2003195-0000066

HEADQUARTERS • DESERET TEST CENTER • FORT DOUG

BIG JACK (U)

PHASE A

[redacted]

TEST 63-4

[redacted]

FINAL REPORT MAY 1964

[redacted]

Date: 30 May 1964

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DTC 64-574

[redacted]

[redacted]

FOREWORD

1. (U) Twenty trials, identified by the nickname BIG JACK (U) were conducted on the Fort Sherman Military Reservation, Canal Zone, 15 February 1963 to 15 March 1963. The trials were designed to measure penetration of a jungle canopy by biological and chemical agent simulants disseminated from an operational weapon system. The BIG JACK (U) program was divided into two phases. In Phase A trials, Bacillus globigii (BG), a simulant for biological agents, was released and sampled. Phase B involved the release and sampling of tri (2-ethylhexyl) phosphate (TOF), a simulant for the toxic chemical agent VX. [redacted]

2. [redacted]

3. (U) Various elements of the U. S. Army, U. S. Marine Corps, and U. S. Air Force contributed technical support to the operation.

4. [redacted]

[redacted]

[redacted]

[redacted]

ABSTRACT

1. [redacted] Studies were made of the penetration of a jungle canopy by a biological aerosol generated by crosswind dissemination of the biological tracer BG from an elevated line source. The dissemination systems used were the Air Force A/B45Y-1 and the Navy Aero 14B spray tanks. Both types of tanks were carried by A4 Marine aircraft. [redacted]

2. [redacted]

3. [redacted]

4. [redacted]

[redacted]

[redacted]

(S) SECTION I

INTRODUCTION (U)

1. [redacted] Employing a previous Bendix Corporation study (BC-61/63)* as a background, the BIG JACK (U) test series, Phase A, was designed to measure the diffusion of biological aerosols into a jungle environment following an operational, above-canopy, crosswind release. Aerosol dissemination in this test series was accomplished by either the Air Force Fairchild Tank or the Navy Aero 14B Tank, both liquid disseminators, center-mounted on Marine Corps A4 aircraft flying at speeds of approximately 500 knots, 100-150 feet above the jungle canopy. These aircraft, unmodified, were flown by line pilots of the VMA 225, Marine Aircraft Group 14, on assignment from Cherry Point, North Carolina. [redacted]

2. [redacted] The correlation between the penetration of the FP and a biological aerosol was not known, but as part of the BIG JACK (U) test a contract was negotiated with meteorological Research, Inc. (MRI) to perform a meteorological study, using FP, and to compare penetration of the jungle canopy by FP and the biological tracer. [redacted]

SECTION II

ACCOMPLISHMENT OF TEST OBJECTIVES (U)

1. [redacted]

2. PRIMARY OBJECTIVES

1) "To obtain information on the degree of penetration of the jungle canopy by biological simulants when disseminated from operational type weapon systems"

[redacted]

[redacted]

ANNEX E

ENVIRONMENTAL DESCRIPTION (Including Pictures) (U)

1. GENERAL

a. The BIG JACK (U) test area is located in the valley of the Rio Agua Dulce on the Atlantic side of the Canal Zone. [redacted]

SUMMARY

A series of 17 FP releases were made in conjunction with the Big Jack field program during February - March 1963. [redacted]

IV. DATA REDUCTION

A. [redacted]

[redacted]

B. FP Tracer Material

Fluorescent particle material used in the Big Jack field operations was zinc cadmium sulfide manufactured by U. S. Radium Corporation and furnished by Dugway Proving Ground. [redacted]

[redacted]

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BIG JACK (U)

[redacted] PHASE B

TEST 63-4

FINAL REPORT MAY 964

[redacted]

[redacted] UNCLASSIFIED

[redacted]

[redacted]

FOREWORD (U)

1. [redacted] Ten trials, identified by the nickname, BIG JACK (U), Phase B (Chemical), were conducted on the Fort Sherman Military Reservation, Canal Zone, from 15 February 1963 through 9 March 1963. The trials, for the U. S. Air Force and the U. S. Marine Corps, were designed to investigate the penetration and dispersion of a simulant for the chemical agent VX when released as an aerial spray over a jungle environment. [redacted]

2. (U) Various elements of the U. S. Army, U. S. Marine Corps, and U. S. Air Force contributed technical support to the operation.

[redacted]

[redacted]

3 UNCLASSIFIED

[redacted] UNCLASSIFIED

[redacted]

ABSTRACT (U)

1. [redacted] BIG JACK (U), Phase B (Chemical), conducted in the Canal Zone during February and March 1963, comprised ten trials in which TOF, a chemical simulant for VX, was discharged above a jungle from Navy Aero 14B and E40 (substitute for the Air Force TMU 28/B) chemical spray tanks. The test was an investigation of agent penetration through the canopy.

[redacted]

[redacted]

[redacted]

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[redacted]

[redacted]

2. [redacted] a. The BIG JACK (U) program was designed to obtain estimates of penetration and area contamination density by a chemical and biological agent released in an aerial line above a jungle canopy.

[redacted]

b. [redacted] Marine Corps A4 jet aircraft, unmodified, and the Fairchild E40 and Aero 14B spray tanks were employed. The aircraft were flown by line pilots of the VMA 225, Marine Aircraft Group 14, on assignment from Cherry Point, North Carolina.

3. [redacted]

[redacted]

[redacted]

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SECTION II

ACCOMPLISHMENT OF TEST OBJECTIVES (U)

1. [redacted]

2. PRIMARY OBJECTIVES

a. First Primary Objective

"To obtain information on the degree of penetration of the jungle canopy by a chemical agent simulant disseminated from an operational-type weapon system."

[redacted]

[redacted]

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b. Test Procedures

(1) Spray Dissemination

A simulant for VX, Tri (2-ethylhexyl) phosphate (TOF), was discharged from an Aero 14B spray tank in five trials, B21 through B25. The same non-volatile material was disseminated from an E40 spray tank in five trials, B31 through B35.

[redacted]

(U) ANNEX A

ENVIRONMENTAL DESCRIPTION (U)

1. (U) TEST SITE AREA

a. The BIG JACK (U) test site, located on the Fort Sherman Military Reservation, Canal Zone, is a region covered by a dense jungle, as shown in Figure A-1.

[redacted]

2. [redacted]

[redacted]

Report Number DTC 646138R

TEST 64-6 -- YELLOW LEAF (U)

FINAL REPORT

October 1967

Prepared by
Ronald D. Stricklett

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

[redacted]

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[redacted]

(S) ABSTRACT (U)

YELLOW LEAF (U) (DTC Test 64-6) was conducted on the island of Hawaii, during April and May, 1966, to test the M143 biological bomblet in a jungle environment. The test was accomplished in two phases: in Phase A (105 trials), burst height characteristics of the M143 bomblet when released (under simulated operational conditions) into a jungle canopy were measured, in Phase B (20 trials), BG (a harmless biological spore) was released from static firings of the M143 bomblet to measure cloud diffusion characteristics under a jungle canopy. Phase-A data was compared with data obtained from previous testing in the Canal Zone; [redacted]

SECTION I

INTRODUCTION (U)

1. (U) BACKGROUND

[redacted]

d. [redacted] Testing to obtain height of burst data was initiated in February 1964 in the Canal Zone. However, before YELLOW LEAF trials could be completed, international considerations forced Deseret Test Center (DTC) to terminate its testing program at that location.

e. Since the requirement to answer the objectives stated in the YELLOW LEAF plan remained, a substitute jungle site was designated for completion of the test. [redacted]

[redacted]

SECTION II

ACCOMPLISHMENT OF TEST OBJECTIVES (U)

1. [redacted]

2. (S) PRIMARY OBJECTIVES

a. First Objective

To determine effectiveness of the M143 bomblet when employed against targets in a jungle environment by:

[redacted]

b. Second Objective

To determine by mathematical means, and based upon data obtained from this test, the area coverage which can be expected from the detonation of a Navy MISTEYE I weapon system or a SERGEANT M211 biological warhead over a jungle canopy.

[redacted]

3. (S) SECONDARY OBJECTIVE

a. Objective

To gather information relative to the effects of precipitation on a biological aerosol moving under a jungle canopy.

[redacted]

[redacted]

SECTION III

CONDUCT OF TEST (U)

1. TEST SITE - GENERAL DESCRIPTION

a. Location[1]

The YELLOW LEAF test site is located on the Island of Hawaii approximately 29 km southwest of Hilo in the Olaa Forest Preserve. [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

SECTION V

SUMMARY (U)

1. GENERAL SUMMARY

a. YELLOW LEAF consisted of a series of trials, conducted during April and May 1966, wherein the M143 biological bomblet was tested in a jungle environment on the island of Hawaii. A number of trials (185) had been previously conducted in the Canal Zone. The initial phase (Phase A) in Hawaii consisted of 100 trials designed to measure the burst-height characteristics of the bomblet when it is released over the canopy. The second phase (Phase B) consisted of 20 trials where BG was released from static detonations of the M143 bomblet to measure cloud diffusion characteristics under a jungle canopy.

[redacted]

[redacted]

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Report Number: DTC 648139R

TEST 64-8 -- TALL TIMBER (U) AND TRIAL GROUPS B AND D OF TEST 65-16 PINE RIDGE (U)

FINAL REPORT

[redacted]

OCTOBER 1967

Prepared by
L. Dale King

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

[redacted]

DTC 67-1098

[redacted]

[redacted]

ABSTRACT

DTC tests 64-8, TALL TIMBER, and 65-16, PINE RIDGE, were conducted April through June 1966 in the rain forest near Hilo, Hawaii. TALL TIMBER was designed to test the effectiveness of the M138 bomblet (BZ agent fill) in a tropical forested environment. [redacted]

The BZ portion of PINE RIDGE was designed to test the BLU-20/B23 bomblet in the forested tropical environment with objectives similar to those of TALL TIMBER. [redacted]

[redacted]

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SECTION I

INTRODUCTION (U)

1. (S) AGENT BZ AND ITS USAGE CONCEPT

a. BZ is a code name for an ester of benzilic acid. The chemical affects the human mind for a short period so that contaminated individuals may be rendered incapable of performing an assignment or have reduced will to resist. They may experience, according to the amount of agent inhaled, any of the following effects: confusion, lack of coordination, hallucinations; and complete disorganization. [redacted]

b. BZ is considered a persistent agent. [redacted]

[redacted]

6. TALL TIMBER TEST

The TALL TIMBER test was designed to characterize the M138 bomblet (filled with agent BZ) with respect to dissemination and area coverage in a rain-forest (tropical) environment.

[redacted]

7. (S) PINE RIDGE BZ TESTING

The BZ portion of this test(15) was designed to characterize the BLU-20/B23 bomblet in its dissemination and area-time dosage of BZ in a rain-forest (tropical) environment.

[redacted]

SECTION II

ACCOMPLISHMENT OF TEST OBJECTIVES (U)

1. (U) PRIMARY OBJECTIVES FOR TALL TIMBER

a. The first primary objective was to characterize--with respect to dissemination, diffusion, and travel in a jungle environment--the BZ-aerosol cloud which is released from each statically-ignited M138 bomblet.

b. The second primary objective was to obtain data in order to estimate the area coverage of the BZ-aerosol cloud which would result from the successful functioning of a CBU-5 cluster bomb released by aircraft above a jungle canopy.

2. (U) PRIMARY OBJECTIVES FOR PINE RIDGE BZ TESTING

a. To ascertain the percentage of BLU-20/B23 bomblets that function and to determine their dissemination points in or below a jungle canopy.

b. To determine area-time-dosage and diffusion characteristics of agent BZ when disseminated from single BZ-filled (BLU-20/B23) bomblets, statically fired at representative functioning heights in and under a jungle canopy.

c. To estimate the effective area coverage that could be expected if agent BZ were disseminated from single or multiple SUU-13/A dispenser loads.

[redacted]

3. SECONDARY OBJECTIVE FOR PINE RIDGE BZ TESTING

The secondary objective is to determine any peculiarities of handling, storage, and safety of the BLU-20/B23 bomblets in a jungle environment. [redacted]

SECTION III

TEST PROCEDURES (U)

1. [redacted] INTRODUCTION

a. TALL TIMBER, test 64-8, and PINE RIDGE, test 65-16, were conducted in the test area on the island of Hawaii during the period from April through June 1966. Agent BZ was disseminated and sampled on both tests. [redacted]

APPENDIX A UNCLASSIFIED

DESCRIPTION OF TEST ENVIRONMENT (U)

1. TEST SITE

a. Location

[redacted] The site is located on the island of Hawaii, approximately 18 miles southwest of Hilo in the upper Waiakea Forest Reserve. [redacted]

Report Number: DTC 65111438

SUNDOWN

DTC TEST 65-11

FINAL REPORT

Daniel R Woodman, Ens, USNR
PLANS OFFICER
Leo Laughlin, Lt, USN
TECHNICAL OFFICER

Harold H Wilson, LTC USAF
TEST DIRECTOR

MARCH 1968

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

[redacted]

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(U) ABSTRACT (U)

In DTC Test 65-11, GB- and simulant-filled BLU 19/B23 bomblets were tested in a subarctic winter environment.

[redacted]

[redacted]

[redacted]

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[redacted]

CHAPTER ONE

OPERATIONAL SUMMARY (U)

SECTION I. PURPOSE (U)

[redacted] The primary purpose of the test was to evaluate the GB-filled BLU 19/B23 bomblet in forested and open terrain with snow cover at temperatures between -18°C and -1°C. [redacted]

SECTION II. RESULTS (U)

1. [redacted]

2. GB-filled BLU-19/B23 bomblets were detonated [redacted]

3. [redacted]

4. [redacted]

[redacted]

TABLE 1 (U): CONDITIONS OF TRIAL GROUPS FOR THE FIRST OBJECTIVE

Trial group	Number of trials	BLU 19/B23 bomblet fill	[redacted]
A	15	Simulant MAA	[redacted]
B	80	Simulant MAA	[redacted]
C	80	Tiara	[redacted]

SECTION IV. TEST CONDITIONS (U)

1. [redacted] TEST LOCATION AND DATES

a. DTC Test 65-11 was conducted at the Gerstle River test site on the Fort Greely Military Reservation in the Big Delta region of Alaska during February and April 1966.

