NoFoam System for Aircraft Hangar Fire Suppression Foam Discharge Checks

Y0817 Pollution Abatement Ashore Program
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Technical POC
NFESC, Code 421
Phone 805 982-4976

Management POC
NFESC, Code 45
Phone 805 982-1674

Objective & Navy EQ Requirements

Objective: Demonstrate and validate the effectiveness of the NoFoam System Technology for aircraft hangar fire suppression foam system

Requirements	Priority	Requirement Title
2.II.01.C	High	Control Emissions from Fire Fighter Training
2.II.01.q	High	Control/Treat Industrial Wastewater Discharges

Problem Statement/Drivers-Regulatory

- **Estimated Navy Cost is more than $15M/Year**
  - **over $12.8M per year wastewater disposal (160 hangars X 40K gal/hangar X $2/gal X yearly)**
  - **over $1.4M per year in AFFF procurement (160 hangars X 1200 gal/hangar X $7/gal X yearly)**
- **AFFF poses environmental concerns**
  - **BOD**
  - **COD**
  - **foaming action**
- **USEPA concerns with the perfluoro-octanyl sulfonates (PFOS)**
  - **persistent**
  - **bio-accumulating**
  - **toxic**

Approach

- Apply NoFoam System Technology for ARFF vehicles
- Simulate AFFF nozzle spraying using environmental benign dye-water or water while checking the aircraft hangar fire suppression foam system - piping, pumps, valves, proportioner, eductor, nozzles
  - monitor AFFF surrogate flow rates
  - monitor inline pressures
  - monitor pump pressures

Technology Description

- Drain system
  - AFFF concentrate - reuse
  - flush residual AFFF
- Reduce AFFF wastewater generation and disposal cost by 99%
- Reduce wastewater treatment plant disruption from AFFF discharges
- Reduce AFFF concentrate procurement - 1200 gal / hangar (minimum)
- Maintain mission readiness
- Allows facilities to comply with Federal pollution and waste minimization regulations
- Technology is applicable within DOD and the private sector

Before/After Comparison

Before	After
NAS Oceana • Do NOT perform discharge checks (older hangars), inspect only • Collect and dispose off-site (newer hangars)	• Release clean water to sewer • Reduced AFFF concentrate procurement
NAF Diego Garcia • Drain to holding pond • Ship to the mainland for disposal	• Release clean water to sewer • Reduced AFFF concentrate procurement
Other Activities • Do NOT perform discharge checks or • Inspect only or • Collect and dispose on site/off-site or • Dilute and controlled discharge to sewer	• Release clean water to sewer • Reduced AFFF concentrate procurement

Benefits: Before/After Comparison

	Current Technology		NoFoam System Technology	
	Annual Cost		Annual Cost	
	Per Hangar	Navy Wide	Per Hangar	Navy Wide
AFFF Wastewater	$ 80,000	$ 12,800,000	$ 0	$ 0
AFFF Concentrate	$ 8,400	$ 1,344,000	$ 0	$ 0
Utilities (water)	$ 50	$ 8,000	$ 50	$ 8,000
Maintenance	$ 5,000	$ 800,000	$ 700	$ 112,000
TOTAL	$ 93,450	$ 14,952,000	$ 750	$ 120,000

ROI = 44 ($15M / $335K)

Milestones and Major Deliverables of Task

MILESTONE	FY 02				FY 03				FY 04				FY 05			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1. Establish Host Site																
2. Establish Baseline, Design Specs, and Parts List																
* 3. Site Prep																
*4. Install, Test, and Train																
*5. Monitor and Evaluate																
*6. Issue Final Report and Technology Transfer																

*Delay Contract Award and Design Changes

Technical Accomplishments to Date

Task 1

FY02 Established Host Platform Sites
- NAS Oceana Hangar 200
- NAF Diego Garcia Hangar 300

Task 2

FY03 NFESC mock-up test & NoFoam System Design

Witnessed Fire Suppression Acceptance Test
- MCAS Cherry Point Hangar 500

Task 2 & 6

FY03 Attended
- Fire Suppression Technology Conference
- Halon Option Technical Working Conference
- Fire Department Instructors Conference

FY02 Attended DOD Fire & Emergency Conference

Task 3

FY04 NAS Ocean Hangar 200 Site Check

Implementation Accomplishments and Plan

- Approval authority on aircraft hangar fire protection
  - Joe Simone, NAVFACHQ
  - Joe Condlin, PACDIV Head Fire Protection
  - Bob Tabet, LANTDIV Head Fire Protection
- Present technical paper to fire fighters conferences
- Disseminate tri-fold and technical data sheet
- Joint Service P2 Technical Library
- US Navy Pollution Prevention Equipment Program
- Field Environmental Solutions - US Army Environmental Center
- Drawing procurement package

Logic Model for NoFoam System for Aircraft Hangar Fire Suppression Foam Discharge Checks

Navy Benefits	The Navy obtains the ability to defend against overly stringent regulations that are imposed in the absence of data. The potential outcome is a significant reduction in cost of compliance.
Customer Capability	The customer can use these tools and techniques to collect scientifically defensible data on mass loading of contaminants and directly measure their impacts on receiving waters. The customer can then use these data to defend against overly stingent permits or waste load allocations under the TMDL program.
Products	Enhanced onshore samplers- comms, rt monitoring, robust power Onshore techniques-tidally influenced data collection, rt measures Offshore assessment techniques-magnitude and extent of impacts
Project Milestones	Technology demonstration at Naval facility MS5, 3Q FY03 Second demonstration at Naval facility MS7, 4Q FY04 System transition MS9, 2Q, FY05

Summary

- Use benign dye-water in aircraft hangar foam suppression system annual discharge checks
- Reduce AFFF wastewater and disposal cost by 99%
- Reduce AFFF concentrate procurement cost by 99%
- Maintain mission readiness