrations worldwide.*

1.3. Mobility Concept of Operations (CONOPS). Each year AMC will update and publish the Mobility CONOPS implementing this AFMAN. The CONOPS is located on the AMC/A38O SharePoint® site: **https://eim2.amc.af.mil/org/a3o/O/default.aspx** and the electronic flight bag. The CONOPS designates the specific units in each MAJCOM that will participate in the aircraft demonstration program for the current airshow season.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. AF/A3O. Will approve new aircraft demonstration profiles as well as any changes to profiles in this AFMAN.

2.2. AMC Commander. Will provide oversight, guidance, and policy for the aerial demonstration program for mobility aircraft and publish and maintain this AFMAN.

2.3. MAJCOMs. Will provide headquarters oversight, guidance, and policy for their respective aerial demonstration programs and publish and maintain any authorized supplements to this publication. For the purpose of this manual, the Air Force, District of Washington and ANG are functionally considered to be a Major Command (MAJCOM).

2.3.1. A3V (or equivalent) will establish a primary point of contact for managing issues pertaining to AFMAN and MDS-profile guidance, and kneeboards.

2.3.2. A3O (or equivalent) will establish a primary point of contact for managing issues pertaining to aircraft demonstration policy and event staff package coordination/management.

2.3.3. A3T (or equivalent) will establish a primary point of contact for managing issues pertaining to ground/flight training guidance and materials required in support of aerial events.

2.4. Wing Commanders.

2.4.1. Designate an OPR to manage the wing's Aerial Demonstration Program and will select the most qualified crew members for aircraft demonstrations certification. (T-2).

2.4.2. Maintain an active oversight of aerial event management, training, and execution. (T-2).

2.5. Operations Group Commanders.

2.5.1. Establish the unit certification process, culminating in an initial demonstration certification and recurring seasonal certifications. **(T-2)**.

2.5.2. Manage aerial event training and execution. **(T-2).**

2.5.3. Identify a point of contact and an alternate for aerial event management and coordination. This point of contact and alternate will serve as the principle subject matter experts in regard to aerial events. These individuals will act as a ready resource for aerial event project officers and crew members involved in the planning and execution of a demonstration covered by this AFMAN. They will also serve as the primary points of contact for AMC action officers engaged in the event coordination and approval process. **(T-2).**

2.6. Squadron Commanders. Will select and recommend highly experienced crew members for the aerial demonstration program. **(T-2).**

Chapter 3

AIRCRAFT DEMONSTRATIONS

3.1. Aircraft Demonstration Profiles.

3.1.1. Aircraft demonstration profiles are compilations of basic aircraft flight and ground maneuvers sequenced to present the full range of aircraft capabilities to the audience. Demonstration profiles have been developed for the C-17, C-130, and KC/NKC-135. MAJCOMs operating these aircraft to perform aircraft demonstrations will adhere to the profiles in **Attachments 2, 3, and 4** (specific to MDS) unless an alternate profile is approved in accordance with **paragraph 3.2**

3.1.2. Squadron commanders will select one certified demonstration pilot to fulfill the role of safety observer for each demonstration crew. **(T-2)**. The safety observer shall provide oversight of the entire demonstration, monitor aircrew performance against established maneuver criteria, monitor overall safety of the flight, and lead the post-flight debrief. **(T-2)**. Safety observer will not be assigned additional crew duties. **(T-2)**. The safety observer should use the approved demonstration kneeboard to assist in note-taking and parameter verification. The demonstration kneeboards may be obtained from AMC/A38. Following each flight or simulator, the safety observer will debrief the crew on the notes and critiques covering the simulator/flight. **(T-2)**. Special emphasis during training should be placed on evaluating crew resource management and maneuver parameters, knock-it-off criteria, and thorough post-flight crew debriefs.

3.2. Non-Standard Aircraft Demonstration Profiles. Aircrews desiring to fly a "one-time" aircraft demonstration profile differing from the approved demonstration profiles in **Attachments 2, 3, and 4** must request a waiver from their respective MAJCOM (can be delegated to MAJCOM/A3) for the non-standard profile. In the waiver request, explain why the approved aircraft demonstration profiles are not applicable and include sufficient information on the proposed non-standard profile to permit evaluation at the headquarters, to include at a minimum:

3.2.1. MDS aircraft (and number) and types of formations (similar or dissimilar), if applicable.

3.2.2. Airspeeds and altitudes to be flown.

3.2.3. Holding patterns, if applicable.

3.2.4. Ground tracks to be flown (e.g., entry, demonstration, and or exit tracks).

3.2.5. Type of aircraft maneuvers to be flown.

3.2.6. Type of airdrop (e.g., personnel, heavy equipment, and or container delivery system—include airdrop intended point of impact relative to the crowd line and show line), if applicable.

3.2.7. Survey, drop zone and landing zone info, as applicable.

3.2.8. Name of on-scene ground supervisor and on-scene procedures for communications and control.

3.2.9. Qualification and certification of the participating aircrew members in the maneuvers to be flown.

3.3. Requests for Change. MAJCOMs will submit proposals to change the existing approved demonstration profiles, or to create an entirely new profile for aircraft demonstrations to AMC/A38. Proposals should garner MAJCOM/A3 concurrence before being submitted to AMC. Once approved at AMC, change proposals are forwarded to AF/A3O for final approval.

Chapter 4

AIRCRAFT DEMONSTRATION PROFILE TRAINING AND CERTIFICATION REQUIREMENTS

4.1. Aircraft Demonstration Initial Training Program.

4.1.1. The airshow season is defined as 1 February to 31 January of the following year. Training will be accomplished according to the guidelines of this AFMAN and as supplemented by the operations group commander.