[redacted]

[redacted]

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SECTION V. TEST PROCEDURES (U)

1. [redacted] A TRIALS

A suitable open area (described in Sec 4) was used for the static detonation of 15 MAA-filled bomblets under 76 cm of snow; [redacted]

2. [redacted] B TRIALS

Eighty bomblets filled with MAA, a GB simulant, were singly projected into the open, snow-covered area to determine depth of bomblet detonation in the snow. [redacted]

3. [redacted] D TRIALS

Eighty bomblets filled with tiara, a luminescent gelatinous material, were fired into a spruce forest to determine height of detonation. [redacted]

[redacted]

(S)

CHAPTER THREE

TIME-AREA-DOSAGE RELATIONSHIPS (U)

SECTION III. SCOPE (U)

Five GB-filled BLU 19/B23 bomblets (identified as Group-E trials) were statically detonated [redacted]

AD

Report Number DTC 6514107R UNCLASSIFIED

AD-396 346 L

TEST 65-14 — ELK HUNT (U)

Phase

FINAL REPOR

1/Lt Kay W. Hil
Spencer D. Patterson

NOVEMBER 1965

Prepared by

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH

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ABSTRACT

Trials of ELK HUNT I were conducted to determine: (1) the amount of either standard or modified agent VX picked up on the clothing of personnel traversing various types of contaminated terrain in various modes of traversal, (2) the length of time a barrier is effective in producing casualties, and (3) the comparative pickup of agent when M23 mines filled with standard and modified VX were detonated underwater and underground. [redacted]

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UNCLASSIFIED [redacted]

[redacted]

PREFACE

Twenty trials, identified as ELK HUNT (U) Phase I, DTCTP 65-14, were conducted in the vicinity of Fort Greely, Alaska, from 3 July through 15 August 1964.

[redacted]

3. (U) DESCRIPTION OF ELK HUNT TRIALS

[redacted]

b. [redacted]

In this phase, a total of 20 chemical trials were conducted between 3 July and 15 August 1964. In 17 of the trials, standard or modified VX was disseminated from M23 mines detonated under 5 centimeters of soil to create a chemical barrier in three different types of terrain cover: (1) shrubbery, cut to

three different types of terrain cover: (1) shrubbery, cut to

[redacted]

waist height, (2) wooded terrain, and (3) terrain covered with rye grass. The remaining three trials were designed to yield measurement of pickup of both standard and modified VX, when disseminated from M23 mines buried 5 centimeters under soil, and for mines laid 5 centimeters under water.

[redacted]

Personnel, assuming various tactical positions, traversed the 17 contaminated grids at specified time intervals after mine detonation; and the amount of VX picked up on their clothing was measured.

[redacted]

[redacted]

b. Agent

[redacted]

(1) Each M23 mine that utilized standard VX was delivered on the test site filled with approximately 5200 grams (11.5 lbs.) of dyed agent. [redacted]

(2) Fifty mines filled with modified VX were employed during the trials of ELK HUNT I. The modified agent was standard VX to which one percent of polyisobutyl-methacrylate was added as a thickner. [redacted]

(3) All VX used, both standard and modified, was dyed with 6 grams of DuPont Oil Red dye per liter of agent.

3. (C) SAMPLING OF AGENT

a. Sampling Techniques

Sampling was performed by three methods, as follows:

1) Pickup of VX on both segmented and unsegmented clothing of personnel traversing VX-contaminated areas--Trial Groups A, B, C, and D.

2) Pickup of agent on cloth-covered rollers traversing VX-contaminated areas--Trial Groups A, B, C, D, and E. [redacted]

3) Detection of VX-droplet-size on M6A1 detector paper on the arcs (Fig. 6) of Trial Groups A, B, C, and D (See Table 1).

b. Clothing Sampling Procedures

(1) Personnel wore complete, impermeable, butyl-rubber outfits and M9A1 masks. [redacted]

TEST 65-16 -- PINE RIDGE (U)

FINAL REPORT

NOVEMBER 1967

Prepared by
Paul Brent Anderson

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

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PREFACE

[redacted]

The USAF provided personnel and munitions as requested by DTC. The USATECOM provided personnel, test equipment, and laboratory services. The U.S. Navy provided medical support. The U.S. Army, Hawaii, provided personnel for security guard. [redacted]

JCP-I, DPG

[redacted]

SECTION I

INTRODUCTION (U)

1. GENERAL

[redacted] In order to comply with one part of the requirement, DTC Test 65-16, PINE RIDGE, was designed to evaluate the effectiveness of the BLU-19/B23 bomblet (GB) and BLU-20/B23 bomblet (BZ) when ejected from the SUU-13/A bomblet dispenser into a tropical rain forest. [redacted]

[redacted]

SECTION II

ACCOMPLISHMENT OF TEST OBJECTIVES (U)

1. PRIMARY OBJECTIVES

[redacted]

a. First Primary Objective

To ascertain the percentage of BLU-19/B23 bomblets that function and to determine their dissemination points in or below a jungle canopy. [redacted]

b. Second Primary Objective

To determine area-time-dosage and diffusion characteristics of agent GB when disseminated from single, GB-filled, BLU-19/B23 bomblets statically fired at representative functioning heights in (and under) a jungle canopy. [redacted]

c. Third Primary Objective

To estimate the effective area coverage that could be expected of agent GB when disseminated from single or multiple SUU-13/A dispenser loads. [redacted]

2. SECONDARY OBJECTIVE

The secondary objective was to determine the peculiarities (if any) of handling, storage, and safety of the BLU-19/B23 bomblet in a jungle environment. [redacted]

bomblet in a jungle environment. [redacted]

SECTION III

TEST PROCEDURES (U)

1. (S) TEST LOCATION AND DATE

The test was conducted in a dense tropical montaine forest on the island of Hawaii during May and June 1966. [redacted]

2. (U) TEST GRID AND EQUIPMENT

[redacted]

b. Munition

A GB-filled, BLU-19/B23 bomblet was used. [redacted]

c. Airgun

An airgun was constructed to launch the BLU-19/B23 bomblets into the forest canopy. It was mounted on a turntable base which allowed a 360-degree horizontal movement and a pivot which allowed a vertical angle adjustment. [redacted]

(S) SECTION IV

RESULTS AND DISCUSSION (U)

1. (S) FIRST PRIMARY OBJECTIVE

a. General

The first primary objective of PINE RIDGE was to determine representative burst heights for the BLU-19/B23 bomblets in a rain forest environment. To accomplish this objective, a total of 56 simulant-filled, BLU-19/B23 bomblets were projected into the forest canopy from an airgun mounted on a 40-meter tower. [redacted]

[redacted]

2. [redacted] SECOND PRIMARY OBJECTIVE

a. General

The second primary objective was to determine area-time-dosage and diffusion characteristics of agent GB when disseminated from BLU-19/B23 bomblets in a rain-forest environment. To accomplish this objective, 32 trials were conducted [redacted]

[redacted]

APPENDIX A

DESCRIPTION OF TEST ENVIRONMENT (U)

1. TEST SITE

a. Location

[redacted] The site is on the island of Hawaii, approximately 29 km southwest of the city of Hilo in the Olaa Forest Preserve. [redacted]

JCP-I, DPG

DMMC Control #
2003196-0000077
2003196-0000077

AD 391 488

[redacted]

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Report Number DTC 6602156R

DTC TEST 66-2 (PHASE I)

FINAL REPORT

RED OAK I

Daniel R Woodman, Ens, USNR
PLANS OFFICER
Leo Laughlin, Lt, USN
TECHNICAL OFFICER

Don H Bronson, LTC, USA
TEST DIRECTOR

JUNE 1968

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[redacted]

ABSTRACT

The M121A1 (155mm) GB-filled munition and the M55 (115mm) rocket warhead were tested in a tropical jungle environment. The test was conducted in two phases, one in the Panama Canal Zone and the other in Hawaii. [redacted]

[redacted]

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[redacted]

(U) PREFACE (U)

DTC (Deseret Test Center) Test 66-2 (RED OAK, Phase I) was primarily designed to determine area-time-dosage relationships for artillery delivered GB munitions in a tropic environment. [redacted]

[redacted]

[redacted]

[redacted]

CHAPTER ONE

OPERATIONAL SUMMARY (U)

SECTION I

PURPOSE (U)

[redacted] The purpose of DTC Test 66-2 was to evaluate the effectiveness of GB-filled M121A1 (155mm) artillery projectiles and GB-filled M55 (115mm) rocket warheads in a tropical jungle environment.

[redacted]

SECTION II

OBJECTIVES (U)

1. [redacted] To determine the height-of-burst distribution of the M121A1 (155mm) chemical projectiles and M55 (115mm) rocket warheads, both PD fused, when fired into a jungle environment.

2. [redacted] To determine, on a comparative basis, the effects of fragmentation from a bursting chemical munition.

[redacted]

[redacted]

[redacted]

SECTION IV

TEST CONDITIONS (U)

1. [redacted] GENERAL

DTC Test 66-2 was conducted in two phases during April and May 1967. The test site on the island of Hawaii was used for all trials involving the M55 rocket and the dissemination of GB agent from the M121A1 projectile. Portions of DTC Test 66-2 were conducted by the DEP in the Panama Canal Zone.

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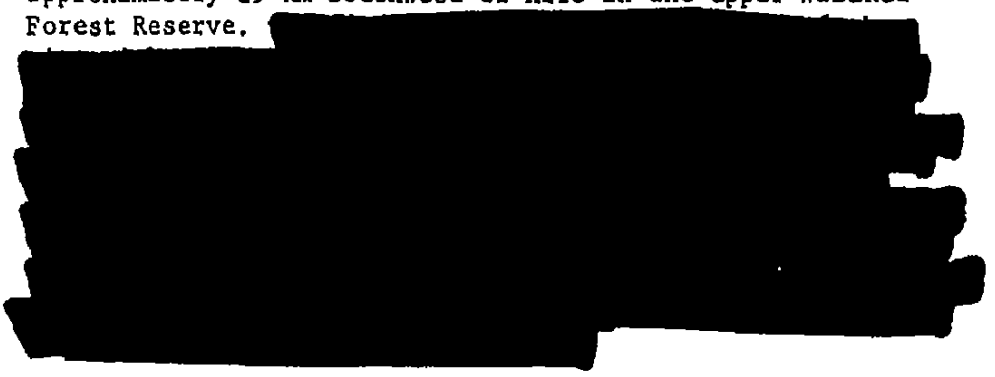
[redacted]

2. [redacted] LAYOUT OF TEST AREAS

a. The Hawaii test site is located on the island of Hawaii, approximately 29 km southwest of Hilo in the upper Waiakea Forest Reserve. [redacted]



b. The Canal Zone test site is located on the Pina Range, immediately south of Fort Sherman Military Reservation on the Atlantic side of Panama [redacted]

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[redacted]

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[redacted]

SECTION II

OBJECTIVES (U)

1. (U) To determine the area-time-dosage relationships as a function of burst height and to collect meteorological data to further define/refine a mathematical diffusion model for agent GB when disseminated in a jungle environment from M121A1 projectiles (155mm) and M55 rocket warheads (115mm).

2. [redacted] To estimate, on the basis of the refined diffusion model, the effective area coverage expected from battery and battalion shoots with GB-filled M121A1 projectiles and GB-filled M55 rockets in a jungle environment.

[redacted]

SECTION IV

TEST CONDITIONS (U)

1. [redacted] This phase of DTC Test 66-2 was conducted during April and May 1967 on the island of Hawaii. [redacted]

[redacted] May 1967 on the island of Hawaii. [redacted]

Report Number: DTC 68R148R

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DTC TEST 66-8 -- Phase II

FINAL REPORT

WEST SIDE II

William S Tanner
PLANS OFFICER/TECHNICAL OFFICER

Arden B Hughes, Col, USAF
TEST DIRECTOR

MAY 1968

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ABSTRACT (U)

WEST SIDE (U), Phase II, was conducted as the second of two tests to evaluate the area coverage capability of an airborne dry agent dissemination system (USAF A/B 45Y-4/F105), when operated overland in a frigid environment. [redacted]

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[redacted]

CHAPTER ONE

OPERATIONAL SUMMARY (U)

SECTION I. PURPOSE (U)

The purpose of this test was to evaluate the area coverage capabilities of the A/B 45Y-4/F105 powdered agent dissemination system (Fig. 1), as used operationally over a northern open plains region during cold weather. [redacted]

[redacted] JCPJ, DPG [redacted]

(4) Fourth Task

To disseminate FP from the A/B 45Y-4 (mounted on an F105 aircraft) for the purpose of defining and comparing downwind dosage ratios of the two tracers, BG and FP, when released simultaneously (by separate disseminators) on the same aircraft.

[redacted]

[redacted]

SECTION III. SCOPE (U)

2. (U) SCOPE OF OPERATIONS

a. Area Coverage by Tracer Aerosols

Twelve trials were conducted in which both BG and FP were simultaneously disseminated along a single 80-kilometer release line, each from separate, wing-mounted Y-4 disseminators

[redacted]

[redacted]

on an F105 aircraft. [redacted]

A second release of FP of a different fluorescent color was made by a contractor aircraft immediately after the dissemination run by the F105. The contractor aircraft (JHC-47) and EW-2 disseminator released FP both above and below the inversion top to measure its influence on aerosol travel.

