

2025

DEPARTMENT OF THE AIR FORCE

Fire & Emergency Services (F&ES) Aircraft Rescue & Firefighting Response (ARFF) Playbook



CE PLAYBOOKS



Table of Contents

Chapter 1	Introduction and Background	5
1.1	Background	5
1.2	ARFF Program	5
1.3	Response Guidance	6
Chapter 2	Airfield Response Operations	7
2.1	Critical Rescue and Fire Fighting Access Area (CRFFAA)	7
2.1.1	Movement Area and Rapid Response Area (RAA)	7
2.1.2	CRFFAA & RAA Boundaries	7
2.1.3	Historical Data	8
Chapter 3	Response Times	9
3.1	Aggregate Response Time (ART)	9
3.2	Joint Use Response	10
3.3	Measurement of ARFF Response Time	11
Chapter 4	Staffing and Vehicle Requirements	12
4.1	Staffing Requirements	12
4.2	Vehicle Requirements	12
4.3	Master Vehicle Record (MVR)/Minimum Essential Level (MEL)	13
Chapter 5	DAF F&ES Core Vehicle Categories	14
5.1	Vehicle Allocation for Aircraft Category 1	14
5.2	Vehicle Allocation for Aircraft Category 2	14
5.3	Vehicle Allocation for Aircraft Category 3	14
5.4	Vehicle Allocation for Aircraft Category 4	14
5.5	Vehicle Allocation for Aircraft Category 5	15
5.6	Vehicle Allocation for Aircraft Category 6	15
5.7	Vehicle Allocation for Aircraft Category 7	15
5.8	Vehicle Allocation for Aircraft Category 8	15
5.9	Vehicle Allocation for Aircraft Category 9	16
5.10	Vehicle Allocation for Aircraft Category 10	16
5.11	Differences in Airport Categories	16
Chapter 6	Levels of Service (LOS)	18
6.1	LOS for ARFF Response Capability	18
6.1.1	ARFF Personnel Required for Each LOS	18
6.1.2	ARFF Agent Required for Each LOS	20
Chapter 7	Air Show Safety	23
7.1	Air Show Guidelines	23
7.1.1	ARFF Vehicle Positions	23
7.2	The Aerobatic Box	24
7.3	Airshow Incident Action Plan	26
Chapter 8	Risk Management (RM) and Agent Reporting Tools	27
8.1	Risk Management (RM)	27
8.2	Recommended RM Practices	27
8.3	ARFF Agent Reporting Tools	27
Appendix A	Acronyms	28
Appendix B	Master List of Links	30
Appendix C	Personnel and Vehicle Setup for Category 1 – 10 Aircraft	32



Table of Figures

Figure 1: CRFFAA & RAA Boundaries	7
Figure 2: Historical Data	8
Figure 3: P-19C Firetruck replaces the older (red) P-19 legacy truck for contingency operations	12
Figure 4: P-23 ARFF Crash Truck	13
Figure 5: Practicing Emergency Airshow Procedures	23
Figure 6: Typical Airshow Layout	24
Figure 7: The Aerobatic Box	25
Figure 8: Category 1 - 4 Personnel & Vehicle Setup	32
Figure 9: Category 5 Personnel & Vehicle Setup	32
Figure 10: Category 6 Personnel & Vehicle Setup	33
Figure 11: Category 7 - 8 Personnel & Vehicle Setup	33
Figure 12: Category 9 Personnel & Vehicle Setup	34
Figure 13: Category 10 Personnel & Vehicle Setup	34

Table of Tables

Table 1: Response Requirements	9
Table 2: Travel Distance Based on Speed	11
Table 3: Airport Category/Classification Comparisons	17
Table 4: Personnel Requirements for Category 1 through 6	18
Table 5: Personnel Requirements for Category 7	19
Table 6: Personnel Requirements for Category 8	19
Table 7: Personnel Requirements for Category 9	19
Table 8: Personnel Requirements for Category 10	20
Table 9: LOS Chart	22



Chapter 1 Introduction and Background

The purpose of this Playbook is to clarify the Department of the Air Force (DAF) implementation of Department of Defense Instruction ([DoDI 6055.06, Department of Defense Fire and Emergency Services Program](#)) and [National Fire Protection Association \(NFPA\) 460, Standard for Aircraft Rescue and Firefighting Services at Airports \(2024 Edition\)](#), relative to Aircraft Rescue and Firefighting (ARFF) operations. This Playbook provides a template for Major Commands (MAJCOM), Air Force Installation and Mission Support Center (AFIMSC) Detachments (Dets) and installation senior fire officials (SFOs) to utilize during assessments and to communicate ARFF capabilities to leadership.

Limitations: This Playbook does not replace, supersede, or circumvent existing Department of Defense (DoD) or DAF policy.

Applicability: This Playbook is written for all F&ES personnel within the CE Enterprise. It does not apply for use during contingency, humanitarian relief, or wartime operations; consult [Department of the Air Force Instruction \(DAFI\) 32-2001, Fire & Emergency Services Program](#) and, where applicable, [Air Mobility Command Instruction \(AMCI\) 11-208, Mobility Air Forces Management](#) and [F&ES Contingency Operations Concept of Employment \(CONEMP\) Playbook](#).

1.1 Background

[DoDI 6055.06](#) contains ARFF response criteria pertaining to response times, ARFF fire ground staffing and requirement for each DoD component to develop policy to deliver Scope of Services for ARFF. The DAF uses the following as the means to identify service specific requirements to implement DoDI 6055.06:

- [DAFI 32-2001, Fire & Emergency Services Program](#)
- [Air Force Manpower Determinant \(AFMD\), Fire Emergency Services 44F100](#)
- [Air National Guard Manpower Determinant \(ANGMD\) 44F100](#)
- [Air Force Reserve Command Manpower Determinant \(AFRCMD\) FAC 44XXX](#)

The DAF ARFF vehicle categories are implemented based on the DAF F&ES Vehicle Determinant Plan (VDP) codified in DAFI 32-2001 and consistent with [NFPA 460](#) airport categories, agents, and vehicle requirements.

1.2 ARFF Program

The key to an effective ARFF program is to deliver sufficient firefighting agent within a specific amount of time as outlined in [DoDI 6055.06](#). The goal of the DAF ARFF program is to provide protection for aircrews, passengers, aircraft, and on-board weapons, while preventing and/or reducing collateral damage to any exposed property. As SFOs, your role is crucial in the effective execution of DoD and DAF implementation instructions. A thorough understanding of ARFF response criteria, vehicle capabilities, and staffing is not just beneficial, but essential for the success of the mission.

SFOs are responsible for fully utilizing available resources and must notify senior leadership, using a [DAF Form 4437, Deliberate Risk Assessment Worksheet](#) if abilities fall below mission requirements. A comprehensive Fire Risk Management (RM) plan, supported by documented RM assessments and mitigating actions, provides information for the installation commander to make critical risk-



acceptance decisions. In accordance with (IAW) [DAFI 32-2001](#), the Installation Fire Chief will develop and implement Risk Management Plans, which include detailed actions for periods of reduced capability for approval by the installation commander.

1.3 Response Guidance

Several factors must be considered when determining ARFF response criteria. These include response time for **Announced** and **Unannounced** aircraft emergencies, staffing and vehicle requirements, and the use of a risk management process. These factors will be further defined in this Playbook.



Chapter 2 Airfield Response Operations

[DoDI 6055.06](#) directs the use of NFPA standards, which include ARFF response criteria. The Critical Rescue and Fire Fighting Access Area (CRFFAA) is a designated rectangular area surrounding a runway where most aircraft movements occur. Within the CRFFAA, the Rapid Response Area (RRA) is a rectangle surrounding the runway. Use the information below to determine proper crash fire station location(s).

2.1 Critical Rescue and Fire Fighting Access Area (CRFFAA)

[NFPA 460](#) contains standardized requirements as the baseline for Aircraft Rescue and Firefighting (ARFF) response criteria. This criterion identifies a specific area of an airfield where most aircraft flight or ground-related fire incidents have historically occurred. This area is named the Critical Rescue and Fire Fighting Access Area (CRFFAA). The CRFFAA is defined as the rectangular area that surrounds a runway which most aircraft movements can be expected to occur on airports. These boundaries are set to a distance extending 500 feet each direction from the runway centerline and 3,300 feet beyond each runway threshold.

2.1.1 Movement Area and Rapid Response Area (RAA)

The CRFFAA contains the Movement and Rapid Response Area (RRA). The Movement Area is defined as the part of an airport to be used for the takeoff, landing, and taxiing of aircraft, as well as the apron(s), unless otherwise specified. The RRA is defined as a rectangle that includes the runway and the surrounding area extending to a width of 500 feet outward from each side of the runway centerline and to a length of 1,650 feet beyond each runway end but not beyond the airport property line. According to the NFPA, approximately 85 percent of aircraft accidents, as historically recorded in the CRFFAA, occurred within the boundary of the RRA.