4.1.2. The minimum ground and flying training requirements leading to certification are established in the approved AMC/A3V syllabus for each MDS. Additional flight sorties may be added as required. Syllabus for each MDS can be found on AMC/A38O SharePoint® site.

4.1.3. The approved profiles for aircraft demonstration are compilations of basic flying maneuvers such as assault takeoff and landing, personnel and equipment airdrop, random steep approach, spiral up departure, closed traffic pattern, inflight refueling procedures, aircraft backing procedures etc. AFMAN 11-2 MDS, Volumes 1, 2 and 3 fully document these basic flying procedures, and aircraft maneuvers—MAJCOMs will ensure all aircrew members who fly the demonstration profiles at approved events are trained and qualified in these basic flying procedures and aircraft maneuvers. **(T-2).**

4.1.4. Squadron commanders will select only highly experienced crew members to enter into the aircraft demonstration profile upgrade program. **(T-2).** At a minimum, the aircraft commander will be an instructor pilot with 100 hours of instructor time in aircraft type and be qualified in the events being flown. **(T-2).** The pilot will have at least 1,000 hours in aircraft type and be qualified in the events being flown. **(T-2).** The combat system officer, loadmaster, boom operator, and flight engineer(s) will be instructor qualified in aircraft type and be qualified in the events being flown. **(T-2).** Demonstration mission commanders should be highly experienced pilot or combat system officer instructor on their applicable MDS. **(T-2).**

4.1.5. Aircraft demonstration crew will complete the ground and flight training items as specified in the approved Aircraft Demonstration Pilot Training Syllabus. **(T-2).** This training will be documented in accordance with operations group processes. **(T-2).**

4.1.6. Only crew members that have accomplished the initial aircraft demonstration certification may act as instructors for upgrading crew members. **(T-2)**. If previously certified aircraft demonstration crew members are unavailable, then operations group commanders will select highly qualified instructor crew members to administer the training. **(T-2)**.

4.1.7. *The chief of training, chief of stan/eval,* squadron commander, or designated representative will fly with aircraft demonstration candidates on the final syllabus certification flight. **(T-2)**. Aircrews shall make an "Info Note" in the aircraft forms for maintenance personnel to download military flight operations quality assurance (MFOQA) data (on capable aircraft) from the practice sortie(s). **(T-2).**

4.1.8. Wing commanders will ensure squadron commanders, or designated representative will attend the aircrew debrief following the final syllabus flight. **(T-2)**. For aircraft that are capable, MFOQA data should be downloaded from the sortie and referenced during the debrief. If this information is unavailable due to data corruption or equipment failure or if unable to retrieve data in a reasonable time frame (within 48 working hours), use all available notes and observations from the sortie to complete the debrief.

4.2. Demonstration Profile Certification Program.

4.2.1. Crewmembers must be certified prior to performing aircraft demonstration profiles at approved military or civilian events. **(T-2)**. The MAJCOM commander (Air National Guard Chief) is the certification approval authority but may delegate certification authority no lower than the Numbered Air Force Commander.

4.2.2. Initial Demonstration Certification. Squadron commanders recommend aircrew members for aircraft demonstration certification upon completion of required training. **(T-2)**. The operations group commander will personally interview each candidate, and review training folder information and all available flight data (i.e., video, MFOQA, squadron commander certification flight notes, and safety observer critiques and notes from the final syllabus training sortie) before approving the squadron commander's nomination. **(T-3)**. Wing commander will then interview the candidates. **(T-2)**. Wing commander interview will emphasize items including, but not limited to, strict adherence to the aircraft demonstration profile and parameters, importance of the Safety Observer, and thorough crew brief and debrief. **(T-2)**. The wing commander will document their decision whether to recommend to the MAJCOM commander each candidate for certification. **(T-2)**. The wing commander will ensure the MAJCOM commander receives an appropriate package for each candidate recommended for certification. **(T-2)**. Document "Initial Aircraft Demonstration Certification" on squadron's Letter of X's, once MAJCOM commander approves crew member's demonstration certification.

4.2.3. Recurring Seasonal Certification. Squadron commanders will select squadron members who have completed aircraft demonstration initial training and certification. **(T-2)**. The certification process will be the same as the process in, **paragraph 4.2.2** **(T-2)**. For all subsequent airshow seasons, candidates do not need to re-accomplish initial training, but will complete the following: 1- Conduct a thorough review of applicable portions of this publication, 2- Simulator sortie or practice demonstration flight, and 3- Squadron commander review of simulator or practice demonstration flight via MFOQA data (if capable), simulator video and crew debrief. **(T-2)**.

4.2.3.1. Squadron commander may ride along in the simulator or practice demonstration flight and attend the debrief in lieu of reviewing the MFOQA and video data. Document completion of this training in accordance with normal operations group processes. Document seasonal certification on the squadron's Letter of X's.

4.2.3.2. Seasonal Certification Expiration. Seasonal certification expires each year on 31 January for all MAJCOMs with the exception of PACAF. **(T-2).** PACAF will designate an equivalent date based upon their airshow season. **(T-2)**.

4.3. Aircraft Demonstration Decertification. Squadron commanders or higher command authorities may decertify an individual at any time. Recertification will be in accordance with

paragraph 4.2.2 **(T-2).** However, the squadron commander may direct reaccomplishment of some or all of the initial certification requirements on a case by case basis.