[redacted]

SECTION IV. TEST CONDITIONS (U)

1. [redacted] LOCATION AND TIME OF TEST

The test was conducted in the Great Plains Region of central Canada, with the test area extending about 161 km (100 mi) north and east from the Suffield Experimental Station (S.E.S.), southern Alberta Province, and into southwestern Saskatchewan (Fig 3). The test period extended from 5 Jan through 7 Mar 65. Operations were directed and supported by S.E.S., Ralston, Alberta Province. Base support for F-105 aircraft was provided by Malmstrom Air Force Base, Great Falls, Montana, and meteorological aircraft support by the commercial airfield at Lethbridge, Alberta.

[redacted]

[redacted]

[redacted] JCP-I, DPG [redacted]

4. [redacted] CONSTRAINTS ON TESTING

Three flight paths for the dissemination of tracers were permitted by the Canadian government. These flight paths and the corresponding trajectories of aerosol travel were selected to preclude travel of the tracers over heavily populated areas, or over the inhabited areas of S.E.S. Aerosol travel was thus limited to the field test areas of S.E.S. and to sparsely populated areas that were generally north and east of this location. [redacted]

[redacted]

location. [redacted]

Joint Operational Activities. (U)

DESERET TEST CENTER FORT DOUGLAS UT

MAR 1971

Distribution: DoD only: others to Commanding General, Deseret Test Center, Attn: STEPD-TT-JP(S). Fort Douglas, Utah 84113.

[redacted]

ANNUAL STATUS REPORT

OF

JOINT OPERATIONAL ACTIVITIES (U)

March 1971

DESERET TEST CENTER
Fort Douglas, Utah 84113

[redacted]

[redacted]

[redacted]

CHAPTER I

[redacted] CHEMICAL TEST SERIES (U)

SECTION 1

(U) INTRODUCTION (U)

A summary of all active DTC chemical tests is presented in Table 1. [redacted]

Table 1 (U). Status of Active Chemical Tests (U)

Test Program	Date Test Plan Completed	Date Test Conducted or Scheduled	Estimated Publication Date of Final Report
68-13 I	Apr 69	May-July 68	Oct 71 [a]
68-13 II	Apr 69	Sep 67 & Sep 68	Oct 71 [a]
68-13 III	Feb 68	Aug - Sep 68	Oct 71 [a]
68-53 I	Mar 69	Apr - Dec 69	Mar 71
69-10	May 68	May 69	May 70 - (Vol 1) Mar 71 - (Vol 2)
69-12	Apr 69	Jun - Aug 69	Oct 71 [a]
69-12(M)	Sep 69	Oct - Nov 69	Sep 71
69-14	Aug 71	Nov 71 - May 72	Jan 73
70-10	Jul 71	(Deferred)	(Deferred)
70-11	Jun 71	Jul - Nov 71	Jul 72

[a] Final reports of 68-13 (I, II, III) and 69-12 will be one combined report; draft reports are due in June 1971

Table 5 [redacted] Joint Operational Tests and Technical Investigations (U)

TEST NUMBER	COGNIZANT AGENCY	AGENT OR SIMULANT	MUNITION, SYSTEM OR CONCEPT	LOCATION (ENVIRONMENT)	PURPOSE	STATUS
[redacted]						
70-10	USA	GB, VX	Downwind hazard of nerve agents	DPG (test chamber)	To determine the effects of absorption and adsorption by vegetation on aerosolized nerve agents	Approved for planning Execution deferred
[redacted]						
70-30	USA, USN, CINCLANT, CINCSTRIKE, CINCEUR	TT, ZZ, LH, PC	Effects of sunlight on agents.	DPG	To determine the effects of sunlight on agents TT, ZZ, LH and PC	Deferred
[redacted]						

[redacted]

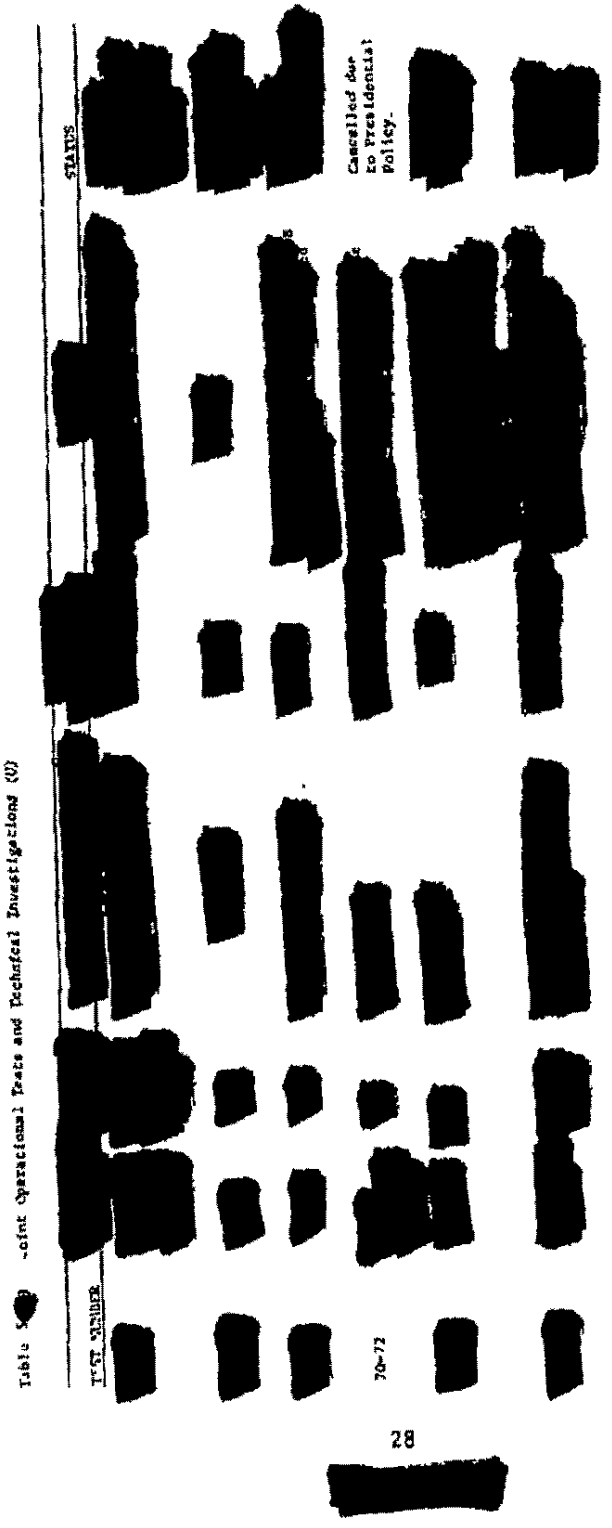


Table [redacted] Joint Operational Tests and Technical Investigations (U)

[redacted]

Table 5 (U) Joint Operational Tests and Technical Investigations (U)

TEST NUMBER	STATUS
70-A	Cancelled. Work integrated with 72-70
70-B	Cancelled
70-C	Scheduled to begin 1 Jul 71

UNCLASSIFIED

Phase I Test Plan, Rev. Copy 5:

[redacted]

UNCLASSIFIED

TEST 67-6 -- BLUE TANGO (U)

Phase I

TEST PLAN

REVISED

FEBRUARY 1967

Prepared by

Ronald D. Stricklett

Headquarters • Deseret Test Center • Fort Douglas, Utah • 84113

UNCLASSIFIED H1195680053

[redacted]

UNCLASSIFIED H1195680053

EA 5-1139 (67)

TCA 67-6-5-1195

SECTION I

GENERAL INFORMATION (U)

1. (U) TEST DESIGNATION

DTC 67-6, BLUE TANGO (U), Phase I

2. (U) COGNIZANT SERVICES

U.S. Air Force and U.S. Army

3. [redacted] DISSEMINATION AND PRODUCT

a. Dissemination

E2 nozzle with back-up system.

b. Biological Materials

Escherichia coli (EC), Serratia marcescens (SM), and Bacillus subtilus var. niger (BG).

4. (U) TEST AUTHORIZATION

Letter, DA, OCRD, subj: "Plans for Testing in FY67", dated 8 July 1966, to CG, DTC. SECRET.

5. (U) TEST EXECUTION

The Test will be executed by the Test Director upon direction of the Commanding Officer, Deseret Test Center (DTC), Fort Douglas, Utah.

6. [redacted] TEST SUPPORT REQUIREMENTS

a. U.S. Army Test and Evaluation Command

Dugway Proving Ground (DPG) will provide appropriate test equipment and personnel as requested by DTC.

b. U.S. Army Munitions Command

U.S. Army Biological Laboratories, Fort Detrick, Frederick, Maryland, will furnish the biological material requested by DTC.

c. U.S. Air Force

The U.S. Air Force will provide test personnel and equipment as requested by DTC.

ment as requested by DTC.

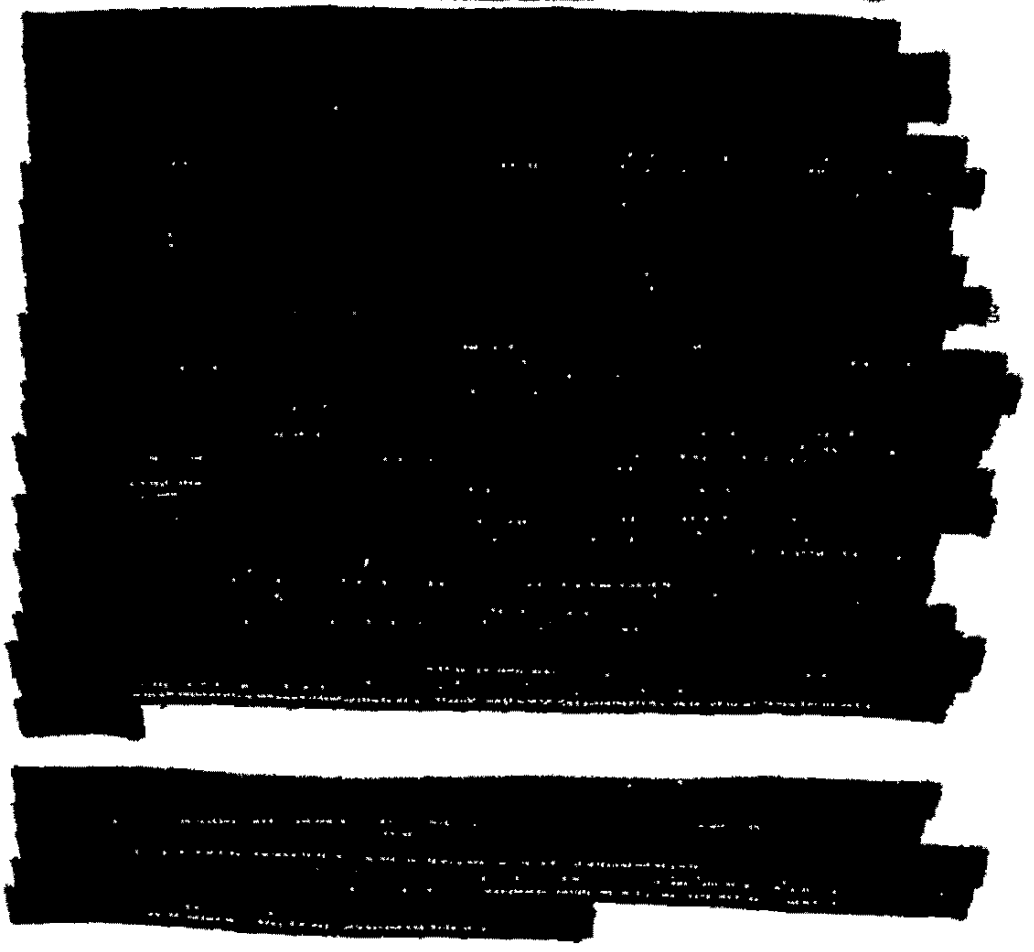
[redacted]

8. (S) TEST LOCATION

Trials will be conducted on the Island of Hawaii.

b. DTC Test 67-6 (BLUE TANGO) is divided into two phases. In Phase I, presented herein, we are concerned with travel of vegetative organisms in and above jungle-type canopy. In Phase II we will characterize, out to approximately 30km, aerosols of BG-FP disseminated from an elevated line source over a dense semi-tropical jungle.

[redacted]



[redacted]

SECTION III

OBJECTIVES (U)

1. [redacted] TECHNICAL OBJECTIVES

a. Primary

(1) First Technical Objective

To determine the decay rates of SM-1 and EC-1 aerosols when (1) released at ground level into a tropical rain-forest environment; and (2) when released from above the canopy of a tropical rain forest. Further, the environmental factors affecting decay of the aforementioned microorganisms will be evaluated.

[redacted]

[redacted] UNCLASSIFIED

SECTION V

SCOPE (U)

1. [redacted] GENERAL

a. This test will consist of a total of 40 trials to be conducted as follows:

20 trials with aerosol release above canopy;
20 trials with aerosol release below canopy.

Further, each group of 20 trials will consist of:

10 trials with BG-1 and SM-1; and
10 trials with BG-1 and EC-1.

Trial procedures, grid arrays, and meteorological requirements are described in detail in subsequent sections of this plan.

[redacted]

[redacted]

[redacted]

[redacted]

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[redacted]

[redacted]

b. Dissemination Procedures

(1) Ground releases: dissemination in all trials will be from E2-type nozzles with suitable "pressurizing" equipment. [redacted]

(2) Above canopy releases: dissemination will be made from the 32-meter tower located on Arc E using equipment and procedures similar to ground-release trials. [redacted]

[redacted]
UNCLASSIFIED

AMCPM-DETE

5 April 1968

TEST ENGINEER'S REPORT

TEST SERIES

BLUE TANGO (U)

Prepared by: _____
LEWIS M. NIELSEN

Reviewed by: _____
CHARLES H. VARNECKE

Approved by: _____
ROBERT D. HENDERSON

[redacted]
UNCLASSIFIED

GROUP - 4
Excluded from automatic
downgrading and declassification.

