

14 JAN 1955

SUBJECT: Airfoam Tests on Fire Protection, POL Bulk Storage Facilities

TO: Commander
Alaskan Air Command
Elmendorf Air Force Base
APO 942, U S Air Force

1. Reference is made to discussions between Messrs. King and Kreitlow and Captain Trimble of this office and Messrs. Paul J. Cunningham, Fire Prevention Engineer, and H. D. Roberts of your headquarters regarding testing to determine cold weather operating limits of mechanical type airfoam for fire protection on POL bulk storage tanks.
2. This office has contacted principal suppliers of equipment and oil companies operating in northern climates without obtaining satisfactory answers to questions which have arisen concerning the operating limits of airfoam systems. As a result of the inavailability of this information from manufacturers and oil companies, and in view of the existence of such airfoam systems on POL bulk storage tanks at Elmendorf, Ladd, and Eielson Air Force Bases, Tok Junction and Haines on the Haines-Fairbanks Pipeline, and the contemplated future construction at various other installations, it is considered important that low-temperature tests be conducted to determine the lowest temperature at which these systems will function or can be made to function in accordance with acceptable fire codes.
3. To accomplish these tests, it is proposed to set up an equivalent of the longest foam line Area E-6, Eielson Air Force Base, complete with appurtenances. This set-up is proposed to be made on Ladd Air Force Base on the China River at a location prescribed by the Air Force in accordance with the inclosed sketch. A complete test delivering airfoam for the duration of thirty minutes at the rate recommended by the standards of the National Board of Fire Underwriters is proposed using water obtained from the China River. At the conclusion of this test, it is proposed to connect to a suitable water and steam supply as indicated in the inclosed sketch, and run tests with water initially heated to various temperatures to determine the affect of heated water on the functioning of the airfoam system.
4. To most practicably determine an optimum low temperature to start these tests to reduce false starts being attempted at temperatures so low that the tests would have no chance of being successfully conducted, it is proposed and requested that the Air Force conduct a preliminary test. This preliminary test should be conducted with portable airfoam equipment of the Air Force, and should give information indicating the minimum temperature at which satisfactory foam can be produced, and should permit estimates to be made as to icing conditions in the line leading to the foam maker.

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5. It is also proposed to test a section of approximately 1,400 feet of six-inch line, using water only, at Big Delta ATC as an equivalent of the longest airfoam line at Station 3, Tok Junction, Haines-Fairbanks Pipeline. This set-up is to be made on the Big Delta ATC at a location approved by the Post Commander in accordance with the inclosed sketch. It is proposed to pump water for the duration of thirty minutes at the rate recommended by the standards of the National Board of Fire Underwriters. This test is to be conducted with variable water temperature to give information pertaining to the delivery of water to foam systems operating with long supply lines. It is considered that the information from these tests will be sufficiently conclusive to set the lowest temperature at which the existing systems can be expected to satisfactorily operate.

6. There are no funds directly available for these tests, and in view of the need for this information, it is requested that the Fir Force furnish on a nonreimbursable basis for the test at Ladd the necessary liquid airfoam stabilizer, estimated at a maximum of 1,000 gallons; fire truck with foam proportioning equipment and 750 gpm water pumping unit; two 3KW, 120-volt, or equivalent, portable electrical generating sets to furnish current for heating gauges and meters; and personnel to operate the above equipment. The remainder of the equipment and installation to be furnished and erected by this office.

7. It is requested that clearance be given to the following personnel of this office and Headquarters, United States Army, Alaska, to participate in the preliminary and regular tests at Ladd Air Force Base:

Security Clearance

Mr. Wardie W. King	Secret
Mr. Edwin J. Kreitlow	Secret
Captain James K. Trimble	Top Secret
R. B. Smith	Secret
(Fire Prevention Engineer, USARAL)	
H. W. Buskirk (USARAL)	Secret

ENGR
Trimble
George
EXECCO
Eardley
Shepard
Farrell
R&R

1 Incl
Sketch of Airfoam Tests

CARL Y. FARRELL
Colonel, CE
District Engineer

025317

cc USARAL
ATTN: ARENG (3)
ARAEN-U (3) w/Incl
NPD w/incl
RE, ALCANGO w/incl
RE, Big Delta w/incl

cc ENGR, Alas Gen
CONSTR, Mr. Prescott w/incl
SAFETY, Mr. King
ENGR, Mr. Kreitlow

JKT/sg
14 Jan 55

TYPE I FOAM CHAMBER
(MODEL TYPE)

SUPPORT FOAM CHAMBER
GAUGE, ETC ABOVE FOAM

THROTTLING VALVE - 2 1/2" OR 3"
FLOW METER - 214 CIPM MAX WTR



SUCTION

WATER PUMP
VALVE
FOAM VALVE

PERMIT TEST WATER
AT RIVER TEMP

FIELD DIMENSIONS TO GOVERN

PI - O
214 CIPM
VALVE 100 W MIN
VALVE 100 W MIN
VALVE 100 W MIN

CORPS OF ENGINEERS U.S. ARMY OFFICE OF THE DISTRICT ENGINEER ANCHORAGE, ALASKA	
DESIGNED	APPROVED
DRAWN (HUSSELL)	SCALE
TRACED	DRAWING NUMBER
CHECKED	SHEET 07
SUBMITTED JEK/ELG	
RECOMMENDED	

AIR FOAM TEST
LADD FIELD