4.4. Aircraft Demonstration Profile Continuation Training. Continuation training will consist of a minimum of two practice profiles within two weeks of the scheduled aircraft demonstration. **(T-2)**. A maximum of one practice profile may be performed in the simulator. The practice profiles will be the specific demonstration profile to be flown at the event. **(T-2)**. Both profiles may be accomplished on the same sortie. Aircrews shall ensure every practice flight is video recorded and make an "Info Note" in the aircraft forms for maintenance personnel to download MFOQA data (on capable aircraft) from the practice sortie(s). **(T-2)**. Squadron commanders shall attend the practice sortie debrief, reviewing all available data (i.e., video, MFOQA, etc.) and safety observer critiques and notes. **(T-2)**. Squadron commanders may establish alternate practice sortie debrief arrangements if they are not co-located with the crew during the practice sortie.

Table 4.1. Qualification, Training, and Certification Level Requirements for Aircraft Demonstration Profiles.

Event Type	Qualification Required	Training Required	Certification Level
Aircraft Demonstration Profiles -AFMAN 11-246 V6, **Attachment 2-4** Profiles -2 or more aircraft maneuvers	Aircraft commander – instructor Pilot w/1,500 total hours, 500 hours in type, 100 Instructor Pilot hours in type and qualified in the events being flown. Safety officer – instructor Pilot w/1,500 total hours, 500 hours in type, 100 Instructor Pilot hours in type and qualified in the events being flown. Pilot – 1,000 total hours, 100 hours in type and qualified in the events being flown. Combat system operator – instructor in type, qualified in event being flown. Loadmaster – instructor in	In accordance with Demonstration Syllabus Pre-Event Simulator Pre-Event Flight	MAJCOM Commander, or as delegated equivalent Certification

	type, qualified in event being flown. Boom operator – instructor in type, qualified in event being flown. Flight engineer – instructor in type, qualified in event being flown.		

Chapter 5

CAPABILITIES DEMONSTRATION

5.1. *P*urpose and Intent of the Capabilities Demonstration. The purpose and intent of the capabilities demonstration is to limit its complexity and/or increased risk by using three distinct events. The events listed in **Table 5.1** can be performed during a capabilities demonstration.

Table 5.1. Events.

Events [1]	C-17[7]	C-130[8]	KC-135
Assault Takeoff	Y	Y	N
Tactical Departure	N	Y	N
Airdrop[2]	Y	Y	N
Tactical Approach[3]	Y	Y	N
Assault Landing	Y	Y	N
Assault Landing (Heavyweight)	N	N	N
Airland	Y	Y	N
Aircraft Back Taxiing (N/A If Back Into or Out Of A Routine Home Station Spot At The Beginning Or End Of The Sortie)	Y	Y	N
Air Refueling Demonstration[4]	Y	N	Y
Modular Aerial Fire Fighting System and Modular Aerial Spray System demonstration.	N	Y	N
Defensive Systems[5, 6]	Y	Y	N

Notes:

1. No more than three events per demonstration.

2. Airdrop demonstrations include a single pass for an actual or simulated drop, flown either single-ship or as a formation. Formations may contain multiple elements involving a number of aircraft up to limits authorized by Department of Defense, USAF, and AMC guidance. In accordance with AFMAN 11-2 MDS, Vol 3 a formation requires a mission commander.

3. Airland demonstrations include any one tactical event or maximum effort landing. Exception: A standard overhead, straight-in, or beam pattern is not considered a tactical event for these purposes and may be flown in conjunction with another capabilities demonstration event, i.e., flying an overhead pattern to a maximum effort landing.

4. Air refueling demonstrations will only be flown in an Aerobatic Demonstration Area/Flying Display Area ("show line"), in accordance with AFI 11-209.

5. Aircraft may be tasked periodically to participate in aerial demonstrations at approved military events using defensive systems-equipped aircraft for the sole purpose of

demonstrating defensive systems equipment in operation during flight. Examples of such military events are the USAF CAPSTONE Aerospace Power Demonstration at Creech AFB, NV, or the USAF Air University Aerospace Power Demonstration at Eglin AFB, FL. MAJCOM/A3 approval is required to demonstrate the operation of defensive systems in flight, to expend defensive systems munitions (chaff/flares) in flight, or to fire defense system laser equipment in flight as part of an aerial demonstration at an approved event.

6. This requirement does not apply for defensive systems-equipped aircraft operating defensive systems in flight to support Department of Defense sanctioned or directed programs or projects to test aircraft or aircraft systems.

7. C-17 tactical events are airdrop, low level, station keeping equipment (SKE)/non-SKE formation, assault Landing/takeoff, tactical approaches/departures, and landings. Events not listed, such as penetration descents and standard traffic pattern altitude downwind and overhead approaches, are not tactical events.

8. C-130 tactical events are airdrop, low level, formation, assault landing/takeoff, tactical approaches/departures, and landings.

5.2. Qualification and Training Requirements. Prior to performing a capabilities demonstration, aircrew members will accomplish applicable items of GT-01 in accordance with the Aircraft Demonstration Profile Training Syllabus. **(T-2).** GT-01 is designed to ensure crews are familiar with applicable guidance and safety considerations. Document completion of the ground training in accordance with operations group processes.

5.3. Flying Training Minimum Requirements. Aircrew members who are current and qualified according to AFMAN 11-2 MDS Vol 1 are considered trained in regards to performing no more than three events during capabilities demonstrations. **Exceptions**: C-17 and C-130 only: Loadmasters may regain airdrop currency on airdrop demonstrations under the supervision of an instructor loadmaster per **Table 5.2**, of this regulation.

