



DEPARTMENT OF THE AIR FORCE  
WASHINGTON DC

OFFICE OF THE ASSISTANT SECRETARY

16 November 2021

MEMORANDUM FOR ALMAJCOM/CC  
ALFIELDCOM/CC  
AFRC/CC  
NGB/CC

FROM: SAF/IE  
1665 Air Force Pentagon  
Washington, DC 20330-1665

SUBJECT: Sundown Policy for Foam Fire Suppression Systems

The Assistant Secretary of the Air Force for Installations, Environment, and Energy led a joint effort across the Departments of the Air Force, Army and Navy along with the Defense Logistics Agency to assess risks with respect to replacing Aqueous Film Forming Foam (AFFF) fire suppression systems (FSS) in DoD facilities. After reviewing 32 years of historical data and 15 years of safety mishap data, the assessment team did not find a single instance where a hangar fuel related fire resulted in the loss of an aircraft or life. The only aircraft fuel related fire in the past 32 years in the DoD was suppressed by a water deluge system.

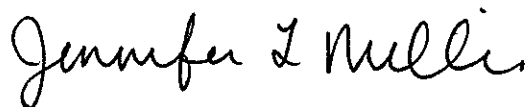
In contrast, the historical data shows a trend of inadvertent activations of foam systems across the DoD of one in every two months (84 mishaps over past 15 years). The mishap cost associated with these events was in excess of 24.5 million dollars and contact with chemicals in the foam have caused one death, injured 21 people and damaged more than 120 aircraft. Considering the findings of this risk-informed analysis and the high cost of converting, maintaining and clean-up of accidental discharges of foam systems, effective immediately, all DAF hangars and similar facilities equipped with a foam FSS will be categorized as Tier 2 Fire Protection Facilities. Tier 2 facilities will use an automatic water sprinkler system consistent with the attached guidance in lieu of foam FSS.

The use of foam FSS is limited to facilities where the total loss of the facility, or the loss of the aircraft/assets serviced inside, would result in mission failure at the Department of Defense, Department of the Air Force, Combatant Command or Sub-Unified Command level. These facilities, which are of limited exception, will be categorized as Tier 1 Fire Protection Facilities. Categorization as a Tier 1 facility requires justification by MAJCOMs and approval by SAF/IE as outlined below. For approved Tier 1 facilities, bases shall program replacement of existing FSS containing fluorinated AFFF to one of the following specialized systems: Ignitable Liquid Drainage Floor Assembly (ILDFA), Low Expansion Foam System containing an approved Fluorine Free Foam (FFF), or High Expansion Foam System (HEFS). The ILDFA is the primary option for Tier 1 facilities.

MAJCOMs must establish a process to assess applicable facilities and submit exception-to-policy requests for Tier 1 facility designation. Requests must be endorsed by MAJCOM/CDs, delegated no further than MAJCOM/A3s (or equivalent USSF organization), before being submitted to AF/A3 or SF/S3 for endorsement and then to SAF/IE for Tier 1 approval consideration. For the Reserve and Guard Components, Tier 1 requests require endorsement by their respective A3 and approval consideration by SAF/IE. All requests for Tier 1 approval for existing facilities must be received by SAF/IE no later than 90 days after issuance of this policy. For new facilities requiring a tiering determination, the request must be submitted prior to authorization of design funding. Additional details on exception to policy submission are provided in the attachment.

An aggressive schedule is required to meet the congressionally mandated phase out of AFFF by 1 October 2024. If conversion to an approved alternative is not feasible before this deadline, bases must still remove and dispose of AFFF and provide other fire safety measures approved by the Installation Commander (delegable to the Base Fire Marshal per AFI 32-2001) until the conversion project can be accomplished. Tier 2 facilities that have an existing HEFS may continue to remain operational and sustained pending conversion to, or installation of, an automatic water sprinkler system in accordance with this policy.