Copy 1 of 3 Copies

[redacted] UNCLASSIFIED

[redacted]

AMCPM-DETE 5 April 1968

ENGINEERING REPORT ON

TEST SERIES 67-6 (U)

1. (U) Introduction:

a. Test Description:

(1) Purpose of Test: This test will partially fulfill the US Air Force requirement for an evaluation of the A/B 45Y-1 tank (TT filled). [redacted]

(2) Test Time: [redacted] This test was successfully conducted between the dates of 18 January 1968 and 1 March 1968.

(3) Test Location: The test site was located on the south side of Stainback Road, approximately four miles east of Kulani Honor Camp. [redacted]

(4) Physical Conditions: The test site is located in a rain forest. [redacted]

2. (U) Discussion:

[redacted]

[redacted]

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[redacted]

b. Tests Conducted and their Objectives:

(1) The overall objective of this test was to characterize diffusion and decay of certain non-pathogenic, biological materials when disseminated in a tropical rain forest environment, [redacted]

(2) The tests consisted of spraying BG and EC or BG and SM into the air and measuring their virility as they diffused through the grid.

c. Administration:

[redacted]

[redacted]

d. Test Support:

(1) Plate pouring facility:

(a) SHAD personnel were utilized for the construction of the plate pouring facility. Three chiefs and two seamen were provided from SHAD to assemble the facility.

[redacted]

C O P Y

5-Su,
22 M
ACTION
IN ...

PTTUZYUW RUEBBNA1986 1412101-UUUU-RUEBEAA.

FROM: AMC
TO: TECOM

ZNR UUUUU

P 212052Z MAY 69

FM CG USAMC WASH DC

TO RUEBEAA/ CG USATECOM ABERDEEN PROV GR MD

RUEOEKB/ CG USAMUCOM DOVER NJ

INFO RUWJBTA/CG DESERT TEST CTR FT DOUGLAS UTAH

RUEBBFA/ CG EDGEWOOD ARSENAL MD

RUEORDA/ CO FORT DIETRICK. MD

BT

UNCLAS AMC 57777 FROM AMCRD-ET

SUBJECT: TESTING OF CHEMICAL AND BIOLOGICAL LETHAL AGENTS

1. EFFECTIVE IMMEDIATELY, THE ARMY WILL CEASE AND DESIST OPEN AIR TESTING OF ALL LETHAL CHEMICAL AND BIOLOGICAL AGENTS ANYWHERE.

2. THIS RESTRICTION WILL CONTINUE UNTIL PROCEDURES FOR RESUMING SUCH TESTS ARE PROMULGATED BY THIS HEADQUARTERS.

BT

#1986

C O P Y

UNCLASSIFIED

22 May 69

FROM: TECOM
TO: DTC

S

ROUTINE
ROUTINE

CGUSATECOM APG MD

CG DESERET TEST CENTER FORT DOUGLAS UTAH

UNCLAS TEC FROM AMSTE-NB, SUBJECT: TESTING OF CHEMICAL AND BIOLOGICAL LETHAL AGENTS

EFFECTIVE IMMEDIATELY, ALL OPEN AIR TESTING OF LETHAL CHEMICAL AND BIOLOGICAL AGENTS WILL BE HALTED UNTIL FURTHER NOTICE IN ACCORDANCE WITH PRIORITY MESSAGE, AMCRD-ET, USAMC, DATED 21 MAY 1969.

LOUIS O. ELSAESSER
Colonel, GS
Director, NBC Mat Testing

LOUIS O. ELSAESSER, Colonel, GS
Director, NBC Mat Testing

UNCLASSIFIED

Director, NBC Mat Testing

Director, NBC Mat Testing

C O P Y

FOR OFFICIAL USE ONLY

29 MAY 69
ACTION: DS-C
INFO: NBC

RTTEZYUW RUEBBNA2784 1482136-EEEE-RUEBEAA.

FROM: AMC
TO: TECOM

ZNY EEEEE

R 252126Z MAY 69

FM CGUSAMC WASH DC

TO RUEBEAA/CGUSATECOM ABERDEEN PROVING GROUND MD

FUEOEKB/CGUSAMUCOM DOVER NJ

INFO RUHJBTA/CG DESERET TEST CTR FT DOUGLAS UTAH

RUEOCTA/CO FT DETRICK FREDERICK MD

RUEBBFA/CO EDGEWOOD ARSENAL MD

ZEN/DA WASH DC

BT

UNCLAS E F T O FOUO AMC 58496 FROM AMCRD-ET FOR AMSTE-DS-C, SMU-RE-C, STEPD-SC, SMUEA-CO, DA -CRDNBC

SUBJECT: TESTING OF CHEMICAL AND BIOLOGICAL LETHAL AGENTS

1. REFERENCES:

A. TELECON LTC DISMORE (DA, OCRD) TO DR. ROTHENBERG (DESERET) AND COLONEL CEARA (EDGEWOOD ARSENAL), 23 MAY 1969.

B. TELECON MR. RHODES (AMCRD-ET) TO MR. MILLER, AMSTE-DS-C; HQ TECOM, AND MR. CHANDLER, AMSMU-RE-C HQ MUCOM 26 MAY 69.

C. AMC MSG 57777q SUBJ: 'TESTING OF CHEMICAL AND BIOLOGICAL LETHAL AGENTS'.

2. REFERENCED TELECONS ANNOUNCED TERMINATION, EFFECTIVE 232110Z

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MAY 69. OF RESTRICTIONS AGAINST SUBJECT TESTING ESTABLISHED BY REF C.

PAGE 2 RUEBBNA2784 UNCLAS E F T O FOUO.

3. THE RESUMPTION OF THE SUBJECT TESTING IS AUTHORIZED ONLY FOR THOSE TESTS REPORTED IN THE FOLLOWING CORRESPONDENCE:

A. MESSAGE STEPD-PA(5) OM-340 SUBJ: 'DTC AGENT TESTING', EXCEPT PROJECT BIGEYE WHICH HAS BEEN POSTPONED BY THE NAVY.

B. LETTER SMUEA-TS-D, DATED 22 MAY 1969, SUBJ: 'EDGEWOOD ARSENAL LETHAL CHEMICAL AGENT TEST PROGRAM'.

4. ANY ADDITIONAL OPEN AIR TESTING OF LETHAL CHEMICAL AND BIOLOGICAL AGENTS BETWEEN THIS DATE AND 30 JUNE 1969 MUST BE CLEARED WITH THIS HEADQUARTERS. GUIDANCE RELATIVE TO SUBJECT TESTING SUBSEQUENT TO 1 JULY 1969 WILL BE FORTHCOMING.

PROTECTIVE MARKINGS CAN BE REMOVED IN 3 YRS.

BT

#2784

Implementation memo sent to DTC on 2 Jun 69.

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COPY

UNCLASSIFIED E F T O

2 JUNE 1969

S

FROM: TECOM
TO: DTC

ROUTINE
ROUTINE

CGUSATECOMAPG MD

CG DESERET TEST CENTER FORT DOUGLAS UTAH

UNCLAS E F T O FOUO TEC FROM AMSTE-NB, SUBJECT: TESTING OF CHEMICAL AND BIOLOGICAL LETHAL AGENTS

1. USA MATERIEL COMMAND MESSAGE 58496, AMCRD-ET, DATED 28 MAY 1969, ANNOUNCES PARTIAL TERMINATION OF RESTRICTIONS IMPOSED ON SUBJECT TESTING BY USA MATERIEL COMMAND MESSAGE 57777, DATED 21 MAY 1969, AND MESSAGE, THIS HEADQUARTERS, DATED 22 MAY 1969.

2. ATTENTION IS INVITED TO PARAGRAPHS 3 and 4 OF USA MATERIEL COMMAND MESSAGE 58496 WHICH DETAIL SPECIFIC TESTS NOW AUTHORIZED AND PRESCRIBE CLEARANCE REQUIREMENT FOR ALL OTHER LETHAL AGENT TESTING TO BE CONDUCTED PRIOR TO 30 JUNE 1969.

3. ANY OPEN AIR TESTING OF LETHAL C AND B AGENTS TO BE CONDUCTED PRIOR TO 30 JUNE 1969 WHICH IS NOT SPECIFICALLY AUTHORIZED BY REFERENCED USA MATERIEL COMMAND MESSAGE OF 28 MAY 1969 WILL BE SUBMITTED TO THIS HEADQUARTERS FOR APPROVAL.

4. FOUO PROTECTIVE MARKINGS MAY BE REMOVED 2 JUNE 1972.

LOUIS O. ELSAESSER
COLONEL, GS
DIRECTOR, NBC MAT TESTING

LOUIS O. ELSAESSER, COLONEL, GS
DIRECTOR, NBC MAT TESTING

UNCLASSIFIED E F T O FOUO

DIRECTOR, NBC MAT TESTING

11-621
21 Nov 69
ACTION: NBC
INFO: POD
DS-C

FROM: OCRD
TO: AMC

P [illegible] RUEADWD0425 3242356-EEEE-RUEBEAA.

ZNY EEEEE

P 202343Z NOV 69

FM DA

TO RUEBBNA/CGUSAMC

INFO RUEBEAA/CGUSATECOM APG MD

RUEOEKB/CGUSAMUCOM DOVER NJ

RUWJBTA/CODTC FORT DOUGLAS UTAH

BT

UNCLAS E F T O FOUO-

CRDNCB 20 NOV 69

CGUSAMC FOR AMCRD-U; CGUSAMUCOM FOR AMSMU-RE

SUBJ: TEMPORARY SUSPENSION OF LETHAL AGENT OPEN-AIR TESTING ~~OF LETHAL AGENTS~~

1. MILITARY PROCUREMENT AUTHORIZATION ACT OF 1970, SECTION 409, SETS FORTH CERTAIN REQUIREMENTS THAT MUST BE MET BEFORE THE OPEN-AIR TESTING OF LETHAL CHEMICAL OR ANY BIOLOGICAL AGENTS CAN BE CONDUCTED. THESE INCLUDE COORDINATION WITH SECRETARY OF HEALTH, EDUCATION AND WELFARE AND PRIOR NOTICE TO PRESIDENT OF SENATE AND SPEAKER OF HOUSE.

2. TO COMPLY WITH THIS ACT, AUTHORIZATION TO CONDUCT PREVIOUSLY APPROVED LETHAL AGENT OPEN-AIR TESTS IS CANCELLED. NO TEST OF THIS

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PAGE 2 RUEADWD0425 [illegible] E F T O FOUO

TYPE WILL BE CONDUCTED UNTIL DIRECTED BY THIS HEADQUARTERS.

3. THIS MESSAGE DOCUMENTS THE FONECON LTC HENDERSON, CRDAGB TO MR. J. F. RHODES, AMC TEST AND EVALUATION DIVISION ON 19 NOVEMBER 1969.

BT

#0425

AMSTE-MB

26 NOV 69

SUBJECT: Temporary Suspension of Open-Air Testing of Lethal Agents

Commanding General
Deseret Test Center
ATTN: STEPD-PA(S)
Building 103, Soldiers' Circle
Fort Douglas, Utah 84113

1. References:

a. Letter, AMSTE-MB, HQ, USAIECOM, 23 October 1969, subject: Open Air Testing of Lethal Chemical-Biological Agents and Munitions.

b. DA message, CRDNCB, 20 November 1969, subject as above.

c. USAMC message, AMCRD-U, 24 November 1969, subject: Lethal Agent Open Air Testing at Dugway Proving Ground.

d. Telephone conversation of 19 November 1969 between Dr. M. Rothenberg, DAC, and Mr. W. A. Shreve, this headquarters.

2. Confirming reference 1d above, authorization to conduct testing, approved by reference 1a, is cancelled, for reasons outlined in references 1b and 1c. No further testing of this nature will be conducted until directed by this headquarters.

FOR THE COMMANDER:

LOUIS O. ELSAESSER
Colonel, GS
Director, NBC Met Testing

AMSTE-HR
SUBJECT: Temporary Suspension of Open-Air Testing of Lethal Agents

MEMORANDUM FOR RECORD: Letter advises Deseret Test Center, officially, of cessation of all lethal open-air testing pending development of coordination procedures by higher authority. Deseret Test Center was provided guidance informally by telephone conversation, reference 1d.

COORDINATION: None required.

LOUIS O. ELSAESSER, COL, GS
Director, NEC Hat Testing
mis/4804/25 November 1969

24 Nov 69
ACTION: NBC
INFO: POD
DS-C
DCS
DCG

C O P Y

RJTUZYUW RUEBBNA1567 3261701-UUUU--RUEBEAA. FROM: AMC
TO: TECOM

ZNR UUUUU

R 241658Z NOV 69

FM CG USAMC WASH DC

TO RUEBEAA/CG USATECOM APG MD

INFO RUEOEKB/CG USAMUCOM DOVER NJ

RUWJBTA/CO DESERET TEST CENTER FT DOUGLAS UTAH

RUEBBFA/CO EDGEWOOD ARS MD

BT

UNCLAS

AMCRD-U

SUBJECT: LETHAL AGENT OPEN AIR TESTING AT DUGWAY PROVING GROUND

1. REFERENCE TELECOM 19 NOV 69 SHREVE AMSTE-NB AND RHODES AMCRD-U RE SUSPENSION OF THE SUBJECT TESTING.

2. THIS CONFIRMS REFERENCED TELECOM WHICH DIRECTED THAT SUBJECT TESTING BE SUSPENDED EFFECTIVE 19 NOV 69.

3. ADDITIONAL GUIDANCE WILL BE FORTHCOMING REGARDING ACTIONS WHICH MUST BE TAKEN BEFORE THE SUSPENSION OF THE SUBJECT TESTING WILL BE LIFTED.