5.4. Certification Level. The operations group commander will oversee capabilities demonstrations. **(T-2)**. Squadron commanders will ensure aircrew members complete required training prior to submitting the capabilities demonstration request to the operations group commander. **(T-2)**. The operations group commander will personally interview the aircraft commander as a minimum to assess overall suitability to perform the capabilities demonstration. **(T-2)**. If satisfied, the operations group commander will certify the designated aircrew for the specific event. **(T-3).** The operations group commander will document the certification in a memorandum for record, detailing the event, capability to be performed, authorized crew and certification actions taken. **(T-2)**.

Table 5.2. Qualification, Training, and Certification Level to Perform Three-Event Capabilities Demonstration.

Event Type	Qualification Required	Training Required	Certification Level

Capabilities Demonstration (NO MORE THAN ONE OF THE FOLLOWING) -Tactical Departure -Tactical Arrival (excluding overhead pattern/landing) -Airdrop[1] -Landing using Assault Procedures -Backing -Air Refueling Demonstration (formation)[2]	Aircraft Commander – Instructor Pilot with 100 instructor hours in type and qualified in the events being flown. Pilot – 100 hours in type, qualified in event being flown. Combat system operator – instructor in type, qualified in event being flown. Loadmaster – instructor in type, qualified in event being flown. Boom operator – instructor in type, qualified in event being flown. Flight engineer – instructor in type, qualified in event being flown.	Demonstration Syllabus GT-01	Operations Group Commander
Notes: 1. Refer to AFI 11-209 for restrictions and approval authority. 2. Practice flight required. Refer to applicable MAJCOM supplement to AFI 11-209 for restrictions.			

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Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFMAN 11-202, Vol 3, *Flight Operations,* 10 June 2020

AFI 11-209, *Participation in Aerial Events,* 22 May 2018

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

AFMAN 11-2, MDS, Vol 1, *MDS Aircrew Training*

AFMAN 11-2 MDS, Vol 2, *MDS Aircrew Evaluation Criteria*

AFMAN 11-2 MDS, Vol 3, *MDS Operations Procedures*

AFTTP 3-3.C-17, *Tactical Doctrine Combat Aircraft Fundamentals—C-17,* 16 August 2018

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

DAFI 33-360, *Publications and Forms Management*, 1 December 2015

T.O. 1C-17A-1, *Flight Manual,* 1 October 2018

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AF Form 4324, *Aircraft Assignment/Aircrew Qualification Worksheet*

Abbreviations and Acronyms

AETC—Air Education and Training Command

AF—Air Force

AFI—Air Force Instuction

AFPD—Air Force Policy Directive

AFMAN—Air Force Manual

AFTTP—Air Force Tactics, Techniques And Procedures

AGL—Above Ground Level

AMC—Air Mobility Command

AMC/A38—Operations Management Division

CDS—Container Delivery System

CONOPS—Concept of Operations

DAF—Department of the Air Force

EPR—Engine Pressure Regulator

ERO—Engine Running Onload/Offload

FAA—Federal Aviation Administration

HALO—High Altitude Low Opening

HE—Heavy Equipment

KIAS—Knots Indicated Airspeed

MAJCOM—Major Command

MDS—Mission Design Series

MFOQA—Military Flight Operations Quality Assurance

MFLMETO—Minimum Field Length Maximum Effort Takeoff

OPR—Office of Primary Responsibility

PACAF—Pacific Air Forces

SAF/PA—Secretary of the Air Force, Public Affairs

SKE—Station Keeping Equipment

T.O.—Technical Order

USAF—United States Air Force

VFR—Visual Flight Rules

Terms

Aerial Demonstration—Aerial demonstration, a subset of aviation support, includes virtually every type of aerial participation by fixed-wing or rotary-wing aircraft in public or military events (except aerial review and flyover).

Aerial Event—A common name for aviation support including static displays, flyovers, aerial reviews and aerial demonstrations.

Aircraft Demonstration Pilot or Crew—A highly qualified pilot or crew trained, proficient, and certified in the maneuvers or demonstration to be performed.

Assault Landing Demonstration—An aircraft capabilities demonstration illustrating a technique used for landing on short runways. The aircraft is flown at a speed slightly above aircraft stall speed and on a steeper-than-normal approach path. After touchdown, maximum engine reverse thrust and braking are applied to stop the aircraft.

Assault Takeoff Demonstration—An aircraft capabilities demonstration illustrating a takeoff procedure used for departing short runways employing maximum takeoff power and climb rate for the aircraft. Also referred to as Maximum Performance Takeoff or Maximum Effort Takeoff.

Aviation Support—An overarching class of aviation-related activities, including exhibits or displays, provided to military or public event sponsors.

Capabilities Demonstration—An aerial demonstration in which an aircraft (fixed or rotary wing) conducts maneuvers usually associated with its employment and which are common to the airframe being shown. The purpose is to illustrate the unique flying capabilities of the aircraft.

Eligible Events—Aerial events that have been screened by SAF/PA or other designated organization and deemed appropriate for Air Force participation.

Event Approval—Issued when SAF/PA or other designated organization, determines the event (e.g., aviation show/open house, sporting event, commemoration, or civic event) is eligible for Air Force participation. Some events have automatic approval by virtue of AF or Department of Defense policy; otherwise, depending on the nature of the event, the evaluation process is conducted by one of several agencies. Event approval does not imply participation approval.