2.1.2 CRFFAA & RAA Boundaries

The diagram below reflects the boundaries associated with the CRFFAA and RRA. When siting a new crash fire station, consideration must be given to the station's location and the ability to meet mandated response times. An evaluation should be conducted on the present use of the airport areas and any known future uses.

Click [here](#) to view a larger image.

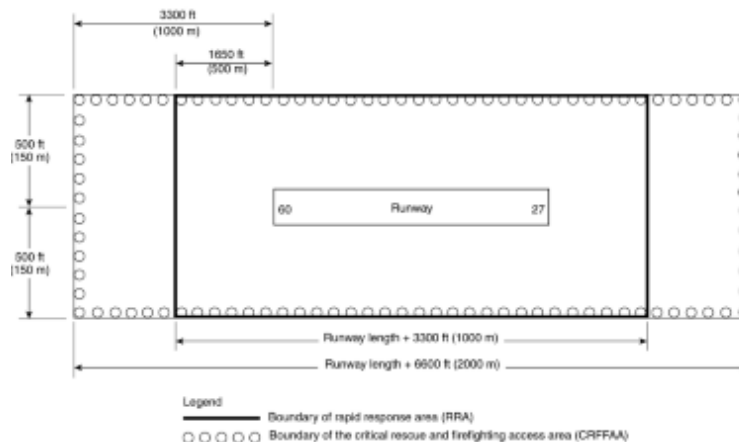


Figure 1: CRFFAA & RAA Boundaries



2.1.3 Historical Data

The diagram below reflects historical locations along the runway where aircraft incidents/accidents have occurred during landing and takeoff.

Click [here](#) to view a larger image.

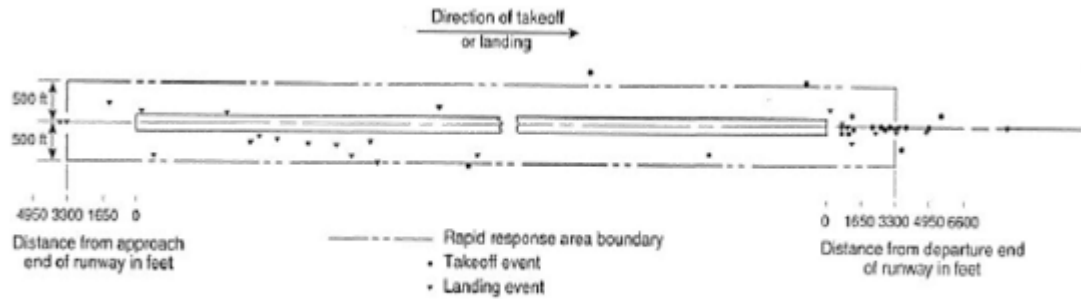


Figure 2: Historical Data



Chapter 3 Response Times

Consistent with the [National Technology Transfer Act of 1995 \(Public Law 104-113\)](#) and the amendment by [Public Law 107-107, section 1115, Utilization of Consensus Technical Standards by Federal Agencies](#), for federal agencies to use industry standards whenever appropriate. [DoDI 6055.06](#) (Table 1 DoD F&ES Service Delivery) adopted the agent and airport category requirements of [NFPA 460](#), and DAF F&ES establishes standards through the publishing of the NFPA 460 Technical Implementation Guidance (TIG).

The DAF retained the response times defined in DoDI 6055.06, paragraphs 7.1.1 and 7.1.2, and Table 1, Aggregate Response Time (ART) Standard for ARFF responses. There are two types of aircraft related emergencies:

- **Announced:** An aircraft emergency declared while in flight with an anticipated landing time. ARFF apparatus respond to pre-established positions to standby for the emergency aircraft to land. ARFF apparatus, (when pre-positioned) will be capable of responding to any incident/accident location on the runway(s) (not including overruns) within 1 minute (travel time) of aircraft full stop. Time begins when aircraft stop location is transmitted to the communication center and ends when the apparatus arrive at the incident location.
- **Unannounced:** (Ground Emergency) An aircraft emergency without prior notification and with an established location. ARFF apparatus will be capable of responding to any incident/accident on the runway(s) within a 3-minute travel time, not to exceed a total 5-minute aggregate response time.

ARFF	Baseline ART	On-Scene Personnel
Unannounced (Ground Emergency) First Arriving Apparatus	5	3
Announced (IFE) First Arriving Apparatus	1	3
Additional Units, Should Arrive at 30 Second Intervals	-	-

Table 1: Response Requirements

3.1 Aggregate Response Time (ART)

[DoDI 6055.06](#) defines service delivery objectives and ART standards. The evaluation of each service objective will be 90 percent. The evaluation metric for announced aircraft will assume ARFF apparatus are pre-positioned alongside the runway.

The ART is comprised of the following components:

1. **Dispatch Time:** The point of receipt of the emergency alarm at the public safety answering point to the point where sufficient information is known to the dispatcher and applicable units are notified of the emergency.
2. **Turnout Time:** The time that begins when units are notified of an emergency to the beginning point of travel time.
 - a. **DAF F&ES further defines it as:** The time interval that begins when the fire station(s) and emergency response unit(s) notification process begins (by either an audible alarm or visual annunciation or both) and ends at the beginning point of travel time. The first ARFF vehicle that can mitigate the call must sign out as the vehicle turns a wheel in transit to an emergency incident. This is the end of turnout time but will **NOT** begin travel time for “announced” emergencies due to the unknown landing timeframe.



3. **Travel Time:** The time that begins when units are enroute to an emergency incident and ends when units arrive at the scene.
 - a. **DAF F&ES further defines it as:**
 - i. **Announced emergencies:** Travel Time begins when the Incident Commander (IC) announces that the aircraft has come to a complete stop which will account as the beginning of response time. Travel Time ends when the ARFF vehicle announces it is on scene.
 - ii. **Unannounced emergencies:** Travel Time begins when the ARFF vehicle(s) sign out and ends when the ARFF vehicle(s) announce “on scene” or similar terminology.

Fire departments must account for **Initial** and **Full Alarm** response. The remaining ARFF vehicles in the Full Alarm Response are expected to arrive at 30-second intervals for both announced and unannounced emergencies.

The notification of the ARFF crews is usually through the activation of the Primary Crash Phone, which initiates a specific tone/audible alarm and/or public address system in the ARFF station(s), which notifies (alerts) the ARFF crews that an aircraft emergency exists. If the ARFF station(s) does not have that capability, as recommended in Annex C to NFPA 460, then the installation fire chief must pursue obtaining that capability.

[Technical Order \(T.O.\) 00-25-172, Ground Servicing of Aircraft and Static Grounding/Bonding](#), applies to United States Air Force (USAF) aircraft ground servicing operations as well as servicing of non-USAF aircraft when performed at USAF or non-USAF installations by USAF personnel under USAF control. The Installation Fire Chief (IFC) will determine the standby requirements and vehicle positions for optimum response.

IFCs will establish locally developed benchmarks for handline deployment, aircraft shutdown, and render safe procedures for egress safety systems for mission assigned aircraft to meet or exceed standards.

3.2 Joint Use Response

The Fire Chief will determine the appropriate response for aircraft at joint-use Federal Aviation Administration (FAA) airports. It is critical for F&ES personnel to be familiar with system used at their respective airport. Additionally, local requirements, standards, and procedures approved by the Authority Having Jurisdiction (AHJ) should be utilized.

The FAA Advisory Circular for Airport Emergency Plan recommends developing an incident/accident classification system. Some common examples are:

- Alert I (Local Standby Alert)
- Alert II (Full Emergency Alert)
- Alert III (Aircraft Accident Alert)



3.3 Measurement of ARFF Response Time

Response time can be measured by the following three methods to validate the department's ability to provide ARFF IAW established service objectives. Data from these three methods should be collected, validated, and analyzed.

1. **Historical Response Time Data:** Historical fire department response data best indicates response times. The minimum assessment period of one (1) year, or longer if needed to ensure a statistically stable metric, should provide sufficient data to determine actual response times to specific areas of the runway(s) and airfield.
2. **Actual Time Trials:** Time trials can be used to gather response time data. Time trials shall be conducted following all speed limitations defined in local flightline instructions.
3. **Computer Models:** The Engineering Flight can assist with [Air Force Geospatial Information Management System \(AFGIMS\)](#) computer modeling geospatial software to estimate emergency travel times. These systems can measure distance and can calculate response time by inputting vehicle speeds. The following chart provides an example of how far a vehicle can travel at a given speed and how long it would take to travel down a 12,000-foot-long runway.

Miles Per Hour	Feet Per Second	Feet Per Minute	12,000-foot Runway Travel Time
25	36.7	2,200	5:27 min
30	44.0	2,640	4:33 min
35	51.3	3,080	3:54 min
40	58.7	3,520	3:25 min
45	66.0	3,960	3:02 min
50	73.3	4,400	2:44 min
55	80.7	4,840	2:29 min
60	88.0	5,280	2:16 min

Table 2: Travel Distance Based on Speed



Chapter 4 Staffing and Vehicle Requirements

DAF has established standards for F&ES staffing and response criteria grounded in various guidelines referenced in this chapter. These guidelines provide the foundation for effective firefighting tactics and ensure that DAF installations are equipped to respond to ARFF emergencies. DAF has also established variances to consider unique mission requirements and base configurations.

