

Naval Aviation Fire Protection

Advantages and Features

An aircraft's self-contained nature and the close proximity of fuel lines and electrical equipment means that even the smallest fire can be catastrophic. If not promptly extinguished, fire can trigger a chain reaction that could result in the loss of aircraft and crew. Add the dangers of flying in combat to the equation, and the probability of an on-board fire increases dramatically. For these reasons, the Navy's aircraft fire protection program must be top-notch.

Technology Description

The Navy Fire Protection Team is responsible for all naval aircraft fire protection systems. The team's expertise, experience, and knowledge can easily be adapted to other military aircraft platforms and commercial applications. Specific capabilities include:

- Identifying, evaluating, and testing alternatives to Halon 1301
- Conducting independent research and development for two halon alternatives — fine water mist technology and inert gas generators
- Maintaining knowledge of environmental policies and working relationships with all aircraft regulator agencies, military and commercial (U.S. and international)
- Analyzing and tracking fire-related trends (e.g., false alarms, equipment problems) for each unique aircraft platform



Navy sailors demonstrate small, mobile fire fighting unit



Recent accomplishments in fire fighting and protection include:

- Development of a patented fine water mist nozzle that consistently outperforms any commercially available nozzle in its class tested to date. The nozzle is nontoxic, does not deplete the ozone layer, is not a global warming agent, and is easy to clean.
- Design (in partnership with Entwistle Company of Hudson, MA) of a small mobile fire fighting vehicle to perform rapid first line fire response to large scale fires on aircraft carrier flight decks and hangar bays in the proximity of fueled and armed aircraft. Unlike large fire trucks used by most community fire departments, this vehicle is much smaller which allows it to maneuver in and around obstacles in restricted spaces.

Equipment and Testing Facility

The Navy Aircraft Fire Test Facility, located at the Naval Air Warfare Center Aircraft Division, Patuxent River, MD allows the team to evaluate rigorous and superior fire suppression, protection, and detection systems. Here they research, develop, test, and evaluate systems that protect engine nacelles, dry bays, and cabin areas. The Fine Water Mist Laboratory performs system discharge testing, allowing team engineers to assess the effectiveness of various fine water mist technologies. Various test equipment is used to evaluate exotic materials to determine whether they are “fire hardened,” fireproof,” or “fire resistant.”

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The Navy also owns an agent concentration measuring system, which accurately measures the amount of CO₂ and O₂ in an engine nacelle. In addition, the Mini Deck Test Facility located at China Lake, CA allows the team to conduct realistic shipboard firefighting tests by simulating conditions on board an aircraft carrier.

Licensing and Partnering Opportunities

Domestic technology transfer and partnership activities are integral elements of the Department of Defense’s national security mission and concurrently improve the economic, environmental, and social well being of U.S. citizens. At the same time, technology transfer supports a strong industrial base that the Department of Defense may use to supply U.S. defense needs.

Several mechanisms exist for partnering with NAVAIR Lakehurst. These include cooperative research and development agreements (CRADAs), commercial service agreements (CSAs), and licensing of government-owned technologies. Under a CRADA, Lakehurst engineers and scientists work cooperatively with their peers in industry or academia on mutually beneficial research and development. The Navy has been given statutory authorization, via CSAs, to use Navy facilities to perform specific types of work for private parties. NAVAIR Lakehurst frequently produces patented, innovative discoveries of commercial value that are available for licensing to the private sector. Information about partnering with NAVAIR Lakehurst is available from the Business Development Office.

The Naval Air Warfare Center Aircraft Division Lakehurst, known as NAVAIR Lakehurst, is part of the Naval Aviation Systems TEAM. NAVAIR Lakehurst researches, develops, tests, and procures aircraft launch and recovery systems and support equipment for Navy and Marine aviation.

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