High Altitude Low Opening Airdrop Demonstration—Demonstration of personnel delivery accomplished at or above 3,000 feet above ground level (AGL). The parachutists free fall to a predetermined altitude before deploying their parachutes to complete the descent.

Inflight Refueling Demonstration—An aircraft capabilities demonstration employing inflight refueling procedures up to and including the pre-contact position.

International Airshow and Trade Exhibition—An activity organized specifically to promote sales of aerospace and defense products.

Knock-It-Off Criteria—Prebrief requirement when to stop current maneuver.

Military Event—An official Department of Defense event (sponsored by Department of Defense or Department of Defense component or command) conducted in support of an assigned mission, including purposes of esprit-de-corps, primarily for military or civil service personnel, dependents, and limited guests. The event must be hosted on a facility-owned, leased or operated by the Department of Defense. (T-1).

Letter of X's—AMC unit certification document is the "Letter of X's". The Letter of X's is populated by signed AF Form 4324, *Aircraft Assignment/Aircrew Qualification Worksheet*.

Participation Approval—The approval process within the operations community leading to actual Air Force participation in public or military events.

Public Event—Public events are community relations events not connected with the military functioning of the Department of Defense and intended primarily for non-military audiences. Some examples include military open house events, ceremonies, exhibitions, expositions, athletic contests, fairs, parades, tattoos, airshows, international airshow and trade exhibitions, or similar programs. These events may be on or off-base; Continental United States or Outside the Continental United States. Public events can be sponsored by either Department of Defense or non-Department of Defense organizations. Military exercises, movements, maneuvers, or operations are not considered to be public events merely on the basis of being incidentally observed by the general public. Such events can be good community relations and recruiting opportunities.

Show Line—A show line is a prominent reference line appearing on the ground in the "Aerobatic Demonstration Area/Flying Display Area" established for an airshow or open house. The show line must be easily identifiable from the air and could be an existing structure already present such as a runway, taxiway, canal, breakwater, or road, or any straight line marked off by a snow fence, canvas panels, etc. The show line is a prescribed distance from the spectator area and serves as the basic reference line for aerial demonstrations performances.

Spectator Area—The area specifically set aside at an airshow or open house for people to view the aerial demonstrations performed for the event.

Attachment 2

C-17 AIRCRAFT DEMONSTRATION PROFILES

A2.1. General Instructions. Aircrews from all MAJCOMs will adhere to the flying procedures in Profiles 1 through 5. (T-2). Aircraft max weight for all profiles is 340K. Refer to T.O. 1C-17A-1, *Flight Manual* for a WARNING in regard to excessive use of rudder during turns.

A2.2. C-17 Aircraft Demonstration Profile 1 Synopsis. "Takeoff-to-Land – Short"; this 6-minute profile is an aircraft demonstration consisting of a MAX engine pressure regulator (EPR) setting takeoff followed by a maximum performance climb (max performance climb angle) at or above V_{MCO} to 1,000'-1,500' AGL.

A2.2.1. For takeoff, the crew will rotate the aircraft at or above rotation speed but no later than V_{ROT} + 20 kts.

A2.2.2. At or above 1,000'AGL and 160 knots, the C-17 then executes course reversal (80°-260°, 45° teardrop turn, or as needed depending on conditions) using up to 45° angle of bank, maintaining 160 knots and remaining configured with slats and ½ flaps (optional descent to 500' AGL once inbound).

A2.2.3. At show center, the aircraft demonstrates a 360° turn at 160 knots, flaps ½, and gear retracted, using 45° of bank.

A2.2.4. At the end of the 360° turn, the aircraft continues down show centerline. **NOTE:** If landing opposite the direction of takeoff, the aircraft will continue the turn for an additional 180 degrees of turn (completing a 540° turn) to setup for a downwind while climbing to 1,000'-1,500' AGL.

A2.2.5. Once past the corner marker and at or above 160 knots, the aircraft executes a 45° teardrop reversal, then climbs to 1,000'-1,500' AGL (using max power), to set up for a full-stop assault landing.

A2.2.6. The aircraft stops at show center and demonstrates a backing maneuver at approximately 10 knots but not to exceed 20 knots. Aircraft will not turn while backing.

A2.2.7. After backing up an adequate distance (no turns), complete the maneuver.

A2.2.8. Exit the runway as required. Approximate duration: 6 minutes.

A2.3. C-17 Aircraft Demonstration Profile 2 Synopsis. "Fly-In, Fly-Out"; this 8-minute profile is an aircraft demonstration consisting of a high-speed pass over the runway at 500' AGL.

A2.3.1. The C-17 will align with show centerline no later than the corner marker (as defined by the FAA) to perform a high-speed pass greater than 240 knots but no greater than 330 knots (FAA waiver required to exceed 250 knots).

A2.3.2. Once past show center, the C-17 executes a 45° teardrop turn (using 45° of bank) and reversal while maintaining 500'-1,000' AGL. Configure the aircraft normally for landing with slats/full flaps and gear.

A2.3.3. If required, the C-17 descends to or maintains 500'AGL for a slow-speed pass no slower than V_{APP}.

A2.3.4. At show center, the aircrew advances the power setting to MAX, sets ½ flaps, raises the gear, and accelerates.

A2.3.5. Once flaps are ½ and speed is above 160 knots, the aircraft performs a course reversal (80-260, 45° teardrop turn, or as needed depending on conditions) using up to 45° angle of bank, and maintains 500' AGL for the third pass.