BT

#1567

DISPOSITION FORM

For use of this form, see AR 340-15, the proponent agency is The Adjutant General's Office.

REFERENCE OR OFFICE SYMBOL	SUBJECT
AMSTE-NB 11/21/69	CB Lethal Testing Halt

TO Deputy Chief of Staff FROM NBC Mat Testing Dir DATE 20 Nov 69 CMT 1

Inclosed for your information is MFR covering 19 November telephone conversation with Mr. Rhodes of AMCRD on above subject. As indicated, DTC was advised of situation and told to comply. Neither the CO nor Deputy CO was available at DTC so the information was given to Dr. Rothenberg, the DTC Scientific Director.

1 Incl
as

To:

WILLIAM A. SHREVE
Technical Director
NBC Mat Testing Directorate

AMSTE-NB 19 November 1969

MEMORANDUM FOR RECORD

SUBJECT: CB Lethal Testing

1. Mr. Rhodes of the Test Division, Headquarters, USAMC, called at 1600 and advised that the President had signed the Defense Appropriation Authorization Act and, therefore, the provisions dealing with thirty day prior notification to HEW before performing any CB lethal open-air testing are effective as of today. In this regard, DA had directed that all such CB tests be halted instantly until a clearance procedure had been developed and our current second quarter test schedule had received HEW approval. Mr. Rhodes advised that an implementing message would be transmitted by 20 November and requested that action be taken as a result of this call to halt current testing.

2. Colonel Hubbard was advised of the above as was Dr. Rothenberg at DTC at 1615 hours.

WILLIAM A. SHREVE
Technical Director
NBC Mat Testing Directorate

C O P Y UNCLASSIFIED [redacted] NOV 1970

RTTCZYUW RUEADWD4075 3202157-CCCC-RUEOGDA.

FROM: OCRD
TO: AMC

ZNY CCCCC

R 162133Z NOV 70

FM DA

TO RUEBBNA/CGUSAMC WASHDC

INFO RUWJSTA/CO DESERET TEST CENTER FT DOUGLAS UT

RUEOGDA/CG TECOM

BT

[redacted]

CRDNCB

SUBJECT: OPEN-AIR TESTING (U)

O C R D 162133 NOV 70

USAMC FOR AMCRD-U, AMCPM-DE; TECOM FOR AMSTE-NB; DTC FOR STEPD-CG(S)

REF: DEPUTY SECRETARY OF DEFENSE MEMO, 8 AUG 1970, SUBJECT: INTERIM GUIDELINES ON ENVIRONMENTAL STATEMENTS (DISTRIBUTED SEPARATELY).

1. (C) PUBLIC LAW 91-121, SECTION 409, REQUIRES CERTAIN APPROVALS AND COORDINATIONS PRIOR TO ANY LETHAL AGENT OPEN-AIR TESTING. OCRD INITIATED ACTION IN FEBRUARY 1970 TO COMPLY WITH PROVISIONS OF THIS LAW. ON 27 AUGUAT 1970 THE OFFICE OF THE SECRETARY OF DEFENSE REQUESTED THAT DETAILED PLANS, INCLUDING A PUBLIC AFFAIRS PLAN, BE DEVELOPED TO SUPPORT RESUMPTION OF OPEN-AIR TESTING WHEN AUTHORIZED. DA TASKED USAMC

[redacted]

UNCLASSIFIED

PAGE 2 RUEADWD4075 [redacted]

PAGE 2 RUEADWD4075 [redacted]

2. (U) P[illegible] 91-190 ALSO REQUIRES CERTAIN ACTIONS PRIOR TO EXEC[illegible] OF ANY ACTION WHICH WILL CAUSE IMPORTANT ADVERSE CHANGES IN NATURAL SURROUNDINGS OR WILL RESULT IN SUBSTANTIAL CONTROVERSY. SINCE OPEN-AIR TESTING OF LETHAL CHEMICAL AGENTS FALLS AT LEAST IN THE LATTER CATEGORY, ENVIRONMENTAL IMPACT STATEMENTS MUST BE PREPARED AS REQUIRED BY THE CITED REFERENCE.

3. (U) THE REQUIREMENTS FOR COMPLIANCE WITH PROVISIONS OF BOTH PUBLIC LAWS OVERLAP INSOFAR AS COORDINATION WITH AGENCIES EXTERNAL TO THE DOD IS CONCERNED.

4. (U) REQUEST YOU PROVIDE AN ENVIRONMENTAL IMPACT STATEMENT IN ACCORDANGE WITH THE REFERENCE, INCLUDING AS AN INCLOSURE THE DETAILED TEST PLAN, FOR EACH OPEN-AIR TEST CURRENTLY UNDER CONSIDERATION FOR EXECUTION IN THE NEAR TIME FRAME.

5. (C) TESTS FOR WHICH ENVIRONMENTAL IMPACT STATEMENTS MUST BE PREPARED ARE:

A. DISSEMINATION TRIALS OF THE BINARY GB XM687 155MM PROJECTILE.

B. CHALLENGE OF THE AIR FORCE ALL PURPOSE DECONTAMINANT.

C. CHEMICAL TECHNOLOGY TEST (SPINNING DISC).

[redacted]

D. CHEMICAL TECHNOLOGY TEST (MODIFIED AGRICULTURAL SPRAYER).

6. (U) ENVIRONMENTAL IMPACT STATEMENTS SHOULD BE SUBMITTED THROUGH APPROPRIATE CHANNELS TO ARRIVE AT DA, OCRD, ATTN: CRDNCB NOT LATER THAN 7 DECEMBER 1970. GP-4.

BT

CRDNCB NOT LATER THAN 7 DECEMBER 1970. GP-4.

UNCLASS[redacted]

AMCPM-DECM

Personnel Participating in HIGH LOW (U)

Director, Test Operations

Test Director, HIGH LOW

31 Dec 64
diw/2273

1. (C) The list in Paragraph 3 indicates personnel on temporary duty status to US Naval Station, San Diego, California and US Naval Station, Long Beach, California from approximately 4 Junary 1965 to 11 March 1965 in conjunction with HIGH LOW. Test personnel may be contacted by telephone through Building 25, extension 570, San Diego Naval Station. Persons may be reached by mail through the following address:

a. Official

Officer in Charge
ATTENTION: Individual's Name
HIGH LOW
Box 112
US Naval Station
San Diego, California

b. Personal

Individual's Name
HIGH LOW
Box 112
US Naval Station
San Diego, California

2. (C) The following dates indicate the scheduled testing dates for each ship. Some test personnel will be on board during the period scheduled for a specific ship.

a. USS WEXFORD COUNTY (LST 1168) - San Diego, Calif
4 Jan 65 - 22 Jan 65

b. USS OKANOGAN (APA 220) - Long Beach, Calif
25 Jan 65 - 6 Feb 65

c. USS BERKELEY (DDG 15) - Long Beach, Calif
8 Feb 65 - 20 Feb 65

d. USS FECHTELER (DD 870) - Long Beach, Calif
22 Feb 65 - 6 Mar 65

3. (C) Test Personnel

a. USN, Project SHAD Technical Staff, onbd USS GRANVILLE S. HALL (YAG 40)

(1) Creer, Philip Douglas, Jr., Ltjg, 661901, SECRET

(2) Stern, Robert Michael, Ltjg, 665613, TOP SECRET

[redacted]

Page 1 of 3 Pages
Copy 1 of 2 Copies

[redacted]

UNCLASSIFIED

AMCPM-DECM
SUBJECT: Personnel Participating in HIGH LOW (U)

b. Deseret Test Center

(1) Donahue, Patrick H., Lt Col, 034885, TOP SECRET

(2) Masterson, Tipton, Jr., 2nd Lt, 05323542, SECRET

(3) Nielsen, Lewis M., GS-13, SECRET

(4) Yadeskie, William G., GS-12, SECRET

(5) Meikle, John E., GS-13, TOP SECRET

(6) Cox, Zeniff J., GS-13, TOP SECRET

(7) Lind, Kenneth R., GS-13, SECRET

c. Dugway Proving Ground

(1) Jones, Curtis Franklin, Jr., GS-12, TOP SECRET

(2) Davis, Soloman K., GS-7, SECRET

(3) Ricks, Gordon K., GS-9, SECRET

(4) Inskeep, Warren, E-1, US56365546, SECRET

(5) Kabak, John J., E-1, US52601847, SECRET

(6) Green, Robert D., E-1, US51533564, SECRET

(7) Matthews, Richard A., E-3, RA19770975, SECRET

(8) Janda, Donald J., E-3, US52588147, SECRET

(9) Jones, Gordon F., E-2, US56375138, SECRET

(10) Vezzulo, Micheal E., E-3, US51530231, SECRET

(11) Williams, Paul D., GS-12, SECRET

(12) VanBeuge, Robert, W-8, SECRET

(13) Edwards, Kenneth J., E-4, RA17646676, SECRET

AMCPM-DECM
SUBJECT: Personnel Participating in HIGH LOW (U)

(14) Lohman, Denis M., GS-11, SECRET

(15) Sandstrom, Joh, L-8, SECRET

d. Army Pictorial Center

(1) Chisa, Earl, 2nd Lt, 05532503, SECRET

(2) Kramer, Kit D., SP5, RA16699695, SECRET

(3) Foulke, William A., SP5, RA13759717, SECRET

(4) Dingwall, Robin M., PFC, US55764233, SECRET

e. US Army Edgewood Arsenal

Steele, William J., GS-9, SECRET

FOR THE TEST DIRECTOR:

TIPTON MASTERSON, JR
2nd Lt, CmlC
Administrative Officer, HIGH LOW

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

02:RES:bo
5200
Ser 06
4 July 1969

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center

Subj: Weekly Status Report

Ref: (a) DTC CONF ltr of 18 Jun 69

Encl: (1) Photograph of YAG and LT Highline Operation

1. In compliance with reference (a), the following report is submitted:

a. Personnel status: The integration of Project SHAD Technical Staff to USS GRANVILLE S. HALL (YAG-40) was completed 1 July 1969. The following is a breakdown of departments:

TECH OPS.	19
TUG OPS	42
OPERATIONS	26
DECK	24
ENGINEERING	62
SUPPLY	29
TOTAL	202

b. Technical Operations Department. The following special material was received from Mr. Ed. Dalton (DTC) on 30 June 1969 for storage in HALL:

ITEM	UNIT OF ISSUE	AMOUNT
SM	41b container	12 each
EC	41b container	10 each
EC	251b container	1 each
BG	50 gal. drum	6 each

The SM and EC are being maintained in REVCO sub-zero freezers at minus 70 degrees Centrigrade. The BG is stored at 38 degrees Fahrenheit.

An AGI adapter was designed and satisfactorily tested to permit the use of the new type AGI (smaller inlet orifice) on the existing vacuum manifold located in the LT Doghouse. A complete report of this modification will be submitted to Mr. T. D. Green (DTC).

The underway highline transfer technique, enclosure (1) designed and supervised by commanding officer, HALL proved highly successful in transferring test material between HALL and the LTs during DTC Program 69-32.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

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[redacted]

and the LTs during DTC Program 69-32.
GROUP 4

Vic Olsen
Cdr Phillips
M. Dawson
Cdr Sanders

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

02:RES:jmp
5200
Ser 09
11 July 1969

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Desert Test Center

Subj: Weekly Status Report

Ref: (a) DTC CONF ltr of 18 June 1969

1. In compliance with reference (a), the following report is submitted:

a. Personnel status: Personnel status remains the same with the exception of the following:

(1) BOYD, Larry B., 236 11 23, QMC, USN was transfered to the Medical Holding Company, Pearl Harbor, Hawaii for evaluation, treatment and disposition.

(2) GUDOWSKI, James D., B88 67 37, SN, USN was transfered from the operations department to the tug department, LT-2080, to replace Chief BOYD. GUDOWSKI is a college graduate and if he proves himself a capable navigator this transfer will be permanent.

(3) LTJG Robert E. FARR will relieve, on Monday, 14 July 1969, LT David C. NEUBAUER as skipper of LT-2087. LTJG FARR has qualified as a tug skipper and LT HAWLEY skipper of LT-2080. LT NEUBAUER is being transfered to COMSERVRON 5 staff awaiting release from active duty.

b. Load out: Load out of equipment for 69-33 was completed today. Forty=eight (48) tons of deck cargo will be loaded, which includes vechicles.

c. Maintenance and upkeep: A package of work requests is being made up for approval by COMSERVPAC and forwarded to COMSERVRON 7. This will allow needed repairs for the LT's and the HALL to begin upon arrival at San Francisco. The HALL and the tugs will commence a restricted availability upon arrival in San Francisco.

The HALL's fresh water tanks have been patched and chemically cleaned. The tanks have been filled with potable water, PMU-6 will test the water Monday.

d. Technical operations:

(1) Special culture plates sent to HALL by Mr. Harry LEFKOWITZ (DTC) have not been received as of 0800, 11 July 1969. MAC Terminal, Honolulu Commercial Air Freight, and PLO have not received this material.

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DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

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[redacted]

01:GEB:rwc
5200
Ser: 011
18 July 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for 12-18 July 1969

Ref: (a) DTC conf ltr of 18 June 1969

1. In compliance with reference (a), the following report is submitted:

a. Personnel Status. Remains the same with the following exception:

(1) LTJG Robert E. FARR (DCA Officer from G. S. HALL) has temporarily relieved LT David C. NEUBAUER as skipper of LT 2087.

