



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

10/5/21

SUSTAINMENT

The Honorable Rosa L. DeLauro
Chairwoman
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

Dear Madam Chairwoman:

The explanatory statement, accompanying H.R. 133, the Consolidated Appropriations Act, 2021 (Public Law 116-260), requests the Director of the Department of Defense Per- and Polyfluoroalkyl Substances Task Force provide a brief on research efforts regarding aqueous film forming foam (AFFF) replacement solutions and alternatives, to include cost implications and the testing of products to ensure they meet military standards.

The enclosed brief includes details on the Department's progress to evaluate AFFF replacement alternatives, including development of the Military Specification, cost implications, and assessment of non-foam alternatives. The brief took additional time to complete due to the required collection of data from multiple functional areas within the Assistant Secretary of Defense for Sustainment portfolio and extensive coordination with the Military Departments. Should you have additional questions please contact the Office of the Assistant Secretary of Defense for Legislative Affairs and your respective legislative liaison.

I am sending an identical letter to the Senate Appropriations Committee.

Sincerely,

MORANI.STEVE
N.J.1174632444

Digitally signed by
MORANI,STEVEN.J.1174632444
Date: 2021.10.05 17:23:12 -04'00'

Steven J. Morani
Principal Deputy Assistant Secretary of Defense
for Sustainment (Logistics)
Acting Assistant Secretary of Defense for
Sustainment

Enclosure:
As stated

cc:
The Honorable Kay Granger
Ranking Member



OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE

3500 DEFENSE PENTAGON
WASHINGTON, DC 20301-3500

10/5/21

SUSTAINMENT

The Honorable Patrick J. Leahy
Chairman
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The explanatory statement, accompanying H.R. 133, the Consolidated Appropriations Act, 2021 (Public Law 116-260), requests the Director of the Department of Defense Per- and Polyfluoroalkyl Substances Task Force provide a brief on research efforts regarding aqueous film forming foam (AFFF) replacement solutions and alternatives, to include cost implications and the testing of products to ensure they meet military standards.

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Sincerely,

MORANI.STEVE
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Steven J. Morani
Principal Deputy Assistant Secretary of Defense
for Sustainment (Logistics)
Acting Assistant Secretary of Defense for
Sustainment

Enclosure:
As stated

cc:
The Honorable Richard C. Shelby
Vice Chairman



Briefing to Congress on Aqueous Film Forming Foam (AFFF) Replacements and Alternatives

Mr. Steven Morani

Acting Assistant Secretary of Defense (Sustainment)

September 2021

The estimated cost of this report or study for the Department of Defense is approximately \$4,800. This includes \$2,600 in expenses and \$2,200 in DoD labor. Cost estimate generated on date, September 13, 2021. RefID: 8-4B65508



Purpose

- **Official response to the Explanatory Statement accompanying H.R. 133, the Consolidated Appropriations Act, 2021, Public Law 116-260:**

“The Director of the Department of Defense PFAS Task Force is directed to brief the House and Senate Appropriations Committees not later than 180 days after the enactment of this Act on research efforts regarding aqueous film forming foam replacement solutions and alternatives, to include cost implications and the testing of products to ensure they meet military standards.”



Overview

- **2020 NDAA Sec 322**
- **AFFF Replacement - MILSPEC Development**
- **AFFF Replacement - Cost Implications**
- **Assessment of Non-Foam Alternatives to AFFF**
- **Take-Aways**



2020 NDAA Section 322

“(a) (1) MILITARY SPECIFICATION.—Not later than January 31, 2023, the Secretary of the Navy shall publish a military specification for a fluorine-free fire-fighting agent for use at all military installations”

New MILSPEC

by Jan 31, 2023

“(b) LIMITATION.—No amount authorized to be appropriated or otherwise made available for the Department of Defense may be obligated or expended after October 1, 2023, to procure fire-fighting foam that contains in excess of 1 part per billion of perfluoroalkyl substances and polyfluoroalkyl substances¹.”