A2.3.6. At show center, the aircraft demonstrates a 360° turn at 160 knots, flaps ½, and gear retracted, using 45º of bank.

A2.3.7. At the end of the 360° turn, the aircraft continues down show centerline.

A2.3.8. At the corner marker, the aircrew advances the power setting to MAX and performs a V_{MMA} climb with ½ flaps up to 1,500' AGL or higher if cleared by Air Traffic Control.

A2.3.9. The C-17 then departs the airshow area. Approximate duration: 8 minutes.

A2.4. C-17 Aircraft Demonstration Profile 3 Synopsis. "Fly-In, Land, Takeoff"; This 10-minute profile consists of a high-speed pass over the runway at 500' AGL.

A2.4.1. The C-17 will align with show centerline no later than the corner marker (as defined by the FAA) to perform a high-speed pass greater than 240 knots but no greater than 330 knots (FAA waiver required to exceed 250 knots).

A2.4.2. Once past show center, the C-17 executes a 45° teardrop turn (using 45º of bank) and reversal while maintaining 500'-1,000' AGL.

A2.4.3. Configure the aircraft normally for landing with slats/full flaps and gear. If required, the C-17 descends to or maintains 500'AGL for a slow-speed pass no slower than V_{APP}.

A2.4.4. At show center, the aircrew advances the power setting to MAX, sets ½ flaps, raises the gear, and accelerates.

A2.4.5. Once flaps are ½ and speed is above 160 knots, the aircraft performs a course reversal (80º-260º, 45° teardrop turn, or as needed depending on conditions) using up to 45° angle of bank, and maintains 500' AGL for the third pass.

A2.4.6. At show center, the aircraft demonstrates a 360° turn at 160 knots, flaps ½, and gear retracted, using 45º of bank. At the end of the 360° turn, the aircraft continues down show centerline. **NOTE:** If landing opposite the direction of takeoff, the aircraft will continue the turn for an additional 180º of turn (completing a 540° turn) to setup for a downwind while climbing to 1,000'-1,500' AGL.

A2.4.7. Once past the corner marker and at or above 160 knots, the aircraft executes a 45° teardrop reversal, then climb to 1,000'-1,500' AGL (using Max Power), to set up for a full-stop assault landing.

A2.4.8. The aircraft stops at show center and demonstrates a backing maneuver at approximately 10 knots but not to exceed 20 knots. Aircraft will not turn while backing.

A2.4.9. After backing up an adequate distance (no turns), complete the maneuver.

A2.4.10. Exit the runway as required.

A2.4.11. If immediately departing the airfield, following completion of the Operational Stop checklist, the crew will then perform a MAX EPR setting takeoff and maximum performance

climb (max performance climb angle) at or above V_{MCO} to 1,000'-1,500' AGL or as required and depart the airspace.

A2.4.12. For takeoff, the crew will rotate the aircraft at or above rotation speed but no later than V_{ROT} + 20 kts. Approximate duration: 10 minutes.

A2.5. C-17 Aircraft Demonstration Profile 4 Synopsis. "Takeoff-to-Land – Full"; this 12-minute profile consists of a MAX EPR setting takeoff followed by a maximum performance climb (max performance climb angle) at or above V_{MCO} to 1,000'-1,500' AGL.

A2.5.1. For takeoff, the crew will rotate the aircraft at or above rotation speed but no later than V_{ROT} + 20 kts.

A2.5.2. At or above 1000'AGL and 160 knots, the C-17 then executes a course reversal (80º - 260º, 45° teardrop turn, or as needed depending on conditions) using up to 45° angle of bank, retracting flaps at or above 180 knots, and descending to 500'AGL.

A2.5.3. At or above 235 knots, slats may be retracted.

A2.5.4. The C-17 will align with show centerline no later than the corner marker (as defined by the FAA) to perform a high-speed pass greater than 240 knots but no greater than 330 knots (FAA waiver required to exceed 250 knots).

A2.5.5. Once past show center, the C-17 executes a 45° teardrop turn (using 45º of bank) and reversal while maintaining 500'-1,000' AGL.

A2.5.6. Configure the aircraft normally for landing with slats/full flaps and gear.

A2.5.7. If required, the C-17 descends to or maintains 500'AGL for a slow-speed pass no slower than V_{APP}.

A2.5.8. At show center, the aircrew advances the power setting to MAX, sets ½ flaps, raises the gear, and accelerates.

A2.5.9. Once flaps are ½ and speed is above 160 knots, the aircraft performs a course reversal and maintains 500' AGL for the third pass.

A2.5.10. At show center, the aircraft demonstrates a 360° turn at 160 knots, flaps ½, and gear retracted, using 45º of bank.

A2.5.11. At the end of the 360° turn, the aircraft continues down show centerline. **NOTE:** If landing opposite the direction of takeoff, the aircraft will continue the turn for an additional 180º of turn (completing a 540° turn) to setup for a downwind while climbing to 1,000'-1,500' AGL.

A2.5.12. Once past the corner marker and at or above 160 knots, the aircraft executes a 45° teardrop reversal, then climb to 1,000'-1,500' AGL (using Max Power), to set up for a full-stop assault landing.

A2.5.13. The aircraft stops at show center and demonstrates a backing maneuver at approximately 10 knots but not to exceed 20 knots.

A2.5.14. Aircraft will not turn while backing.

A2.5.15. After backing up an adequate distance (no turns), complete the maneuver.

A2.5.16. Exit the runway as required. Approximate duration: 12 minutes.