4.1 Staffing Requirements

The foundation for DAF peacetime standards for ARFF emergency response criteria is based on [DoDI 6055.06](#), [DAFI 32-2001](#) and F&ES staffing is earned IAW [AFMD 44F100](#), [ANGMD 44F100](#), and [AFRCMD FAC 44XXXX](#).

The AFMD identifies the critical fire ground tasks associated with effective firefighting tactics. AFMD implementation is accomplished by the local Manpower and Organization Office and validated by each MAJCOM/AFIMSC Det F&ES office.

The IFC and MAJCOM/AFIMSC Det F&ES office reviews data annually for currency. The IFC will identify ARFF mission changes to MAJCOM/AFIMSC Det F&ES office for review and validation.

4.2 Vehicle Requirements

DAF F&ES vehicle authorizations are further defined in the DAF F&ES Vehicle Determinant Plan (VDP). ARFF vehicles provide the water, foam and complementary agents as required in [NFPA 460 section 5.2](#).



Figure 3: P-19C Firetruck replaces the older (red) P-19 legacy truck for contingency operations

DAF F&ES Vehicle categories provide a specified amount of ARFF capability for each aircraft category IAW NFPA 460, which defines the minimum amounts of water for foam production and the quantities of complementary agents necessary to extinguish an aircraft fire.



Figure 4: P-23 ARFF Crash Truck

Specific amounts of agents required for each type of aircraft firefighting operation are identified as Q factors. The three Q factors and their definitions are:

- Q₁: Quantity of water for foam production for initial control of the pool fire.
- Q₂: Quantity of water for foam production to continue control or fully extinguish the pool fire.
- Q₃: Water available for interior firefighting.

Certain military aircraft with additional hazards such as munitions, increased fuel capacity, cargo, and unique airframe materials are assigned vehicles with gallonage above required Q factors.

4.3 Master Vehicle Record (MVR)/Minimum Essential Level (MEL)

The IFC must validate that VDP authorizations are identified correctly on their MVR with your local LRS Fleet Management.

Note: Ensure locations with multiple airfields or landing zones have VDP authorizations annotated correctly on their MVR.

Fire chiefs should work with LRS Fleet Management to verify their MEL of response vehicles and ensure proper mission requirements are identified. The MEL allows for a vehicle to go out of service and provides ample time for LRS to repair and return the vehicle to service. The MEL provides a level of increased reporting and repair once a vehicle type code drops below identified MEL levels.

Example: If you are authorized four 3,000-gallon assets, the MEL should be 4 assigned/3 MEL. If the MEL was coordinated properly with LRS, a second vehicle going out of service will drop below MEL and require LRS to report the deficiency and arrange for repair parts and funds quicker than everyday repair priorities.

The validation for ARFF Apparatus is based on Levels of Service (LOS) and gallonage required for mission assigned/transient aircraft. Required ART must also be part of the overall justification for establishing MEL numbers.



Chapter 5 DAF F&ES Core Vehicle Categories

This chapter describes the 10 vehicle allocations for F&ES ARFF. The ARFF assets listed does not include vehicle authorizations for other services provided or any approved variances.

5.1 Vehicle Allocation for Aircraft Category 1

This vehicle allocation provides 6,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length up to but not including 30 feet and a fuselage width of up to but not including 6.5 feet.

Category 1 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.2 Vehicle Allocation for Aircraft Category 2

This vehicle allocation provides 6,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 30 feet up to but not including 39 feet and a fuselage width of up to but not including 6.5 feet.

Category 2 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.3 Vehicle Allocation for Aircraft Category 3

This vehicle allocation provides 6,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 39 feet up to but not including 59 feet and a fuselage width of up to but not including 9.8 feet.

Category 3 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.4 Vehicle Allocation for Aircraft Category 4

This vehicle allocation provides 6,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 59 feet up to but not including 78 feet and a fuselage width of up to but not including 13 feet.

Category 4 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)



- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.5 Vehicle Allocation for Aircraft Category 5

This vehicle allocation provides 6,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 78 feet up to but not including 90 feet and a fuselage width of up to but not including 13 feet.

Category 5 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.6 Vehicle Allocation for Aircraft Category 6

This vehicle allocation provides 6,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 90 feet up to but not including 126 feet and a fuselage width of up to but not including 16.4 feet.

Category 6 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.7 Vehicle Allocation for Aircraft Category 7

This vehicle allocation provides 9,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 126 feet up to but not including 160 feet and a fuselage width of up to but not including 16.4 feet.

Category 7 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 ET – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.8 Vehicle Allocation for Aircraft Category 8

This vehicle allocation provides 9,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 160 feet up to but not including 200 feet and a fuselage width of up to but not including 23 feet.

Category 8 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 ET – Crash Truck (3,000 gallons)



- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.9 Vehicle Allocation for Aircraft Category 9

This vehicle allocation provides 12,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 200 feet up to but not including 250 feet and a fuselage width of up to but not including 23 feet.

Category 9 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 ET – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.10 Vehicle Allocation for Aircraft Category 10

This vehicle allocation provides 18,000 gallons IAW the DAF NFPA 460 TIG and provides sufficient water for installations with assigned aircraft with an overall fuselage length of 250 feet up to but not including 295 feet and a fuselage width of up to but not including 25 feet.

Category 10 vehicle authorizations are:

- P-23 UHP – Crash Truck (3,000 gallons)
- P-23 ET – Crash Truck (3,000 gallons)
- P-23 ET – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-23 – Crash Truck (3,000 gallons)
- P-26 – Water Tender
- P-30 – Rescue Vehicle

5.11 Differences in Airport Categories

DAF F&ES core vehicle categories align differently to NFPA airport categories, FAA and International Civil Aviation Organization (ICAO) classifications. The table below provides a quick reference for comparing DAF Core allocations with NFPA, FAA and ICAO.



Air Force Civil Engineer Center
F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

Airport Category/Classification Comparisons											
NFPA			DAF			FAA			ICAO		
Category	Trucks	Gallons	Category	Trucks	Gallons	Category	Trucks	Gallons	Category	Trucks	Gallons
1	1	160	1	2	6,000	A	1	450	1	1	92
2	1	270	2	2	6,000				2	1	264
3	1	810	3	2	6,000	B	2	1,500	3	1	475
4	1	1,620	4	2	6,000	C	2	3,000	4	1	951
5	2	3,340	5	2	6,000	D	3	4,000	5	1	2,139
6	2	4,700	6	2	6,000	E	3	6,000	6	2	3,117
7	2	6,270	7	3	9,000				7	2	4,807
8	3	9,810	8	3	9,000				8	3	7,211
9	4	12,290	9	4	12,000				9	3	9,615
10	4	17,830	10	6	18,000				10	3	12,733

Table 3: Airport Category/Classification Comparisons

Note: Complementary agents are also required in addition to vehicle water IAW NFPA 460 section 5.2.



Chapter 6 Levels of Service (LOS)

[DAFI 32-2001](#) defines DAF F&ES Levels of Service. For ARFF incident responses, the combination of Q factors as defined in paragraph 4.2.3 and number of certified and trained personnel determine level of service. The three LOS are as follows:

1. **Optimum Level of Service (OLS):** During Optimum Level of Service, available water is equal to or greater than Q-Total gallonage for the aircraft. ARFF response objectives are expected to be accomplished to include initial control of the pool fire, full extinguishment of the pool fire and performing interior firefighting. Aircrew rescue is expected to be performed. Objectives are expected to be accomplished simultaneously. (OLS Water => Total Q).
2. **Reduced Level of Service (RLS):** During Reduced Level of Service, available water is equal to or greater than Q1 + Q2 gallonage for the aircraft. ARFF response objectives are expected to be accomplished for initial control of the pool fire and full extinguishment of the pool fire. Aircrew rescue is expected to be performed; however, interior firefighting may be limited depending on the amount of water available. Objectives are expected to be performed based on the incident priorities. (RLS Water => Q1+Q2).
3. **Critical Level of Service (CLS):** During Critical Level of Service, available water is less than Q1 + Q2. ARFF response objective of initial control of the pool fire is expected to be accomplished. Full extinguishment of the pool fire or interior firefighting is limited based on the amount of water available and aircraft size. Efforts are concentrated on lifesaving actions; however, assets are expected to be lost. (CLS Water < Q1+Q2).

6.1 LOS for ARFF Response Capability

LOS for ARFF response capability, as determined by amount of agent or number of firefighters, should be reported daily to base operations and when LOS changes.

6.1.1 ARFF Personnel Required for Each LOS

The figures below present the personnel required for each task for each LOS for the 10 Aircraft Categories as outlined in [AFMD 44F100](#). ARC staffing may differ based on ANGMD 44F100 and AFRCMD FAC 44XXX. Task marked with asterisk (*) are assumed by other requirements.