Points of contact for this policy are Mr. Jim Sample (james.sample.6@us.af.mil), Office of the Deputy Assistant Secretary of the Air Force for Environment, Safety, and Infrastructure (SAF/IEE), and Mr. Brent Hyden (brent.hyden@us.af.mil), Air Force Directorate of Civil Engineers (AF/A4C). The implementation guidance attached is the responsibility of AF/A4C. A4C may alter this guidance as it deems necessary to comply with this policy.



JENNIFER L. MILLER, SES  
Acting Assistant Secretary of the Air Force  
(Energy, Installations, and Environment)

Attachment:  
Implementation Guidance

cc:  
AF/A3  
SF/S3  
AF/A4C

Attachment  
Implementation Guidance

- 1. Purpose.** To provide guidance and direction to implement the 2020 NDAA and new facility fire protection strategy as it pertains to foam-based fire suppression systems (FSS). These requirements have been developed based on the acceptable risk pertaining to a fuel spill fire scenario.
- 2. Scope.** This policy provides guidance to DAF fire protection engineering and criteria for hangars and similar facilities with foam fire suppression systems. Temporary facilities, tension fabric structures, leased facilities and other facilities purchased as equipment with 3080 funds are also subject to this policy.
- 3. Tier 1 Facility.**
  - 3.1. Definition.** The complete loss of the facility, or the loss of the aircraft/assets serviced inside, would result in mission failure at the DoD, DAF, CCMD or Sub-Unified Command level. Tier 1 facility FSS are designed to provide both life safety protection as well as asset protection in the event of a fuel fire.
  - 3.2. Approved FSS.** The following systems are authorized for Tier 1 facilities and shall comply with paragraphs 3.3 (Administration) and 5 (Technical Criteria) below: Ignitable Liquid Drainage Floor Assembly (ILDFA), Low Expansion Foam System (LEFS), and High Expansion Foam System (HEFS).
  - 3.3. Administration.** This policy immediately designates all DAF hangars or similar facilities equipped with a foam-based FSS as a Tier 2 facility. The Assistant Secretary of the Air Force for Energy, Installations and Environment (SAF/IE) must approve all exceptions meeting the definition above through the Tier 1 approval process. Tier 1 requests require endorsement at the MAJCOM/CD (delegable to MAJCOM/A3 or USSF-equivalent) and AF/A3 levels before being submitted to SAF/IE for approval consideration. For the Reserve and Guard Components, Tier 1 requests require endorsement by their respective A3 before being submitted to SAF/IE.
    - 3.3.1. Projects including FSS already in the programming and/or design phase must be reviewed for compliance with this policy and if applicable, submitted for Tier 1 approval consideration prior to requesting funds for execution. This applies to all projects regardless of funding source.
    - 3.3.2. Tier 1 approval is required prior to installation of any new ILDFA, LEFS, or HEFS. New Tier 1 facilities shall be constructed with an ILDFA to the maximum extent practical.
    - 3.3.3. Requests for Tier 1 approval can be submitted via electronic staff summary sheet with a memorandum from the MAJCOM to SAF/IE. The request should include the base name, facility number, Real Property Unique Identifier, and thorough justification detailing how the complete loss of the facility, or the loss of the aircraft/assets serviced inside, would result in mission failure at the DoD, DAF, CCMD or Sub-Unified Command level.

3.3.4. The real property-owning MAJCOM is responsible for submitting all Tier 1 FSS requests. Tenant units or rotational forces requiring a Tier 1 FSS must coordinate with the owning MAJCOM to submit a Tier 1 request.

3.3.5. Existing HEFS and LEFS are permitted to be maintained throughout the end of useful life, or until funding is available to install an ILDFA, unless otherwise approved for further use.

3.3.6. ILDFA, LEFS, and HEFS shall meet the technical criteria of paragraph 5.

#### **4. Tier 2 Facility.**

**4.1. Definition.** The complete loss of the facility, or the loss of the aircraft/assets serviced inside, would not result in mission failure at the DoD, DAF, CCMD or Sub-Unified Command level. The end-state Tier 2 facility FSS is an automatic water sprinkler system designed to provide life safety protection for occupants to evacuate the facility in the event of a fire.