A2.6. C-17 Aircraft Demonstration Profile 5 Synopsis. "Aircraft Demonstration Airdrop"; this profile is utilized specifically when dropping an airdrop demonstration team (i.e., Wings of Blue, Golden Knights, etc.) at an event.

A2.6.1. Takeoff (if accomplished at event). Crew will execute takeoff followed by a maximum performance climb (max performance climb angle) no slower than V_{MCO} to first drop altitude. This altitude is fluid and dependent on the user.

A2.6.2. Air Drops. Once at altitude, accelerate aircraft to and fly profile at 130-250 knots with a single slowdown to drop airspeed, escaping between 130-250 knots. Normally, the follow-on drops will be at a higher altitude. In this case, and if time permits, leave the ramp/doors open and climb as needed to new drop altitude. This will allow the plane to stay depressurized and minimize the racetrack time, but no less than 4 minute racetracks. At no time will the aircraft exceed 45^{o} of bank during any maneuver in this profile. The Jump/Release will not be turned on until aircraft is within 10^{o} of run-in axis. Repeat this sequence if the user's profile requires higher altitudes.

A2.6.3. Descent and Landing (if accomplished at event). Upon confirmation that "all" jumpers are clear, the aircraft will maneuver as required for approach per aircraft T.O., FAA, or Air Force Tactics, Techniques And Procedures (AFTTP) 3-3.C-17, *Tactical Doctrine Combat Aircraft Fundamentals—C-17*. This will be accomplished no earlier than the closest corner marker, but no later than the last corner marker. The aircraft should set up for a full-stop assault landing.

A2.6.3.1. Prior to landing, ensure all airdropped personnel (and their gear), airdropped heavy equipment (HE), and containers (including parachutes/harnesses) are clear of the landing runway a distance sufficient to comply with AFI 11-209 guidelines specifying minimum safe distances.

A2.6.3.2. If required or requested, the aircraft may stop at show center and demonstrate a backing maneuver at approximately 10 knots but not to exceed 20 knots. Aircraft will not turn while backing.

A2.6.3.3. After backing up an adequate distance (no turns), complete the maneuver.

A2.6.3.4. Exit the runway as required.

A2.7. C-17 Aircraft Demonstration Profile 6. In this profile the aircraft demonstration can perform more than three aircraft capabilities events listed in **paragraph 5.1,** of this AFMAN.

A2.7.1. Events should be selected and ordered in a logical and efficient sequence.

A2.7.2. Submit a detailed performance sequence in the event approval request package.

A2.7.3. Tactical departures, tactical approaches, landing using assault procedures, and aircraft backing will be conducted in accordance with the aircraft Flight Manual and AFTTP 3.3_C-17.

A2.7.4. The airdrop may be flown by a single-ship C-17 or a C-17 formation.

A2.7.4.1. A C-17 formation may contain multiple elements involving a number of aircraft up to the limits authorized by AFI 11-209 and AFMAN 11-2C17, Vol 3, *C-17 Operations Procedures* guidance.

A2.7.4.2. Mission planners may use any combination of C-17 single-ships and formations to airdrop HE, container delivery system (CDS) supply containers and personnel—all as part of the same capabilities demonstration—to present the full range of C-17 delivery capabilities.

A2.7.4.3. Planned timing/spacing between formations, formation elements and between individual aircraft in formation, must account for the differences in airdrop loads. The mission profile must comply with AFMAN 11-2C-17, Vol 3, AFTTP 3.3_C-17, and Flight Manual procedures for multiple formations, or multiple element formations, and mixed airdrop loads.

A2.7.4.4. The planned sequence of airdrop loads must address the restrictions and limitations imposed by the nature of the airdrop loads, the physical characteristics of the drop zone, the proximity of the drop zone to the crowd line, the prevailing weather, safety of flight considerations and by an absolute mandate to keep spectators out of harm's way.

A2.7.4.5. Personnel airdrops are executed in accordance with either static line procedures or high altitude low opening (HALO) procedures performed by personnel meeting military free fall qualifications.

A2.7.5. The following text addresses aircraft formations but applies in principle to a single-ship capabilities demonstration.

A2.7.5.1. Following takeoff, or upon arrival from another airfield from which the aircraft staged, all aircraft proceed to assigned holding patterns.

A2.7.5.2. On cue, the aircraft approach the drop zone at the planned drop altitude.

A2.7.5.3. The airdrop sequence is executed in accordance with the mission plan—deviation is not authorized except for safety considerations.

A2.7.5.4. Following the airdrop, the formations or single-ship aircraft execute escape and recovery flight procedures.

A2.7.5.5. Approach for recovery can be in accordance with instrument approach procedures, visual overhead procedures or visual downwind procedures to a standard formation landing. Prior to landing, ensure all airdropped personnel (and their gear) and airdropped HE/containers (including parachutes/harnesses) are clear of the landing runway a distance sufficient to comply with Department of Defense, USAF and FAA guidelines specifying minimum safe distances.

A2.7.5.6. The procedures in these profiles are general guidelines.

A2.7.5.6.1. Mission planners may adjust them, for cause, to accommodate requirements of the paratroopers (static line, HALO, etc.), requirements of the equipment (materiel) to be airdropped (HE or CDS), physical requirements of the drop zone or unique requirements of the event itself.

A2.7.5.6.2. Aircrews will not deviate from the mission plan except for safety considerations. (T-3).