Category 1 through 6 — Incident Capabilities			
Tasks Required	OLS	RLS	CLS
Vehicle Operator	4	3	3
Rescue	4	3	*
Rapid Intervention (RIT)	2	2	2
Inside Line	1	1	*
Outside Line (Egress/Ground Fire)	2	1	1
Outside Line (Safety)	1	1	1
Resupply	1	1	1
EMS / Triage	2	1	1
Incident Commander	1	1	1
Safety Officer	1	1	1
Assistant Safety Officer			
Accountability Officer	1	*	*
Total Crew Size	20	15	11

Table 4: Personnel Requirements for Category 1 through 6 Aircraft



Air Force Civil Engineer Center
F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

Category 7 — Incident Capabilities			
Tasks Required	OLS	RLS	CLS
Vehicle Operator	4	3	2
Rescue	4	3	*
Rapid Intervention (RIT)	2	2	2
Inside Line	2	2	*
Outside Line (Egress/Ground Fire)	1	1	1
Outside Line (Safety)	2	2	2
Resupply	1	1	1
EMS / Triage	2	1	*
Incident Commander	1	1	1
Safety Officer	1	1	1
Assistant Safety Officer	1	1	1
Accountability Officer	1	*	*
Total Crew Size	22	18	11

Table 5: Personnel Requirements for Category 7 Aircraft

Category 8 — Incident Capabilities			
Tasks Required	OLS	RLS	CLS
Vehicle Operator	5	4	2
Rescue	4	3	*
Rapid Intervention (RIT)	2	2	2
Inside Line	2	2	*
Outside Line (Egress/Ground Fire)	1	1	1
Outside Line (Safety)	2	2	2
Resupply	1	1	1
EMS / Triage	2	1	1
Incident Commander	1	1	1
Safety Officer	1	1	1
Assistant Safety Officer	1	1	1
Accountability Officer	1	*	*
Total Crew Size	23	19	14

Table 6: Personnel Requirements for Category 8 Aircraft

Category 9 — Incident Capabilities			
Tasks Required	OLS	RLS	CLS
Vehicle Operator	6	4	4
Rescue	4	3	2
Rapid Intervention (RIT)	4	2	2
Inside Line	2	2	*
Outside Line (Egress/Ground Fire)	1	1	1
Outside Line (Safety)	2	2	2
Resupply	1	1	1
EMS / Triage	2	1	*
Incident Commander	1	1	1
Safety Officer	1	1	1
Assistant Safety Officer	1	1	*
Accountability Officer	1	*	*
Total Crew Size	26	19	14

Table 7: Personnel Requirements for Category 9 Aircraft



Air Force Civil Engineer Center F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

Category 10 — Incident Capabilities			
Tasks Required	OLS	RLS	CLS
Vehicle Operator	7	6	4
Rescue	4	3	3
Rapid Intervention (RIT)	4	2	2
Inside Line	2	2	*
Outside Line (Egress/Ground Fire)	1	1	1
Outside Line (Safety)	2	2	2
Resupply	1	1	1
EMS / Triage	2	1	1
Incident Commander	1	1	1
Safety Officer	1	1	1
Assistant Safety Officer	1	1	1
Accountability Officer	1	*	*
Total Crew Size	27	21	17

Table 8: Personnel Requirements for Category 10 Aircraft

6.1.2 ARFF Agent Required for Each LOS

The table below shows LOS criteria for each type of aircraft. The chart shows a direct correlation between required firefighting agent and personnel. Aircraft identified with an asterisk (*) have been placed in higher gallonage categories due to increased hazards: Fuel, Munitions, and/or cargo.

F3 Based			OLS		RLS		CLS	
Aircraft	Category	Gallonage	Personnel	Agent	Personnel	Agent	Personnel	Agent
MQM-107	Cat 1	6,000	20 - 16	6000 - 87	15 - 12	87 - 87	11 and below	86 and below
A/T-38A/B/C	Cat 1	6,000	20 - 16	6000 - 134	15 - 12	134 - 134	11 and below	133 and below
QM-34	Cat 1	6,000	20 - 16	6000 - 138	15 - 12	138 - 138	11 and below	137 and below
RQ-1A/B	Cat 1	6,000	20 - 16	6000 - 139	15 - 12	139 - 139	11 and below	138 and below
T-37B (Tandem)	Cat 1	6,000	20 - 16	6000 - 155	15 - 12	155 - 155	11 and below	154 and below
T-6A	Cat 2	6,000	20 - 16	6000 - 225	15 - 12	225 - 225	11 and below	224 and below
UH-72	Cat 3	6,000	20 - 16	6000 - 645	15 - 12	644 - 345	11 and below	344 and below
C-12	Cat 3	6,000	20 - 16	6000 - 646	15 - 12	645 - 346	11 and below	345 and below
Beechcraft King Air 350	Cat 3	6,000	20 - 16	6000 - 669	15 - 12	669 - 369	11 and below	368 and below
RQ-4A	Cat 3	6,000	20 - 16	6000 - 685	15 - 12	684 - 385	11 and below	384 and below
C-21A	Cat 3	6,000	20 - 16	6000 - 687	15 - 12	686 - 387	11 and below	386 and below
Cessna Citation 5	Cat 3	6,000	20 - 16	6000 - 687	15 - 12	687 - 387	11 and below	386 and below
T-1A	Cat 3	6,000	20 - 16	6000 - 689	15 - 12	688 - 389	11 and below	388 and below
AH-64E	Cat 3	6,000	20 - 16	6000 - 694	15 - 12	693 - 394	11 and below	393 and below
F-16C/D	Cat 3	6,000	20 - 16	6000 - 695	15 - 12	694 - 395	11 and below	394 and below
F-35A/B/C	Cat 3	6,000	20 - 16	6000 - 706	15 - 12	705 - 406	11 and below	405 and below
UV-18	Cat 3	6,000	20 - 16	6000 - 717	15 - 12	716 - 417	11 and below	416 and below
A-10/OA-10	Cat 3	6,000	20 - 16	6000 - 726	15 - 12	725 - 426	11 and below	425 and below
UH/HH-60	Cat 3	6,000	20 - 16	6000 - 736	15 - 12	735 - 436	11 and below	435 and below
Beechcraft 1900	Cat 3	6,000	20 - 16	6000 - 758	15 - 12	758 - 458	11 and below	457 and below
C-38A	Cat 3	6,000	20 - 16	6000 - 763	15 - 12	762 - 463	11 and below	462 and below
QF-4	Cat 3	6,000	20 - 16	6000 - 765	15 - 12	764 - 465	11 and below	464 and below
UH-1N	Cat 3	6,000	20 - 16	6000 - 785	15 - 12	784 - 485	11 and below	484 and below
CV-22	Cat 3	6,000	20 - 16	6000 - 794	15 - 12	793 - 494	11 and below	493 and below
CH-47	Cat 4	6,000	20 - 16	6000 - 1178	15 - 12	1177 - 578	11 and below	577 and below
F-22A	Cat 4	6,000	20 - 16	6000 - 1357	15 - 12	1356 - 757	11 and below	756 and below



Air Force Civil Engineer Center F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