(2) ENS Philip HUTAFF, SC, USNR is in the process of relieving William D. BAYS as Supply Officer on or about 4 August. If time permits it is requested Ensign HUTAFF receive orders to DTC for a few days orientation and instructions on DTC logistics procedures.

b. Underway. Task Unit 92.6.1 composed of LT's 2085, 2086 and 2087 and Task Unit 92.6.3 composed of the G. S. HALL got underway on time the 15th of July. Task Unit 92.6.2 composed of LT's 2080 and 2081 got underway at 2200 the same day, 9 hours late. LT 2080 required repairs which were not completed until that time. TU 92.6.2 underway at 152200W and joined the task group at 161400W.

c. Freshwater. HALL's freshwater tanks tested out satisfactory.

d. Dry Docking Tugs. LT's 2080, 2081 and 2086 will be dry docked in San Francisco for Coast Guard inspection commencing 4 August. Estimated cost is $5,000.

e. Refueling. HALL will refuel at Richmond after offloading of deck cargo is completed.

[redacted]

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

UNCLASSIFIED

GROUP 4
Downgraded at 3 year

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

02:RES:rjf
5200
Ser 013
15 AUG 1969

UNCLASSIFIED

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for 19-25 July 1969

Ref: (a) DTC conf ltr of 18 June 1969

1. In compliance with reference (a), the following report is submitted:

a. Personnel Status. Remains the same with the following exception:

(1) ZWIEG, W. H. CSI, cook on LT-2081 cut his hand, required seven stiches by hospital corpsman on board LT-2081. Patient is fine and he will be taken to dispensary at Treasure Island upon arrival, for continued check.

b. Underway. Saturday, 19 July 1969, T.U. 92.6.1 composed of LT's 2085, 2086 and 2087 were replenished underway and detached from the Task Group and are proceeding independently to arrive 0730T Friday, 25 July 1969. Tuesday, T.U. 91.1.2 were detached and are proceeding independently to arrive 1600T Friday, 25 July 1969. The GRANVILLE S. HALL will arrive Saturday afternoon the 26th of July 1969. Thursday, 24 July 1969, LT-2087 had a fire in their boiler exhaust stack. Fire was put out with no damage to the craft.

c. Refueling. GRANVILLE S. HALL will refuel at the pier at Treasure Island arrangements have been made for a barge to come alongside with 375,000 gallons of diesel fuel.

d. Meteorology. One of our two weather facsimile machines, broke down. Repair will be attempted, however, it appears a major part has failed. These machines were recently overhauled at Pearl Harbor Naval Shipyard over a four month period. Parts for these machines are extremely hard to get as the machines are old and have gone out of production. It is strongly recommended that these facsimile machines be surveyed and replaced with newer model machines for 69-33, also, those ancillary equipment converter comparator group AN/URA-8. It is strongly recommended that converter comparator group AN/URA-17 replace the AN/URA-8 and that two model GFR facsimile receivers built by T. H. Gifft Co. Anaheim, California, plus a box of necessary spare parts to be procurred. The AN/URA-17 is recommended because the ship has two for communications and have all the spare parts required aboard. The model GFR facsimile receiver is recommended because it is felt it will yield higher quality weather maps, it uses electro chemical paper which can be purchased through Navy Supply System and it is readily available. Thermo couple to Jackstaff Delta "T" parted and needs replacing. Ships force will accomplish.

GROUP 4
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Ships force will accomplish.

GROUP 4

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DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

CONFIDENTIAL

UNCLASSIFIED

02:RES:rjf
03500
Ser 014
5 AUG 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 1 August 1969; submission of (u)

1. Personnel.

a. Training and preparation for 69-33 continues.

b. LTJG Richard L. NORVELLE, USNR reported aboard for duty upon HALL's arrival in San Francisco Saturday. He is presently in training under LTJG Robert E. FARR to become OINC of LT-2087, Mr. FARR's present temporary duty assignment.

c. The man power authorization of class "B" billets for technical operations personnel has been received by EPDOPAC in San Diego. The ship has not as yet received a copy.

2. Upkeep and Repairs:

HALL, LT-2080, LT-2081, LT-2086, and LT-2087 entered a TAV on 28 July 1969. LT-2086 was taken to Merrit Shipyard for drydocking to accomplish Coast Guard inspection. While at the shipyard, work is being done on the out of commission MG set. LT-2080 and LT-2081 are to be drydocked for Coast Guard inspection next week.

HALL and LT-2087 are having voyage repairs and upkeep done preparatory to Test 69-33. A boiler inspection was conducted Monday and HALL's number one boiler was found to be in need of repair. However, repairs cannot be accomplished prior to 13 August, so they have been deferred until after 69-33.

HALL and the five LT's will be ready for sea by 13 August 1969.

3. Off Load.

Off loading of deck cargo starboard side, began on Monday, 28 July 1969 and was completed Tuesday after the ship was moved to the other side of the pier. The ship had to be moved as the crane being used for off loading, did not have a boom long enough to reach across the ship to off load cargo on the port side.

4. Technical Operations.

GROUP 4
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Downgraded at 3 year intervals, declassified after 12 years

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DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

CONFIDENTIAL

UNCLASSIFIED

[redacted]

02:JTB:rwc
3500
Ser: 016
12 AUG 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103; Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 8 August 1969; submission of (U)

1. Personnel.

a. Training and preparation for 69-33 continues. Two major conferences were held for informing all major participants and to iron out problem areas.

b. The HALL has not received a copy of manpower authorization of class "B" billets. Due to the delay in the authorization of these billets the HALL is short on laboratory personnel for 69-33. However with the assistance of other ship's company personnel, the laboratory will be able to support its mission.

2. Upkeep and Repairs.

a. LT 2080 and LT 2081 have completed their drydocking and passed the Coast Guard Inspection. LT 2086 remains at the Pacific Shipyard.

b. HALL and the five LT's will be ready for sea by 13 August 1969.

c. Meteorology. After many long hours, plus assistance from MOTU-9, the weather facsimile machine was repaired and is again operational. All meteorological systems have been installed on the HALL and 5 LT's and all have been calibrated. Repairs have been completed on the Delta "T" system.

d. Repairs to HALL's number one boiler has been deferred until completion of 69-33. SUPSHIPS TWELVE states that number one boiler can be satisfactorily steamed until completion of scheduled operations. COMSERVPAC concurs with SUPSHIPS TWELVE recommendations.

3. Technical Operations.

a. Replacement filters were installed and satisfactorily tested in all Light Tugs except LT 2086 which is still in the shipyard. This LT will be outfitted with filters on 11 August 1969.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

shipyard. This LT will be outfitted with filters on 11 August 1969.

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DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

CONFIDENTIAL

UNCLASSIFIED

[redacted]

02:RES:rwc
3500
Ser 389
18 AUG 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 15 August 1969; submission of (U)

1. Personnel.

a. Training and preparation completed for Test 69-33B. ORI Trial 001 was conducted with HALL and four support craft Thursday, 14 August. No problems were encountered.

b. HALL has still not received a copy of either the manpower authorization or a 1080 reflecting the new "B" billets. Due to the delay in the final authorization of these billets, shortages in both laboratory and support craft personnel is existent. HALL is filling in from other departments, however talent is required, not just numbers. The Technical Operations Department is presently down to 15 HM's of an allowance of 18. Two HMs are ordered in, to report in December. The same type of situation exists on the support craft, with personnel being transferred without replacements.

c. LT DALAGER and LTJG COMPTON are scheduled to report within the next month as support craft OIC reliefs. LT HAWLEY is in receipt of orders to shore duty effective when relieved and detached.

2. Material.

a. LT 2087 developed a wiped bearing in the turbocharger enroute to Op-area for ORI Trial 001 and was forced to return to port before the test was conducted. ETR is 22 August 1969.

b. LT 2086 has fuel oil pump problems which will take a full week to repair. LT 2086 is operable but reliability is marginal.

c. HALL has filed a CASREP on the 10 ton cargo boom and port boat boom. During operations in August 1968 both port and starboard stub kingpost supporting the 10 ton cargo boom vang-guys and the main preventer for the port and starboard boat booms were bent with the starboard stub kingpost being

Encl 4
Downgraded at 3 year intervals; declassified after 12 years

Encl 4

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[redacted]

UNCLASSIFIED

02:RES:rwc
3500
Ser 389
18 AUG 1969

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 15 August 1969; submission of (U)

1. Personnel.

a. Training and preparation completed for Test 69-33B. ORI Trial 001 was conducted with HALL and four support craft Thursday, 14 August. No problems were encountered.

b. HALL has still not received a copy of either the manpower authorization or a 1080 reflecting the new "B" billets. Due to the delay in the final authorization of these billets, shortages in both laboratory and support craft personnel is existent. HALL is filling in from other departments, however talent is required, not just numbers. The Technical Operations Department is presently down to 15 HM's of an allowance of 18. Two HMs are ordered in, to report in December. The same type of situation exists on the support craft, with personnel being transferred without replacements.

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2. Material.

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b. LT 2086 has fuel oil pump problems which will take a full week to repair. LT 2086 is operable but reliability is marginal.

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GROUP 4
Downgraded at 3 year intervals; declassified after 12 years
GROUP 4

[redacted]

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DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

02:RES:rwc
3500
Ser 022

4 SEP 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 29 August 1969; submission of (U)

Encl: (1) USS GRANVILLE S. HALL (YAG-40) Personnel Status Report of 29 August 1969

1. Personnel.

a. Due to early separations as a result of manpower reductions, HALL will lose 28 men in October affecting all departments.

b. Enclosure (1) is a breakdown of personnel by departments as of 29 August 1969.

c. Six men have been assigned from HALL as security force in building seven, Naval Station, Treasure Island. LT SCHEIFINGER remains in charge at building 420, Naval Air Station, Alameda.

2. Material.

a. Repairs to HALL's hydraulic steering have been completed.

b. SC 87 completed repairs to its AC/MG set.

c. SC 86 completed repairs to its voltage regulator.

d. All other work is proceeding satisfactorily.

3. Technical Operations.

a. All non-expendable 69-33 material in HALL and in building #420 has been retrograded to building #7 in custody of Mr. YADESKIE (DTC). Technical Operations Technicians will maintain autoclaves, steam kettles, etc., in a state of readiness. The poured culture plates (approx. 60,000) stored in building #7 have been transferred to HALL. All classified waste material such as "bomb count plates," empty media containers from building #7 and #420 have been autoclaved in HALL and will be discarded at sea.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

HALL and will be discarded at sea.
GROUP 4

UNCLASSIFIED

USS GRANVILLE S. HALL (YAG-440)
PERSONNEL STATUS REPORT

Date: 29 AUGUST 1969

		Tech Ops.		Tug Dept.		Operations		Engineering		Supply		Deck	
		Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow	On Bd.
3/9	E-8/9	01	01	00	00	00	00	01	01	00	00	00	00
7	E-7	01	04	00	06	02	03	04	04	01	00	01	00
6	E-6	03	03	20	10	05	02	06	08	03	06	00	01
5	E-5	06	03	15	22	05	03	15	09	06	09	02	01
4	E-4	04	03	05	04	10	11	06	13	06	04	01	02
3	E-3	05	00	00	03	00	04	18	24	04	12	25	28
TAL	TOTALS	20	14	40	45	22	23	50	59	20	31	29	32
sen	Absent TAD		02		01		02		00		03		02
ıar	Aboard TAD		00		00		00		00		00		00
ıs	lless Cook		00		00		00		06 (1MAA)		02		06
rve	Leave		00		01		01		04		03		01

TAL TOTAL Allowance 181

TAL TOTAL On Board 192

Submitted.

J. M. PURDON, PN3, USN
Signature

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

[redacted]

02:RES:rjf
3500
Ser 025
6 SEP 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103 Soldiers Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 5 September 1969; submission of (U)

Encl: (1) Personnel Status Report for 5 September 1969

1. Personnel.

a. Enlisted personnel status remains the same.

b. LT Neil R. DALAGER relieved LT Raymond M. HAWLEY as OIC of SC 80 on 3 September 1969.

2. Material.

a. SC 86 completed repairs to fuel oil transfer pump. This completes all minor repairs to Support Craft.

b. A major repair work package is being prepared for submission to cognizant authorities in the event a go ahead is given during the conference to be held next week. This work package will include main engine overhaul for Support Craft, boiler repairs for HALL and repair to cargo boom stub kingposts, on HALL.

3. Technical Operations Department.

a. Retrograde of DTC Program 69-33 continues. Technical Operations Department will retain adequate equipment and supplies to maintain an operational laboratory.

b. The drum of BG received from PLO on 26 August 1969 was assuayed in HALL. The results revealed a viable count of 8.0×10^9. This drum has been in cold storage at NSC, Pearl Harbor for approximately three (3) years and was received at Treasure Island unrefrigerated.

c. HM2 W. BROWN departed HALL on 2 September 1969 for approximately thirty (30) days TDY to DTC.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

UNCLASSIFIED

intervals; declassified [redacted]

USS GRANVILLE S. HALL (YAG440)
PERSONNEL STATUS REPORT

Date: 5 SEPTEMBER 1969

		Tech Ops.		Tug Dept.		Operations		Engineering		Supply		Deck	
		Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow	On Bd.
/9	E-8/9	01	01	00	00	00	00	01	01	00	00	00	00
	E-7	01	04	00	06	02	03	04	04	01	00	01	00
	E-6	03	03	20	10	05	02	06	08	03	06	00	01
	E-5	06	04	15	21	05	03	15	09	05	09	02	01
	E-4	04	03	05	04	10	10	06	13	06	04	01	02
	E-3	05	00	00	03	00	04	18	24	04	12	25	28
LS	TOTALS	20	15	40	44	22	22	50	59	20	31	29	32
L / ent.	TOTAL ATTACHED 203 Absent TAD		02		02		(02 BLGD 7)		00		(03 BLGD 7)		(04 BLDG 7)
rd	Aboard TAD		00		00		00		00		00		00
Cc	Mess Cook		00		00		00		06 (1MAA)		02		06
e	Leave		00		02		00		02		01		00
L A	TOTAL Allowance		101										
L C	TOTAL On Board		194										

Submitted.