Cannot purchase

foam with >1ppb PFAS

after Oct 1, 2023

“(c) PROHIBITION ON USE.— Fluorinated aqueous film-forming foam may not be used at any military installation on or after the earlier of the following dates:

Cannot use

PFAS AFFF

after Oct 1, 2024*

(1) October 1, 2024.

**SECDEF may grant two 1-year extensions = 2026*

(2) The date on which the Secretary determines that compliance

with the prohibition under this subsection is possible.”



AFFF Replacement - MILSPEC Development

- **Fire Testing Performance - Status and Considerations**
 - Since 2017, DoD has invested over \$28M to develop and test nearly 20 PFAS-free agents, some of which are commercially available
 - Available commercial PFAS-free agents can meet current AFFF MILSPEC fire suppression times for jet fuel, but not for gasoline fires
 - Special attention must be paid to firefighting technique when applying PFAS-free foam to protect the foam blanket from degrading and prevent re-ignition (especially during large scale fires)



Large-scale fire test of PFAS-free foam at China Lake, May 2021



AFFF Replacement - MILSPEC Development

- **Other Considerations**

- *Compatibility* – when mixed with other agents
- *Corrosiveness* - could impact piping and tanks
- *Viscosity* – high viscosity would require significant changes to existing delivery equipment
- *Human Health and Environmental Toxicity* - Requesting detailed information from manufacturers about the components of their PFAS-free formulations in order to screen them for potential toxicity to humans and the environment



AFFF Replacement - Cost Implications

- Inventory of fixed and mobile systems with AFFF**

Inventory of all land-based systems using AFFF	Mobile Systems (trucks, etc.)	3,087
	Fixed Systems (hangars, etc.)	1,578
Inventory of foam concentrate	In Service	2,500,000 gallons
	Reserve stock	500,000 gallons

- Future supply of PFAS-free agents**

- Nearly all civilian airports in the United States use MILSPEC AFFF and the Federal Aviation Administration (FAA) faces a similar mandate to replace AFFF. The inventory of AFFF and associated delivery systems at civilian airports is about 3 times larger than DoD's. This will add pressure on manufacturers to scale up supply to meet tight timelines



AFFF Replacement - Cost Implications (continued)

Actions	Considerations
Acquire sufficient stock of PFAS-free agents	Foam manufacturers will have to scale up production to meet increased demand from DoD and commercial airports.
Remove AFFF from existing systems	Removal of the existing AFFF is followed by rinsing AFFF residues out of existing foam delivery systems. This rinsing step will generate significant amounts of rinsate that require disposal. DoD is demonstrating and testing new methods to reduce AFFF residues in piping and tanks that may produce better results and reduce costs compared to rinsing with water.
Modify systems, as necessary, to receive new agents	If qualified alternative agents are low-viscosity, they could be dropped into existing systems with only minor modifications. If, however, the qualified alternative agents are highly viscous, the cost and time to modify or replace infrastructure to accommodate these new agents would expand substantially.
Fill systems w/ PFAS-free foam	Trucks and hangars must be taken off-line to change foam. So, the pressure to change quickly must be balanced with the need to maintain mission capability, which will increase costs.
Properly dispose of AFFF	While disposal should not affect DoD's ability to meet NDAA deadlines, the availability of disposal options and cost of disposal must be considered.



Assessment of Non-Foam Alternatives to AFFF

- **DoD is conducting demonstrations of non-foam fire suppression alternatives at Navy and Air Force hangars**

Floor Drains



Water Mist Systems



Advanced Additives



- **DoD is also conducting a comprehensive assessment of the relative risks and costs of implementing the various AFFF replacement strategies**



Take-Aways

- If drop-in, low-viscosity, replacements can be found, it will greatly simplify fielding. However, we must be prepared for increased cost and time to field if drop-in replacements cannot be found.
- The FY20 NDAA prohibits purchase of “fire-fighting foam” that contains > 1 ppb PFAS. While these measurements cannot be done in product concentrates with current test methods, DoD is researching methods to obtain this detection level in the fire-fighting foam.
- Preparing both the commercial and government elements of the foam supply chain for substantial increases in demand will be important to achieve fielding deadlines and avoid mission impacts.