F3 Based			OLS		RLS		CLS	
Aircraft	Category	Gallonnage	Personnel	Agent	Personnel	Agent	Personnel	Agent
F/A-18 E/F	Cat 4	6,000	20 - 16	6000 - 1373	15 - 12	1372 - 773	11 and below	772 and below
F-15A/B/C/D/E	Cat 4	6,000	20 - 16	6000 - 1377	15 - 12	1376 - 777	11 and below	776 and below
F-117A	Cat 4	6,000	20 - 16	6000 - 1404	15 - 12	1403 - 804	11 and below	803 and below
Short 360	Cat 4	6,000	20 - 16	6000 - 1482	15 - 12	1482 - 882	11 and below	881 and below
Casa CN-235	Cat 4	6,000	20 - 16	6000 - 1513	15 - 12	1513 - 913	11 and below	912 and below
DeHavilland Dash 5	Cat 4	6,000	20 - 16	6000 - 1543	15 - 12	1543 - 943	11 and below	942 and below
C-20A/B/C/H	Cat 5	6,000	20 - 16	6000 - 3098	15 - 12	3097 - 1848	11 and below	1847 and below
Grumman Gulfstream 4	Cat 5	6,000	20 - 16	6000 - 3212	15 - 12	3212 - 1962	11 and below	1961 and below
ATR 72	Cat 5	6,000	20 - 16	6000 - 3264	15 - 12	3263 - 2014	11 and below	2013 and below
ATR 72	Cat 5	6,000	20 - 16	6000 - 3264	15 - 12	3264 - 2014	11 and below	2013 and below
MH-53J/M	Cat 6	6,000	20 - 16	6000 - 3610	15 - 12	3609 - 2360	11 and below	2359 and below
C-37A/B	Cat 6	6,000	20 - 16	6000 - 3700	15 - 12	3699 - 2450	11 and below	2449 and below
AC-130H/J/U	Cat 6	6,000	20 - 16	6000 - 3802	15 - 12	3801 - 2552	11 and below	2551 and below
C-130E/H/J	Cat 6	6,000	20 - 16	6000 - 3802	15 - 12	3801 - 2552	11 and below	2551 and below
EC-130H	Cat 6	6,000	20 - 16	6000 - 3802	15 - 12	3801 - 2552	11 and below	2551 and below
LC-130	Cat 6	6,000	20 - 16	6000 - 3802	15 - 12	3801 - 2552	11 and below	2551 and below
MC-130E/H	Cat 6	6,000	20 - 16	6000 - 3802	15 - 12	3801 - 2552	11 and below	2551 and below
HC-130J/P/N	Cat 6	6,000	20 - 16	6000 - 3828	15 - 12	3827 - 2578	11 and below	2577 and below
MC-130J/P/N	Cat 6	6,000	20 - 16	6000 - 3828	15 - 12	3827 - 2578	11 and below	2577 and below
WC-130H/J	Cat 6	6,000	20 - 16	6000 - 3844	15 - 12	3843 - 2594	11 and below	2593 and below
EC-130E	Cat 6	6,000	20 - 16	6000 - 3874	15 - 12	3873 - 2624	11 and below	2623 and below
T-43A (737) (Ret)	Cat 6	6,000	20 - 16	6000 - 3894	15 - 12	3893 - 2644	11 and below	2643 and below
Boeing 737-600	Cat 6	6,000	20 - 16	6000 - 3962	15 - 12	3961 - 2712	11 and below	2711 and below
Boeing 737-600	Cat 6	6,000	20 - 16	6000 - 3962	15 - 12	3962 - 2712	11 and below	2711 and below
A-318	Cat 6	6,000	20 - 16	6000 - 4024	15 - 12	4023 - 2774	11 and below	2773 and below
A-318	Cat 6	6,000	20 - 16	6000 - 4024	15 - 12	4024 - 2774	11 and below	2773 and below
C-40B/C (737)	Cat 6	6,000	20 - 16	6000 - 4164	15 - 12	4163 - 2914	11 and below	2913 and below
Boeing 737-700	Cat 6	6,000	20 - 16	6000 - 4168	15 - 12	4168 - 2918	11 and below	2917 and below
E-7A (RAAF)	Cat 6	6,000	20 - 16	6000 - 4184	15 - 12	4183 - 2934	11 and below	2933 and below
C-130J-30 (Stretch)	Cat 6	6,000	20 - 16	6000 - 4194	15 - 12	4193 - 2944	11 and below	2943 and below
A-319	Cat 6	6,000	20 - 16	6000 - 4238	15 - 12	4238 - 2988	11 and below	2987 and below
C-9A/C (DC-9)	Cat 6	6,000	20 - 16	6000 - 4358	15 - 12	4357 - 3108	11 and below	3107 and below
Boeing 737-300	Cat 6	6,000	20 - 16	6000 - 4408	15 - 12	4408 - 3158	11 and below	3157 and below
A-320	Cat 6	6,000	20 - 16	6000 - 4568	15 - 12	4568 - 3318	11 and below	3317 and below
Boeing 737-800	Cat 7	9,000	22 - 19	9000 - 5173	18- 12	5173 - 3923	11 and below	3922 and below
C-22B (727)	Cat 7	9,000	22 - 19	9000 - 5271	18- 12	5270 - 4021	11 and below	4020 and below
Boeing 737-900 ER	Cat 7	9,000	22 - 19	9000 - 5432	18- 12	5432 - 4182	11 and below	4181 and below
RC-135U/V/W (707)	Cat 7	9,000	22 - 19	9000 - 5505	18- 12	5504 - 4255	11 and below	4254 and below
E-3B (707)	Cat 7	9,000	22 - 19	9000 - 5688	18- 12	5687 - 4438	11 and below	4437 and below
Boeing MD-88	Cat 7	9,000	22 - 19	9000 - 5695	18- 12	5695 - 4445	11 and below	4444 and below
*KC-130J	Cat 7	9,000	22 - 19	9000 - 5750	18- 12	5749 - 4500	11 and below	4499 and below
A-321	Cat 7	9,000	22 - 19	9000 - 5750	18- 12	5750 - 4500	11 and below	4499 and below
A-400M	Cat 7	9,000	22 - 19	9000 - 5791	18- 12	5790 - 4541	11 and below	4540 and below
E-8C (707)	Cat 7	9,000	22 - 19	9000 - 5880	18- 12	5879 - 4630	11 and below	4629 and below
Boeing 727	Cat 7	9,000	22 - 19	9000 - 5890	18- 12	5890 - 4640	11 and below	4639 and below
Tupolev Tu-154	Cat 7	9,000	22 - 19	9000 - 5917	18- 12	5916 - 4667	11 and below	4666 and below
Tupolev Tu-154	Cat 7	9,000	22 - 19	9000 - 5917	18- 12	5917 - 4667	11 and below	4666 and below
C-32A (757)	Cat 7	9,000	22 - 19	9000 - 5938	18- 12	5937 - 4688	11 and below	4687 and below
Boeing 757	Cat 7	9,000	22 - 19	9000 - 5949	18- 12	5949 - 4699	11 and below	4698 and below



Air Force Civil Engineer Center F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

F3 Based			OLS		RLS		CLS	
Aircraft	Category	Gallonnage	Personnel	Agent	Personnel	Agent	Personnel	Agent
A-310	Cat 8	9,000	23 - 20	9000 - 7921	19 - 15	7921 - 5421	14 and below	5420 and below
Boeing 767-200 ER	Cat 8	9,000	23 - 20	9000 - 8039	19 - 15	8039 - 5539	14 and below	5538 and below
Lockheed L-1011-500	Cat 8	9,000	23 - 20	9000 - 8064	19 - 15	8064 - 5564	14 and below	5563 and below
Antonov An-22	Cat 8	9,000	23 - 20	9000 - 8205	19 - 15	8205 - 5705	14 and below	5704 and below
*KC-135 (707)	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
C-17A	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
*B-2A	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
*B-1B	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
*B-21	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
*B-52G/H	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
*KC-46 (767)	Cat 8	9,000	23 - 20	9000 - 8634	19 - 15	8633 - 6134	14 and below	6133 and below
A-300	Cat 8	9,000	23 - 20	9000 - 8750	19 - 15	8749 - 6250	14 and below	6249 and below
A-300	Cat 8	9,000	23 - 20	9000 - 8750	19 - 15	8750 - 6250	14 and below	6249 and below
Boeing 767-300 ER	Cat 8	9,000	23 - 20	9000 - 8772	19 - 15	8772 - 6272	14 and below	6271 and below
Boeing DC 10-40	Cat 8	9,000	23 - 20	9000 - 8959	19 - 15	8959 - 6459	14 and below	6458 and below
Boeing 787-8	Cat 8	9,000	23 - 20	9000 - 9057	19 - 15	9057 - 6557	14 and below	6556 and below
A-330-200	Cat 8	9,000	23 - 20	9000 - 9329	19 - 15	9329 - 6829	14 and below	6828 and below
Ilyushin IL-86	Cat 8	9,000	23 - 20	9000 - 9370	19 - 15	9370 - 6870	14 and below	6869 and below
A-350-800	Cat 8	9,000	23 - 20	9000 - 9622	19 - 15	9622 - 7122	14 and below	7121 and below
British Aerospace Concorde	Cat 9	12,000	26 - 20	12000 - 9625	19 - 15	9625 - 7125	14 and below	7124 and below
Boeing 767-400 ER	Cat 9	12,000	26 - 20	12000 - 10009	19 - 15	10009 - 7509	14 and below	7508 and below
*KC-10A (DC-10)	Cat 9	12,000	26 - 20	12000 - 10079	19 - 15	10078 - 7579	14 and below	7578 and below
Boeing MD-11	Cat 9	12,000	26 - 20	12000 - 10079	19 - 15	10079 - 7579	14 and below	7578 and below
Boeing 787-9	Cat 9	12,000	26 - 20	12000 - 10281	19 - 15	10281 - 7781	14 and below	7780 and below
A-330-300	Cat 9	12,000	26 - 20	12000 - 10425	19 - 15	10425 - 7925	14 and below	7924 and below
A-340-300	Cat 9	12,000	26 - 20	12000 - 10425	19 - 15	10425 - 7925	14 and below	7924 and below
Boeing 777-200	Cat 9	12,000	26 - 20	12000 - 10484	19 - 15	10484 - 7984	14 and below	7983 and below
A-350-900	Cat 9	12,000	26 - 20	12000 - 10929	19 - 15	10929 - 8429	14 and below	8428 and below
A-340-500	Cat 9	12,000	26 - 20	12000 - 10951	19 - 15	10951 - 8451	14 and below	8450 and below
E-4B (747-200)	Cat 9	12,000	26 - 20	12000 - 11402	19 - 15	11401 - 8902	14 and below	8901 and below
Boeing 747-400	Cat 9	12,000	26 - 20	12000 - 11405	19 - 15	11405 - 8905	14 and below	8904 and below
VC-25A (747-200)	Cat 9	12,000	26 - 20	12000 - 11421	19 - 15	11420 - 8921	14 and below	8920 and below
Boeing 777-300	Cat 9	12,000	26 - 20	12000 - 11756	19 - 15	11756 - 9256	14 and below	9255 and below
A-350-1000	Cat 9	12,000	26 - 20	12000 - 11810	19 - 15	11810 - 9310	14 and below	9309 and below
A-340-600	Cat 9	12,000	26 - 20	12000 - 11877	19 - 15	11877 - 9377	14 and below	9376 and below
A-380	Cat 10	18,000	27 - 22	18000 - 15138	21 - 18	15138 - 10138	17 and below	10137 and below
VC-25B (747-8i)	Cat 10	18,000	27 - 22	18000 - 15449	21 - 18	15448 - 10449	17 and below	10448 and below
C-5A/B/M	Cat 10	18,000	27 - 22	18000 - 15553	21 - 18	15552 - 10553	17 and below	10552 and below

Table 9: Aircraft Category Level of Service (LOS) Chart

Note: *Air Force F&ES increased the NFPA Airport Category and Air Force Vehicle category due to specific military aircraft with additional hazards such as munitions, increased fuel capacity, cargo, and unique airframe material.