J. PURDON, PN3, USN
Signature

ENCLOSURE (1)

Col Sanders [redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

Col Crandell [redacted] HALL

UNCLASSIFIED

02:RES:trs
3500
Ser 026
23 SEP 1969

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103
Soldiers Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 19 September 1969; submission of (U)

1. Personnel.

a. Enlisted personnel status remains the same.

b. LTJG Clark W. COMPTON, USNR, arrived aboard for duty 19 September 1969. He will relieve LTJG John C. PODOBNIK as OINC of SC-2086.

2. Material.

a. Bids on HALL's boilers went out Friday. Work is expected to start Monday 22 September 1969.

b. The cargo boom stub king posts were completed 18 September 1969 and tested satisfactorily 19 September 1969.

c. The ship received a replacement Captain's Gig 19 September 1969 in excellent condition. HALL now has all authorized boats aboard.

d. The bids on one of the support craft went out Friday. It is expected that all remaining bids will be out on Monday.

e. The aerovane wind measuring systems, recorder and transmitter, on the support craft were air shipped to DTC 19 September 1969.

3. Technical Operations Department.

a. Surface contamination surveillance swabs were collected throughout Building 420 (Alameda) on 15 September 1969. Gross BG contamination was detected on the decks. Technical Operations decontaminated the building with HTH solution (10^3 ppm); additional swab samples taken on 17 September 1969 revealed no significant BG contamination.

b. Six (6) fifty-five gallon drums of BG were transferred from HALL to Mr. W. YADESKIE (DTC) on 16 September 1969.

[redacted]

Encl 4
Downgraded at 3 year intervals; declassified after 12 years

UNCLASSIFIED

Downgraded at 3 year intervals; declassified

[redacted] MR DAWSON [illegible] 10/2
MR OLSEN [redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

02:RES:rjf
3500
Ser 028
01 OCT 1969

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 26 September 1969

1. Personnel.

a. Enlisted personnel status remains the same.

b. LTJG J. T. BOGERT commenced process of relieving LTJG R. E. STODDARD as Operations Officer. LTJG STODDARD will be released from active duty on or about 15 October 1969. Due to the lack of qualified junior officers LT BODENNER will relieve LTJG STODDARD as navigator.

c. LTJG Clark W. COMPTON relieved LTJG John C. PODOBNIK as OINC of SC 86 on 26 September 1969.

2. Material.

a. Work on HALL's boilers commenced Monday. Expect to hydro-test boilers next week and have boilers operational by 3 October 1969.

b. Bids on support craft were completed Monday. SC 80 went to Colbert Shipyard in Stockton. SC 81 and SC 85 went to West Wind Machine Shop in San Francisco.

3. Technical Operations.

a. Background research in various laboratory procedures has been conducted in preparation for proposed study 70-B. At present, LVAS collection fluids consisting of 75% sea water and artificial sea water appear most favorable in collecting aerosol samples for marine bacteria and yeasts enumeration. Several media used by Claude ZOBELL, PH. D, University of California, LA JOLLA will be evaluated upon receipt of the required engredients. Chemical analyses for nitrate, nitrite, phospliate, ammonia and protein determinations to be conducted in HALL present a problem. The procedures for the above determinations, have been reported in the literature by several investigators and in each case they require the use of a spectrophotometer.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

GROUP 4
Downgraded at 3 year

[redacted]

[redacted]

OINC ACCIDENT

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

UNCLASSIFIED

[redacted]

02:JTB:trs
3500
Ser 029
9 OCT 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103
Soldiers Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 3 October 1969; submission of (U)

Encl: (1) Personnel Status Report as of 3 October 1969

1. Personnel.

a. Twenty-one enlisted men were separated from the HALL on 3 October 1969 due to the government cutbacks. This leaves a total of 161 on board.

b. LTJG J. T. BOGERT relieved LTJG R. E. STODDARD as Operations Officer on 3 October 1969. LT BODENNER relieved LTJG STODDARD as Navigator on 3 October 1969.

2. Material.

a. HALL's number one boiler was hydro-tested on 3 October 1969 and all tests were satisfactory. Number one boiler will be lighted off on 6 October 1969 and be inspected for final completion of the job. All other minor repairs are well towards completion with only a few minor adjustments to be made in order to complete all work.

(1) Boiler repairs 95% completed.

(2) Reversing engine 100% completed.

(3) Number 1 feed pump manifold 65% completed.

(4) Steering system 75% completed.

(5) Laundry extractor 100% completed.

(6) Steam piping 35% completed.

b. Support Craft - Progress on the main engine overhaul of the SC's is as follows:

[redacted]

UNCLASSIFIED

USS GRANVILLE S. HALL (YAG-440)
PERSONNEL STATUS REPORT

Date: 3 October 1969

		Tech Ops.		Tug Dept.		Operations		Engineering		Supply		Deck	
		Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow	On Bd.
9	E-8/9	01	01	00	00	00	00	01	01	00	00	00	00
	E-7	01	04	00	06	02	03	04	03	01	00	01	00
	E-6	03	04	20	08	05	02	06	08	03	06	00	00
	E-5	06	02	15	20	05	01	15	06	06	09	02	01
	E-4	04	08	05	01	10	08	06	09	06	03	01	02
	E-3	05	01	00	01	00	03	18	22	04	09	25	27
LS	TOTALS	20	16	40	36	22	17	50	49	20	27	29	30
at	Absent TAD		00		00		00		02		01		00
rd	Aboard TAD		00		00		00		00		00		00
Co	Mess Cook		00		00		00		03		03		06
e	Leave		04		01		01		02		02		01
L A	TOTAL Allowance		181										
L O	TOTAL On Board		161										

Submitted.

PN3 J. M. PILLE
Signature

ENCLOSURE (1)

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

UNCLASSIFIED

02:JTB:trs
3500
Ser 034
20 OCT 1969

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 17 October 1969; submission of (U)

1. Personnel.

a. ENS J. S. DENMAN reported aboard on 15 OCT 1969 and will relieve LTJG BOGERT as Communication Officer by 24 OCT 1969.

2. Operations.

a. The HALL will get underway in support of DTC Study 70-C from 21 OCT 1969 through 23 OCT 1969. The HALL will also conduct independent ships exercises during this period.

3. Material.

a. All boiler repairs have been completed and all other jobs affecting the ships underway schedule are completed. A new litter hoist has been procurred for number 2 Hold and is presently being installed. Completion date is expected to be prior to 30 OCT 1969.

(1) Boiler repairs 100% completed.
(2) Number 1 feed pump manifold 100% completed.

b. Support craft

(1) The availability of replacement parts for the SC main engines is questionable at this time. Therefore the completion date of 7 NOV 1969 may have to be set back.

SC 80	36% Work completed	46% Time
SC 81	40% Work completed	45% Time
SC 85	40% Work completed	45% Time
SC 86	40% Work completed	45% Time
SC 87	40% Work completed	45% Time

[redacted]

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

UNCLASSIFIED

after 12 years

[redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

[redacted]

01:GEB:rwc
3500
Ser 036
28 OCT 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 24 October 1969; submission of (U)

1. Personnel.

a. ENS J. S. DENMAN relieved LTJG BOGERT as Communication Officer on 24 October 1969. LTJG J. T. BOGERT is Operations Officer and Test Coordinator for the HALL. LTJG M. C. HAGER, HALL's First Lieutenant will be released from active duty 1 November 1969.

b. The first new NavPers 1080-14 for Tech Ops allowance was received 20 October 1969. This now reflects the new allowance and is the tool detailers will use to furnish manpower requirements.

2. Operations.

a. HALL was underway in support of DTC study 70-C from 21 October 1969 through 23 October 1969. Mr. Fred HODAPP, Technical Representative from Dugway Proving Grounds, accompanied the ship during these operations.

b. The HALL will get underway for continued studies from 29 October 1969 through 31 October 1969.

3. Material.

a. The new litter hoist for number 2 hold is installed and working properly. All boiler repairs checked out satisfactorily, however the Gyro-Electric Steering was unsatisfactory. Repairs were continued on 24 OCT 1969 to correct deficiencies.

b. Support Craft

(1) The completion date for the SC Main Engine Repairs appears to be running a week and a half behind scheduled completion date, due to non-receipt of repair parts.

SC 80	47% Work completed	61% Time
SC 81	45% Work completed	59% Time
SC 85	45% Work completed	59% Time

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

UNCLASSIFIED

[redacted]

SC 85	45% Work completed	59% Time

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

01;GEB:rjf
3500
Ser 039
3 NOV 1969

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 31 October 1969; submission of (U)

1. Personnel.

a. On 28 October 1969, the Commanding Officer of Naval Biological Laboratory, Oakland, California visited the HALL.

2. Operations.

a. HALL was underway in support of DTC Test 70-C from 29 October 1969 through 31 October 1969. Mr. Charles GRAYDON, GS-13 from DTC accompanied the ship during these operations.

3. Material.

a. All of HALL's repairs except the hand electric steering and the auto gyro steering have checked out satisfactorily but the ship is considered ready for sea.

b. Support Craft

(1) There still appears to be a delay in completion date of the support craft due to the delay in needed parts. Contract completion date is 7 November 1969 and the completion of the RAV is 14 November 1969. Estimated sailing date at this time appears to be 21 November 1969.

SC 80	60% Work completed	76% Time
SC 81	55% Work completed	74% Time
SC 85	55% Work completed	74% Time
SC 86	70% Work completed	74% Time
SC 87	70% Work completed	74% Time

c. It is requested that the Director, Test Operations arrange with comptroller to provide CO of HALL an imprest fund from DTC in the amount of $1,000 dollars to expedite procurement of open purchase materials required in the support of Test 70-C.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

UNCLASSIFIED

intervals; declassified

M. Dawson [redacted] Col transmitted

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

02:JTB:rjf
3500
Ser 042
12 NOV 1969

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 7 November 1969; submission of (U)

1. Personnel.

a. On 1 November LTJG M. C. HAGER, HALL's First Lieutenant was detached from active duty without relief. LTJG R. E. FARR is acting as First Lieutenant and Damage Control Assistant until HALL's new First Lieutenant arrives on board. Lieutenant D. P. GRINDALL will be separated 10 November 1969 without relief.

b. Dr. SPENDLOVE (DTC) was aboard 4 and 5 November with the "DTC Naval Support Forces" film. The film was reviewed by all officers of the HALL and Support Craft.

c. A total of 26 enlisted personnel are ordered in to the command, with arrival dates through February 1970.

d. Director, NBC Defense School, Treasure Island and his staff (seven officer personnel) were briefed on 4 November, about HALL's and DTC's mission. They were then given a tour of Technical Operations Department spaces in HALL. They were also shown the "DTC Naval Support Forces" film and responded most favorably to it. They were debriefed on departure.

2. Operations.

a. Tentative sailing date to Hawaii for the Support Forces is 28 November 1969.

3. Material.

a. Support Craft

(1) Dock trials are scheduled on the Support Craft for the following dates:

SC 80	8 November 1969
SC 86	9 November 1969
SC 87	12 November 1969
SC 81	17 November extended to 21 November
SC 85	18 November extended to 21 November

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

UNCLASSIFIED

SC 81	17 November extended to 21 November
SC 85	18 November extended to 21 November

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

Mr. Dawson
Mr. Olsen
Lt Crandell

02:JTB:dlm
3500
Ser 044
18 NOV 1969

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 103 Soldiers Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 14 November 1969; submission of (U)

1. Personnel. Lieutenant D. P. GRINDALL was separated from HALL on 10 November 1969 without relief. LT. C. C. SCHEIFINGER assumed the job of Safety Officer in addition to his regular job as Lab Officer.

2. Operations. The HALL plans to get underway 18 November 1969 to go to Point Molate in the Bay Area to top off with fuel. Sailing date to depart San Francisco is 28 November 1969 to arrive in Pearl Harbor 8 December 1969.

3. Material.

a. Preparations for installation of the LVAS and Royco Particle Counter have been completed by ship's force to the greatest extent possible. Completion of installation is held up until drawings and tubing materials are received from Headquarters. If this material is received on board HALL prior to Monday, 24 November 1969, completion of installation can be accomplished by ship's force prior to departure San Francisco on Friday, 28 November 1969.

b. Support Craft Overhaul:

(1) SC 80 - Completion date expected 15 November 1969

(2) SC 81 - Sea trial 19 November 1969

(3) SC 85 - Sea Trial 20 November 1969

(4) SC 86 - Completion date expected 15 November 1969

(5) SC 87 - Completion date expected 15 November 1969

c. NO ACTION has been taken on the Aerovanes and recorders required to be installed on the SC 80 and 86 prior to 17 November 1969. These were to have been received from DTC prior to 6 November 1969 as stated in Program 70-C Significant Action Report for week ending 1 November 1969.

[redacted]

DOWNGRADED AT 12 YR INTERVALS
NOT AUTOMATICALLY DECLASSIFIED
DOD DIRECTIVE 5200.10

UNCLASSIFIED

DOWNGRADED AT 12 YR INTERVALS
NOT AUTOMATICALLY DECLASSIFIED

[redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

02:JTB:rjf
3500
Ser 046
26 NOV 1969

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 103 Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 21 November 1969; submission of (U)

1. Personnel. Mr. JUDD and Mr. BINION (DTC) arrived on board and began work on the SC's and HALL's met gear. LTJG THORNE, USNR, has been ordered in as relief for LT GORDON, OIC, SC 81. He is due to report January 1970. LT GORDON is not presently in receipt of orders.