**4.2. Approved FSS.** The following systems are authorized in a Tier 2 facility and shall comply with paragraph 4.3 (Administration) and section 5 (Technical Criteria) below: Automatic Sprinkler System (default), HEFS (transitional), and LEFS (transitional).

**4.3. Administration.** Tier 2 fire protection facilities are designated by default, until the process in paragraph 3.3 is fully staffed and approved.

4.3.1. New facilities shall not be designed or constructed with ILDFA, HEFS or LEFS; they shall be designed or constructed with automatic sprinkler systems which comply with paragraph 5.4.

4.3.2. Existing HEFS and LEFS are approved until they can be replaced with an approved automatic sprinkler system. Program projects for HEFS and LEFS replacement with an automatic sprinkler system meeting paragraph 5.4 by July 2022.

4.3.3. Current and future facility FSS designs must be modified to meet Tier 2 fire protection standards consistent with this guidance.

4.3.4. Existing HEFS and LEFS compliant with the AF/A4 Aircraft Hangar Fire Suppression System Modernization policy letter, dated 3 June 2019, are permitted to be maintained throughout the end of useful life, or until funding is available to provide an automatic sprinkler system meeting requirements stated in paragraph 5.4. Modernization of legacy Tier 2 systems is not authorized when costs to do so exceed the costs to convert or install a new water sprinkler system. Existing HEFS and LEFS are permitted to remain in manual mode.

4.3.5. HEFS and LEFS shall meet the technical criteria in paragraphs 5.3 and 5.4.

4.3.6. If installation of an approved FSS is not feasible before 1 October 2024, bases must still remove and dispose of AFFF and provide other fire safety measures approved by the installation commander (delegable to the Base Fire Marshal). Bases shall develop fire Risk Mitigation Plans in accordance with AFI 32-2001. The facility shall carry a Fire Safety Deficiency code 1 (FSD-1) until an approved system is installed.

## **5. Technical Criteria**

### **5.1. Ignitable Liquid Drainage Floor Assembly (ILDFA).**

5.1.1. ILDFA shall be FM Approved in accordance with FM Standard 6090, Approval Standard For Ignitable Liquid Drainage Floor Assemblies. Contact AFCEC/COSM for current criteria until the ILDFA is incorporated into Unified Facilities Criteria (UFC).

### **5.2. High Expansion Foam Systems (HEFS).**

5.2.1. New HEFS shall comply with the UFC.

### **5.3. Low Expansion Foam Systems (LEFS).**

5.3.1. New LEFS shall comply with design criteria as directed by AFCEC/COSM.

5.3.2. Existing LEFS shall be drained of AFFF, and AFFF shall be disposed of in accordance with current environmental policy and applicable environmental regulations by 1 October 2024. New and existing LEFS shall use an AFCEC/COSM Approved UL Listed Fluorine Free Foam (FFF) or DoD approved FFF.

5.3.3. LEFS serving bulk fuel storage and hydrant refueling must be taken out of service immediately.

5.3.4. LEFS are permitted to be abandoned in place when taken out of service.

### **5.4. Automatic Sprinkler Systems.**

5.4.1. Sprinkler systems shall be designed in accordance with UFC 3-600-01, *Fire Protection Engineering For Facilities*, and UFC 4-211-01, *Aircraft Maintenance Hangars*. Aircraft hangar bays shall be considered extra hazard occupancies when referring to UFC 3-600-01, Table 9-7.3.4.

5.4.2. Overhead AFFF systems are permitted to be converted to automatic sprinkler systems.

5.4.3. Facilities for which water is not readily available may require an alternative<sup>s</sup> FSS. An equivalency request must be submitted to and approved by the Fire Protection Engineer, AFCEC/COSM.