Chapter 7 Air Show Safety

As the leader of ARFF and a critical component of emergency response, DAF F&ES must be prepared to ensure both performer and public safety during air shows hosted on Air Force installations. [NFPA 460, Chapter 10](#), [AFMAN 10-1004, Conducting Airforce Open House](#), and [DAFI 11-209, Flying Operations, Participation in Aerial Events](#) provides further guidance.



Figure 5: Practicing Emergency Airshow Procedures

7.1 Air Show Guidelines

In recognition of the non-standard environment in which air shows are conducted, the non-standard aircraft at these events and the non-standard way those aircraft are flown, the following guidelines must be adhered to during air shows.

7.1.1 ARFF Vehicle Positions

ARFF vehicles must be tactically prepositioned to provide the shortest and most direct routes to the show center. In all cases, ARFF vehicles must not be positioned behind the crowd line or staged in the fire station.

The deployment of ARFF vehicles and Crash Fire Rescue (CFR) personnel is a critical aspect of air show safety. They will be positioned to the right and left of the crowd area, with unimpeded access to the air show flight operations area. An ARFF vehicle will also be placed at or near the show center. This strategic placement, with an unobstructed line of sight on



the entire airfield, including the aerobatic box, where most air show flight operations occur, is crucial. By positioning ARFF vehicles at each end of the crowd area and one at the show center, our response time will be significantly improved, potentially saving lives in the event of an incident.

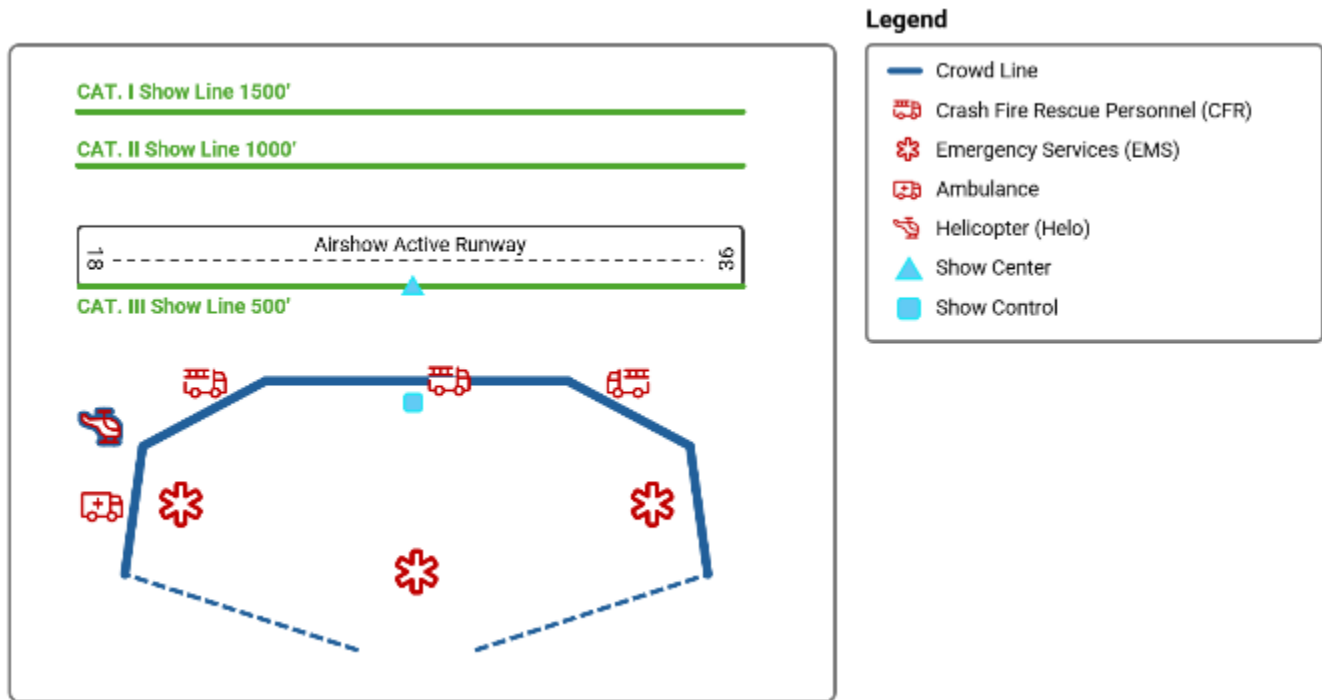


Figure 6: Typical Airshow Layout

7.2 The Aerobatic Box

The FAA defines the aerobatic box as the airspace at an air show where participating aircraft are authorized to perform aerobatic maneuvers appropriate to their Category (CAT). This box begins at the appropriate CAT I/II/III show line shown below.

Note: The bright pink line (below) defines the two-dimensional parameters of the aerobatic box. In addition to these two dimensions, there is a third dimension to the aerobatic box that ensures that the airspace in which air show flight operations are conducted is sterile. That third dimension varies (based primarily on the type of aircraft performing) from as low as 3,000 feet to as high as 20,000 feet.

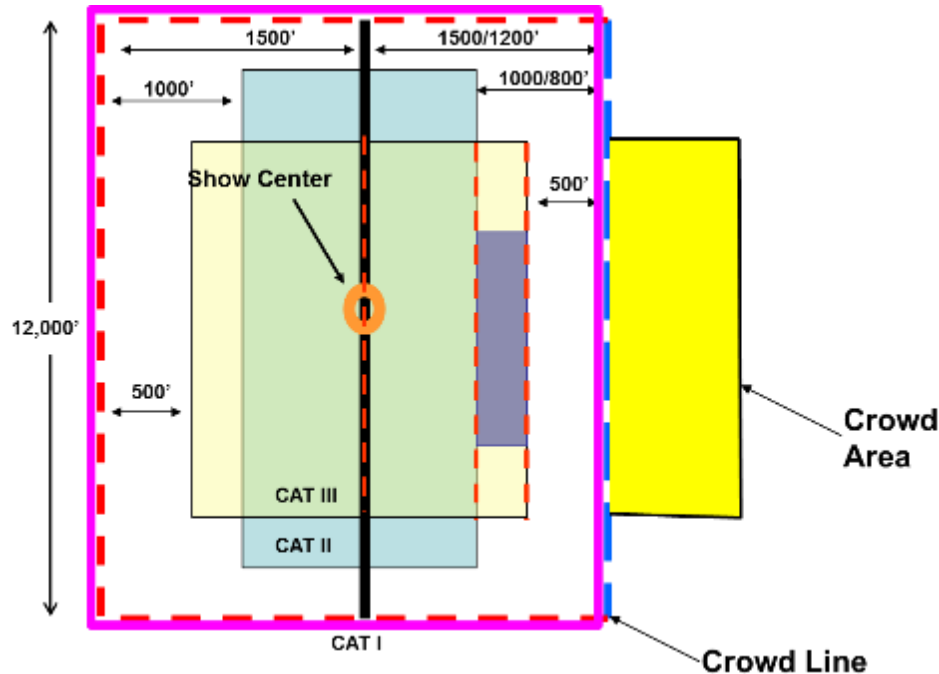


Figure 7: The Aerobatic Box

The aerobatic box is the sterile area in which air show flight operations are conducted. The aerobatic box's boundaries, dimensions, and parameters are clearly and specifically defined as part of the application that air show organizers submit to the FAA to receive authorization to conduct an air show. ARFF Air Show Requirements are as follows:

1. A written or graphic illustration of the aerobatic box must be presented to performers and emergency response personnel during the pre-air show safety briefing.
2. The entire period during which the aircraft are flying during the air show will be treated as an "announced" emergency.
3. ARFF personnel will be staged to respond immediately to any incident or accident. Additionally, folding chairs or other obstructions should never be in front of pre-positioned ARFF vehicles. Friends and family shall not be around ARFF vehicle positions.
4. ARFF personnel will wear their firefighter personal protective equipment (PPE) and remain in the vehicle with engines running throughout the active flying portion of the air show.
5. ARFF personnel will be expected to respond in such a manner that they may deploy firefighting agent within 1-minute following an incident/accident on or near the runway used to conduct the air show.
6. To ensure clear lines of communications, the incident commander shall position themselves or a liaison with the air boss throughout the air show.
7. Prior to the air show and not later than the first safety briefing on the rehearsal/practice day of the air show (typically Friday at most shows), firefighters will meet with the air show operations officer, the air show air boss and appropriate air traffic control personnel to discuss procedures and methods to reduce the standard radio communications and



runway/taxiway clearances required for ARFF personnel to respond to an incident/accident during the air show. These procedures and methods will be developed to allow firefighters to respond to an incident/accident without being delayed by procedural or communications issues.