A2.7.5.6.3. Aircrew planning and mission execution must comply with AFMAN 11-2C17, Vol 3 guidance. **(T-3).**

Attachment 3

C-130 AIRCRAFT DEMONSTRATION PROFILES

A3.1. General Instructions: Aircrews from all MAJCOMs will adhere to the flying procedures in the following C-130J aircraft demonstration profiles. (T-2). These profiles are MAJCOM-approved demonstrations involving a series of maneuvers over a runway environment.

A3.2. C-130 Aircraft Demonstration Profile 1. This 7-minute profile consists of a series of maneuvers beginning with a maximum effort takeoff.

A3.2.1. Perform the takeoff using adjusted maximum effort takeoff procedures.

A3.2.2. Climb at obstacle clearance speed (V_{OBS}) to 1,000' AGL. At or above 1,000' AGL, retract flaps per flight manual maximum effort procedures for the aircraft gross weight while accelerating to no less than 170 KIAS.

A3.2.3. Do not initiate a turn until at or above 140 KIAS or 50% flap approach speed, whichever is higher, or Flaps Up Approach Speed (clean).

A3.2.4. The C-130 then executes a course reversal (typically a level 90°/270° maneuver, but may be adjusted for conditions) using up to 45° of bank.

A3.2.5. Roll out to align with show centerline no later than the corner marker. Descend to 500' AGL, accelerate to 210-230 KIAS, and perform a low-altitude pass.

A3.2.6. Once past show center, the C-130 executes a teardrop maneuver at 500' AGL using no more than 45° of bank, breaking to establish a 30°- 45° offset angle from the landing surface and creating downwind spacing for a continuous turn to final.

A3.2.7. Perform a maximum effort landing.

A3.2.8. Stop the aircraft and perform a back taxi at show center.

A3.2.9. If desired, execute an engine running offload (ERO).

A3.2.10. Exit the runway as required upon profile completion.

A3.3. The profile may be modified to meet "fly-in/fly-out" profile requirements.

A3.3.1. For a "fly-in" profile, execute the profile beginning with the high-speed pass per the above criteria.

A3.3.2. For "fly-out," execute a maximum effort takeoff per the above criteria upon completion of the profile.

A3.3.3. After performing the maximum effort landing, backing, and/or ERO, as required, ensure that runway remaining from departure point is equal to or greater than minimum field length maximum effort takeoff (MFLMETO) or adjusted MFLMETO (C-130).

A3.4. C-130 Aircraft Demonstration Profile 2. This aircraft demonstration profile may comprise of a combination of more than three aircraft capabilities events listed in **paragraph 5.1** of this AFMAN. Events should be selected and ordered in a logical and efficient sequence. Submit a detailed performance sequence in the event approval request package.

Attachment 4

KC-135 & NKC-135 AIRCRAFT DEMONSTRATION PROFILES

A4.1. General Instructions. Aircrews from all MAJCOMs will adhere to the flying procedures in the following profile and options. (T-2).

A4.2. KC-135 & NKC-135 Aircraft Demonstration Profile 1 Synopsis. This 10-minute profile consists of a takeoff (20°/MAX) at V_{CO} + 10 knots to a visual flight rules (VFR) closed pattern, climbing to 1,000'-1,500' AGL.

A4.2.1. Throughout the crosswind turn, maintain minimum of V_{CO} + 30 knots.

A4.2.2. On downwind, retract flaps at V_{CO}+ 25 knots (minimum) and lower the boom for a high-speed pass.

A4.2.3. Execute a base and descending final turn to 500' AGL with no more than 45° of bank and no slower than V_{REF} +50 knots (30° of bank) or 210 KIAS at 200K gross weight or 200 KIAS at 180K/less gross weight.

A4.2.4. Align with show centerline no later than the corner marker to perform the high speed pass at 250 KIAS. Once past show center, stow the boom and execute a 90°/270° maneuver while climbing to VFR pattern altitude at no slower than V_{REF} + 50 knots (30° of bank).

A4.2.5. Configure for one of the following pass options:

A4.2.5.1. Aircraft Demonstration Profile 1-A. Low-speed pass with gear down, flaps 30°. Once established level between 1,000'-1,500' AGL and during the 90°/270° maneuver, configure the aircraft on normal speed schedule for landing (flaps 30°/gear down).

A4.2.5.2. Descend to 500' AGL in the final turn and maintain no slower than V_{REF} + 20 knots for 30° of flaps.

A4.2.5.3. Align with the show centerline no later than the corner marker using no more than 30° of bank. Perform a low-speed pass at flaps 30° approach speed or 0.6 angle of attack.

A4.2.6. Aircraft Demonstration Profile 1-B. Landing attitude demonstration with gear down, flaps 50°. Once established level between 1,000'-1,500' AGL and during the 90°/270° maneuver, configure the aircraft on normal speed schedule for landing (flaps 30°/gear down). Maintain no slower than V_{REF} + 20 knots for 30° of flaps.

A4.2.6.1. Extend the flaps to 50° during the final turn and descend while aligning with the show centerline/runway no later than the corner marker maintaining 50° flap V_{APP}.

A4.2.6.2. Perform a landing attitude demonstration along runway centerline at speeds between V_{TH} and V_{TD} while in ground effect.

A4.2.6.3. Then, after passing show center, but not less than 2,000' runway remaining, initiate go-around procedures. Retract landing gear and set flaps 20° prior to executing a 90°/270° maneuver and climbing to 1,000'-1,500' AGL. Maintain V_{REF} + 30 knots for 20° of flaps and no more than 30° of bank.

A4.2.6.4. Once level, configure the aircraft for a normal landing and perform a full stop landing.