8. Before the beginning of air show flight operations, at least one firefighter from each ARFF vehicle deployed in support of the show will make themselves available to meet with the pilot-in-command of each aircraft participating in the air show/open house to discuss emergency extraction, canopy release, fuel shut off, master switch on/off switch and aircraft lift points. CFR personnel will receive a written copy of the emergency response procedures for aerial performers. If the firefighters are different on subsequent days of the event, at least one firefighter will make themselves available to each pilot and other firefighters to re-brief the emergency response information.
9. In consultation with the air show operations officer and the air show air boss, firefighters shall either participate in a pre-event tabletop emergency response exercise or be available to conduct an emergency response drill on the practice/rehearsal day of the air show (typically a Friday or a Saturday/Sunday event).
10. F&ES should be familiar with [AFMAN 10-1004, Attachment 2: Planning Checklist](#) and review the checklist with the Air boss during event preparation.

7.3 Airshow Incident Action Plan

Utilize Incident Command System (ICS) forms and local guidance to develop a formal incident action plan. An example of an Airshow Incident Action Plan is located on [DAF F&ES SharePoint](#).



Chapter 8 Risk Management (RM) and Agent Reporting Tools

RM practices are critical for DAF F&ES personnel, helping firefighters make informed decisions that balance risk and benefits. The principle of RM emphasizes the importance of not accepting unnecessary risks, making decisions at the appropriate level, and integrating RM into doctrine and planning at all levels. By implementing RM plans and utilizing best practices, F&ES firefighters can mitigate risks and ensure the safety of personnel and aircraft during emergency responses.

8.1 Risk Management (RM)

The principle of RM requires that firefighting crews not accept unnecessary risks, make decisions at the appropriate level, accept risk when the benefits outweigh the costs, and integrate RM into doctrine and planning at all levels. **Under no circumstances** will a reduction in capability subject ARFF personnel to unacceptable risk. Risk management is an essential consideration when developing an operational plan.

Developed and implemented Risk Management Plans shall include detailed actions for periods of reduced F&ES capability, which requires approval by the installation commander.

[DAF Form 4437, Deliberate Risk Assessment Worksheet](#), will be used to document risk at enduring AF installations when ARFF capability requirements defined in [DAFI 32-2001](#) cannot be met.

8.2 Recommended RM Practices

The following best practices provide F&ES Firefighters with resources and tools for Risk Management activities and processes:

- A. Create local documents identifying specific error codes for each airframe. [DAF F&ES SharePoint](#) provides examples. This pre-identified information provides crew awareness of expected consequences when responding to aircraft.
- B. Become familiar with the [Mishap Investigation Process](#) and use the [Aircraft Investigation Board Reports](#) to improve incident response procedures.
- C. DAF F&ES “Talking Crash” sessions also provide valuable lessons learned from real world emergency incidents. Briefing and points of contact (PoC) for each incident are loaded on DAF F&ES SharePoint.
- D. Review [T.O. 00-105E-9](#), which provides info for aircraft cut in and penetration areas for each specific airframe. It is recommended Fire Chiefs validate this info with local maintenance personnel for each airframe and annotate on departments local [Air Force Technical Order \(AFTO\) form 88, Aircraft Pre-Incident Plan](#). The IFC must have maintenance personnel validate aircraft cut in and penetration points for each airframe and sign off on AFTO 88.
- E. Contribute “Lessons Learned”, i.e., After Action Reports. After Action Reports can be sent to the [AFCEC Reach Back Center organization inbox](#). AFCEC/CXF will post to DAF F&ES SharePoint for departments to access.

8.3 ARFF Agent Reporting Tools

The **ARFF Capability Reporting Tool** located on the [DAF F&ES SharePoint](#) - provides a standardized capability report utilized for daily reporting.



Appendix A - Acronyms

Acronym	Term
AF/DAF	Air Force/Department of the Air Force
AFGIMS	Air Force Geospatial Information Management System
AFIMSC	Air Force Installation and Mission Support Center
AFMAN	Air Force Manual
AFMD	Air Force Manpower Determinant
AFRC	Air Force Reserve Command
AFRCMS	Air Force Reserve Command Manning Standard
AFTO	Air Force Technical Order
AHJ	Authority Having Jurisdiction
ANG	Air National Guard
ANGMD	Air National Guard Manpower Determinant
ARFF	Aircraft Rescue & Firefighting Response
ART	Aggregate Response Time
AS	Allowance Standard
CAT	Category
CFR	Crash Fire Rescue
CLS	Critical Level of Service
CRFFAA	Critical Rescue and Fire Fighting Access Area
DAFI	Department of the Air Force Instruction
Det	Detachment
DoD	Department of Defense
DoDI	Department of Defense Instruction
DRAW	Deliberate Risk Assessment Worksheet
EMR	Emergency Medical Responder
EMT	Emergency Medical Technician
ET	Extended Turret
FAA	Federal Aviation Administration
F&ES	Fire and Emergency Services
HAZMAT	Hazardous Material
IAW	In Accordance With
IC	Incident Commander
ICS	Incident Command System
ICAO	International Civil Aviation Organization
IFC	Installation Fire Chief
LOS	Levels of Service
LRS	Logistic Readiness Squadron
MAJCOM	Major Commands
MEL	Minimum Essential Level
MVR	Master Vehicle Record
NFPA	National Fire Protection Association
OLS	Optimum Level of Service
PoC	Point of Contact



Air Force Civil Engineer Center
F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

Acronym	Term
PPE	Personal Protective Equipment
RIV	Rapid Intervention Vehicle
RLS	Reduced Level of Service
RM	Risk Management
RRA	Rapid Response Area
SFO	Senior Fire Officials
T.O.	Technical Order
UHP	Ultra-High Pressure
US	United States
USAF	United States Air Force
VDP	Vehicle Determinant Plan



Appendix B - Master List of Links

Content	Location	Web Address
AFCEC Reach Back Center Organization Inbox	CH 8, Sec 8.2	afcec.rbc@us.af.mil
AFGIMS Webpage	CH 3, Sec 3.3	https://maps.af.mil/
AFMAN 10-1004, <i>Conducting Airforce Open House</i>	CH 7 CH 7, Sec 7.2	https://static.e-publishing.af.mil/production/1/af_a3/publication/afman10-1004/afman10-1004.pdf
AFMD, <i>Fire Emergency Services 44F100</i>	CH 1, Sec 1.1 CH 4, Sec 4.1 CH 6, Sec 6.1.1	https://govtribe.com/file/government-file/25-dot-usaf-manpower-standard-44f1-dot-pdf
AFRCMD FAC 44XXXX	CH 1, Sec 1.1 CH 4, Sec 4.1	https://usaf.dps.mil/sites/HQAFRC/SitePages/Home.aspx *Restricted Access
Air Force Technical Order (AFTO) form 88, <i>Aircraft Pre-Incident Plan</i>	CH 8, Sec 8.2	https://static.e-publishing.af.mil/production/1/af_a4/form/afto88/afto88.pdf
Aircraft Investigation Board Reports	CH 8, Sec 8.2	https://afjag.usaf.afpims.mil/AIB-Reports/ *Requires CAC to access, *Restricted Access
Air Mobility Command Instruction (AMCI) 11-208, <i>Mobility Air Forces Management</i>	CH 1	https://static.e-publishing.af.mil/production/1/amc/publication/amci11-208/amci11-208.pdf
ANGMD 44F100	CH 1, Sec 1.1 CH 4, Sec 4.1	https://usaf.dps.mil/sites/ANGA1/A1M/Manpower%20Determinant%20%20State%20HQ%20Template%20Library/Forms/AllItems.aspx?id=%2Fsites%2FANGA1%2FA1M%2FManpower%20Determinant%20%20State%20HQ%20Template%20Library%2FManpower%20Determinant%20Library%2F4%20%2D%20Mission%20Support%20Group%2FCivil%20Engineering%20%28CE%29&viewid=2944c2d9%2D908b%2D4af1%2Da0c6%2D2c68eee76bdf *Requires CAC to access
DAF F&ES SharePoint Homepage	CH 7, Sec 7.3 CH 8, Sec 8.2 CH 8, Sec 8.3	https://usaf.dps.mil/teams/afcec-portal/CX/CXF/SitePages/Home.aspx *Requires CAC to access
DAF Form 4437, <i>Deliberate Risk Assessment Worksheet</i>	CH 1, Sec 1.2 CH 8, Sec 8.1	https://static.e-publishing.af.mil/production/1/af_se/form/daf4437/daf4437.pdf
DAFI 11-209, <i>Flying Operations, Participation in Aerial Events</i>	CH 7	https://static.e-publishing.af.mil/production/1/af_a3/publication/dafi11-209/dafi11-209.pdf
DAFI 32-2001, <i>Fire & Emergency Services Program</i>	CH 1 CH 1, Sec 1.1 CH 1, Sec 1.2 CH 4, Sec 4.1 CH 6 CH 8, Sec 8.1	https://static.e-publishing.af.mil/production/1/af_a4/publication/afi32-2001/dafi32-2001.pdf



Air Force Civil Engineer Center
F&ES Aircraft Rescue & Firefighting (ARFF) Response Playbook

Content	Location	Web Address
DoDI 6055.06, <i>Department of Defense Fire and Emergency Services Program</i>	CH 1 CH 1, Sec 1.1 CH 1, Sec 1.2 CH 2 CH 3 CH 3, Sec 3.1 CH 4, Sec 4.1	https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/605506p.pdf
F&ES Contingency Operations Concept of Employment (CONEMP) Playbook	CH 1	https://www.ceplaybooks.com/playbooks/73444374-2985-11ef-9454-0242ac120002/
Mishap Investigation Process	CH 8, Sec 8.2	https://www.safety.af.mil/Home/Mishap-Investigation-Process/
NFPA Standard 460, <i>Standard for Aircraft Rescue and Fire Fighting Services at Airports</i> (2024 Edition)	CH 1 CH 1, Sec 1.1 CH 2, Sec 2.1 CH 3 CH 4, Sec 4.2 CH 7	https://link.nfpa.org/ *Requires purchase or membership
Public Law 104-113, <i>National Technology Transfer Act of 1995</i>	CH 3	https://www.govinfo.gov/content/pkg/PLAW-104publ113/pdf/PLAW-104publ113.pdf
Public Law 107-107 Amendment, <i>Utilization of Consensus Technical Standards by Federal Agencies</i>	CH 3	https://www.govinfo.gov/content/pkg/STATUTE-115/pdf/STATUTE-115-Pg1012.pdf
T.O. 00-25-172, <i>Ground Servicing of Aircraft and Static Grounding/Bonding</i>	CH 3, Sec 3.2	https://www.robins.af.mil/Portals/59/12%20July%202023_TO%2000-25-172.pdf
T.O. 00-105E-9	CH 8, Sec 8.2	https://etims.cce.af.mil/ETIMS/ATOMS/catalog/todetail.jsp?to_num=00-105E-9-WA-1&owner_account=WR-COMMON&prev=%2FETIMS%2FATOMS%2Fcatalog%2Ftoxtocat.jsp%3Facct%3D%26user%3Djohn.p.smith.iii1185259613%26isuser%3DF%26tonum%3D00-105E-9-wa-1%26toscope%3D%26totype%3D%26pubkind%3D%26totitle%3D%26weaponsys%3D%26pubtype%3D%26activetos%3Dfalse%26latestchange%3Dtrue%26owns%3Dfalse%26subs%3Dfalse%26firstrow%3D1%26forward%3Dtrue *Access through local TODO account



Appendix C - Personnel and Vehicle Setup for Category 1 – 10 Aircraft

Category 1 - 4 AIRCRAFT

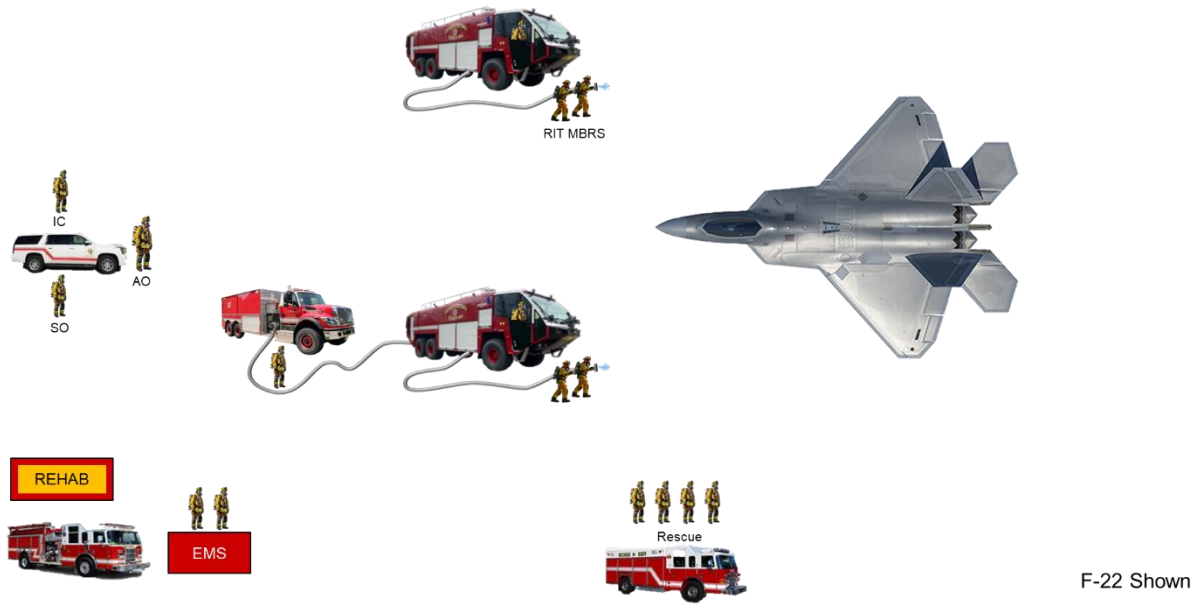


Figure 8: Category 1 - 4 Personnel & Vehicle Setup

Category 5 AIRCRAFT



Figure 9: Category 5 Personnel & Vehicle Setup



Category 6 AIRCRAFT

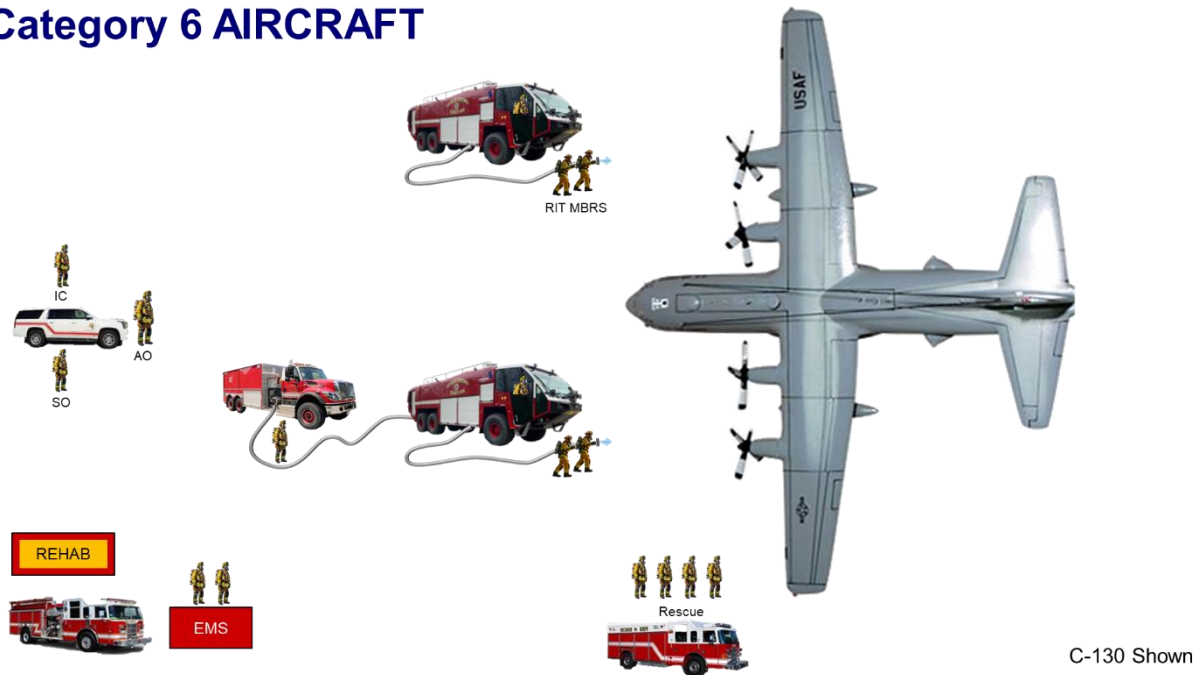


Figure 10: Category 6 Personnel & Vehicle Setup

Category 7 - 8 AIRCRAFT



Figure 11: Category 7 - 8 Personnel & Vehicle Setup



Category 9 AIRCRAFT



Figure 12: Category 9 Personnel & Vehicle Setup

Category 10 AIRCRAFT



Figure 13: Category 10 Personnel & Vehicle Setup