2. Operations. The HALL topped off with fuel on 18 November. Sailing date stands at 28 November 1969.

3. Material.

a. The GRANVILLE S. HALL and all Support Craft are in all respects ready for sea (RFS).

b. Met:

(1) Aerovanes and recorders were received on 17 November and were installed on all SC's on 18 and 19 November.

(2) Two complete met systems were installed on board the HALL. One located on the foremost at 27.4 meters and the other on the jack-staff at 13.7 meters.

(3) The Delta-T system is installed and working.

(4) An infra-red thermometer system has been installed.

(5) Two ultra-violet and one total solar systems have been installed.

(6) Sixteen hours of schooling and instruction on met systems were held at Moetlo, Fleet Weather Central Alemeda for two DTC met personnel, plus one AGC and one ETC from the HALL.

(7) On 21 November HALL received the bill of materials for met operations of 70-C.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

Downgraded at 3 year intervals; declassified

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

02:JTB:trs
3500
Ser 048
1 DEC 1969

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 103
Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 28 November 1969; submission of (U)

Encl: (1) Calibration Certification for Royco Partical Counter

1. Personnel.

a. 1st Lt. James AMON, USA and Mr. Fred HODAPP (DTC) arrived onboard 27 November 1969 to make the transit to Pearl Harbor in conjunction with Test 70-C.

b. Mr. Charles GRAYDON visited the HALL 26 November 1969.

2. Operations. The HALL and all Support Craft completed preparations for transit to Pearl Harbor and the HALL got underway at 0800, 28 November 1969. The Support Craft got underway at 0930 and rendezvoused with HALL at 1730 proceeding IAW GRANVILLE S. HALL OPPLAN 3-69, forwarded your command 28 November 1969.

3. Material.

a. Load-out of all food and supplies was accomplished during this week. In addition 22 private and two Navy vehicles were loaded topside on HALL for the transit to Hawaii.

b. The Heli-arc and 8 1/2 ton air-conditioning unit requested in June 1969 were received on board 26 November 1969.

c. On 26 November 1969 a naval yard tug collided with the HALL on two occasions while attempting to tie up to HALL's port quarter in order to pull HALL clear of pier 16 at Treasure Island, Naval Station. Cause of the two collisions is under investigation at this time. Result of the First collision: HALL's boat boom was bent outward at a 45° angle. Result of the Second collision: Boat boom was damaged beyond economical repair. Frames 137 and 138 on HALL were buckled approximately four inches. External water scupper was smashed and shower stalls in after crews head damaged.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

UNCLASSIFIED

after 12 years

Col Crandell MC
Mr Olsen
Mr Dawson 12/18

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

02:JTB:rjf
3500
Ser 050
10 DEC 1969

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 5 December 1969; submission of (U)

Encl: (1) USS GRANVILLE S. HALL (YAG-40) Personnel Status Report of 5 December 1969

1. Personnel. A complete personnel status report is forwarded as enclosure (1). As can be seen by the report, there is a considerable lack of E-5 and E-6 rated men on board at this time. In addition, this command will be losing more key personnel during the months of January, February and March due to additional early releases authorized by NAVOP 61.

2. Operations. The command is proceeding to Pearl Harbor conducting daily morning and evening trials in support of Test 70-C. Due to storm evasion, heavy seas, and mechanical problems aboard HALL, the Task Group has had to alter its course several times and reduce speed. For these reasons the transit will take approximately thirteen days vice the originally planned ten days.

3. Material. The GRANVILLE S. HALL has run into a series of mechanical problems some of which can be repaired by ships force enroute. The following items have been the major source of concern:

a. The four inch circulation tubes installed in Number one boiler by Triple A Machine Shop in San Francisco during the past RAV have been leaking water at the header of Number one boiler. HALL was required to take the boiler off the line and slow to a speed of eight knots. Three defective tubes were re-rolled by hand. The boiler operated satisfactorily for a day and then started to leak again. At this time the boiler is off the line again and the rest of the four inch circulation tubes are being rolled to see if the leaks in Number one boiler can be stopped. In the interim Number one boiler has been CASREPTED.

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

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intervals; declassifiec

UNCLASSIFIED

[redacted]

USS GRANVILLE S. HALL (YAG-440)
PERSONNEL STATUS REPORT

Date: 5 DEC 1969

ENCLOSURE (1)

	Tech Ops.		Tug Dept.		Operations		Engineering		Supply		Deck	
	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow.	On Bd.	Allow	On Bd.
E-8/9	01	01	00	00	00	00	01	01	00	00	00	00
E-7	01	03	00	06	02	04	04	02	01	00	01	00
E-6	03	02	20	10	05	02	06	05	03	05	00	01
E-5	06	02	15	20	05	01	15	03	06	07	02	02
E-4	04	04	05	04	10	07	06	12	06	04	01	02
E-3	05	00	00	01	00	06	18	18	04	10	25	22
TOTALS	20	12	40	41	22	20	50	41	20	26	29	27
Ab/AD sent TAD		00		00		00		00		01		00
Ab/AD oard TAD		00		00		00		00		00		00
Medi s Cook		00		00		00		04		01		06
Lea ve		01		00		02		01		00		00

TOTLow/AL Allowance 131

TOTBo/AL On Board 162

Submitted

TIM R. SARTIN
Signature

Col. Crandell - TNL

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

21:JSD:rjf
3500
Ser 02
6 JAN 1970

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending Ø2 JAN 1970; submission of (U)

1. Personnel. AGC FIELDS relieved AGC FRANK as Chief Meteorologist 3Ø December 1969.

2. Operations. Leave and up-keep period continues for naval support forces.

3. Material. The naval support forces have received the OPTAR for third quarter, however no determination has been made as to the funding for fuel, utilities and maintenance costs. As a result, shipyard repair work is halted. The RAV will be extended to complete needed repairs when funding is available.

4. Technical Operations Department. End of DTC 70-C1 trip report was submitted to Director Test Operations, on 2 January 1970; maintenance and painting of Technical Operations spaces continues.

W. P. Karmenzind
W. P. KARMENZIND

Copy to:
COMSERVRON FIVE

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

[redacted]

intervals; declassified after 12 years

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

UNCLASSIFIED

[redacted]

02:JTB:rjf
3500
Ser 04
14 JAN 1970

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 103, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 9 January 1970; submission of (U)

1. Personnel.

a. Lieutenant Kendall L. FRAZIER, USN was relieved as OIC of Support Craft 85 on 8 January 1970 by LTJG Robert E. FARR, USNR.

b. LTJG BULLIONS reported aboard and is in the process of relieving LTJG MORTON as DCA and Engineering Officer. When relieved of this job, LJTG MORTON will relieve LTJG FARR who is acting First Lieutenant for the GRANVILLE S. HALL.

c. LTJG THORN has been ordered to report to relieve LT Frank GORDON, USN as OIC of SC 80.

d. Lieutenant Neil R. DALAGER in SC 80 has relieved Lieutenant FRAZIER as Support Craft Operations Officer and Department Head.

2. Operations.

a. Leave period ended 5 January 1970, and HALL and SC returned to regular working hours. The upkeep period continues and RAV which ended 2 January was extended from 9 January through 1 February 1970.

3. Material.

a. There has still been no determination on the funding of fuel, utilities and maintenance costs for the U.S. Naval Support Forces. Therefore all yard repair work has been at a stand still since the beginning of the RAV.

b. HALL and SC have been accomplishing as much ships force PMS and maintenance work as is possible. Some work has been done on the SC anchor windlasses, however, additional shipyard work will still have to be accomplished, to put them all in

GROUP 4
Downgraded at 3 year intervals, declassified after 12 years

GROUP 4

[redacted]

[redacted]

UNCLASSIFIED

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

UNCLASSIFIED

02:JTB:rjf
3500
Ser 05
20 JAN 1970

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 16 January 1970; submission of (U)

Encl: (1) Priorities for Work Requests
(2) COMNAVSHIPYARD Pearl ltr Code 700 of 8 JAN 70
(3) C.O. GRANVILLE S. HALL (YAG-40) ltr 01:GEB:rjf 6700 Ser 36 of 16 JAN 70

1. Personnel.

a. LTJG THORN reported aboard 12 January 1970 and is in the process of relieving LT Frank GORDON, USN as OIC of SC 81.

b. The following is a list of SC OIC's.

(1) LT DALAGER - SC 80 - SC Ops Department Head
(2) LTJG THORN - SC 81 - LT GORDON being relieved
(3) LTJG FARR - SC 85
(4) LTJG COMPTON - SC 86
(5) LTJG NORVELLE - SC 87

2. Operations.

a. Upkeep period and RAV continue for HALL and SC.

b. Arrangements have been made with COMSERVRON FIVE for the SC to tow gunnery targets for ships doing exercises off Oahu. COMSERVRON FIVE has agreed that SERVRON FIVE would furnish replacement fuel for that expended during these operations.

c. All SC have complete Navigational Chart Portfolios and Sailing Direction information for the TTPI trip.

3. Material.

a. Yard repair work has not been started as of this date. The $60,000 sent by DTC for maintenance of HALL and SC is in the repair office and work should begin by Monday or Tuesday of next week. Since the funds sent will only cover about one half of the

GROUP 4
Downgraded at 3 year intervals, declassified after 12 years
GROUP 4

[redacted]

[redacted]

UNCLASSIFIED

Key = 344

[redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

UNCLASSIFIED

02:JTB:rjf
3500
Ser 011
11 FEB 1970

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 7 FEB 1970; submission of (U)

Encl: (1) Personnel Status Report as of 2 FEB 1970

1. Personnel. Submitted as enclosure (1).

2. Operations.

a. The RAV for HALL and Support Craft continues.

b. Support Craft 81 got underway on 2, 3, and 6 February to tow gunnery targets.

3. Material. All job orders submitted are progressing satisfactorily. However, no further job orders will be accepted by the shipyard at this time. All work which has been accepted will be completed as planned.

4. Technical Operations Department.

a. A total of thirty-five cambridge filters for Technical Operations spaces have been received in HALL on 5 February 1970.

b. Technical Operations personnel are supporting Commander, Pearl Harbor Naval Shipyard in laboratory analytical work.

c. Painting and maintenance continue in Technical Operations space.

W. P. KARMENZIND

Copy to:
COMSERVRON FIVE

GROUP 4
[illegible] Classific
after 12 years

[redacted]

after 12 years

UNCLASSIFIED

USS GRANVILLE S. HALL (YAG-40)
PERSONNEL STATUS REPORT

Date: 2 FEB 70

	Tech Ops. Allow.	Tech Ops. On Bd.	Tug Dept. Allow.	Tug Dept. On Bd.	Operations Allow.	Operations On Bd.	Engineering Allow.	Engineering On Bd.	Supply Allow.	Supply On Bd.	Deck Allow	Deck On Bd.
E-8/9	01	01	00	00	00	00	01	01	00	00	00	00
E-7	01	03	00	04	02	04	04	03	01	00	01	00
E-6	03	00	20	14	05	04	06	03	03	04	00	02
E-5	06	04	15	17	05	02	15	08	05	06	02	01
E-4	04	04	05	02	10	05	06	08	06	00	01	02
E-3	05	~~03~~ 01	00	01	00	07	13	20	04	11	25	25
TOTALS	20	12	40	38	22	22	50	43	20	21	29	30
ABSENT TAD												
ABOARD TAD												
Mess Cook		00		00		01		04		01		06
Leave												

TOTAL Allowance 1[illegible]1

TOTAL On Board 167

Submitted,

James M. TILLE

Signature

ENCLOSURE (1)

MR OLSEN
PNZ LEGG

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

[redacted]

02:JTB:trs
3500
Ser 07
27 JAN 1970

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, UTAH 84113

Subj: Weekly Status Report for period ending 23 January 1970; submission of (U)

1. Personnel.

a. LTJG THORN relieved LT Frank GORDON as OIC of SC 81 on 20 January 1970.

2. Operations.

a. Upkeep period and RAV continues for training, ISE, and relieving procedures.

3. Material.

a. Financial and planning details necessary for commencement of work in RAV have been completed and actual work is scheduled to commence/resume 26 January 1970.

4. Technical Operations Department.

a. A copy of the Bill of Materials (BOM) for DTC program 912, Retrograde was received on 23 January 1970. A requirement of 912 supplies that can be used in Technical Operations to support DTC tests will be submitted to Mr. Fred HODAPP (DTC) prior 30 January 1970.

b. One MSC officer and five Hospital Corpsmen are supporting Commander Naval Shipyard, Pearl Harbor in laboratory analyses.

c. Maintenance and painting continues in Technical Operations spaces.

d. Forty gallons of aged sea water is now in sterage in HALL and will be used for the preparation of LVAS collecting liquid and marine agar.

W. P. Karmenzind
W. P. KARMENZIND

Copy to:
COMSERVRON FIVE

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

Downgraded at 3 year intervals; declassified

[redacted]

UNCLASSIFIED

[redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

02:JTB:rjf
3500
Ser014
4 MAR 1970

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding General, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 27 FEB 1970; submission of (U)

1. Personnel.

a. LTJG A. C. BULLIONS relieved LTJG B. A. MORTON as Engineering Officer 26 February 1970.

b. LTJG MORTON will be HALL's First Lieutenant and Navigator.

c. A DCA is scheduled to report 9 MARCH 1970 to fill vacant DCA Billet.

2. Operations.

a. The RAV for HALL and support craft ends 27 February. Since the RAV is in a RECOMP status and a new work request package has been submitted by HALL it is expected that the RAV will be extended until HALL is RFS.

b. Support Craft 86 got underway on 25 and 27 February to tow gunnery targets.

c. Final decision has been made on the suitability of USS GRANVILLE S. HALL (YAG-40) for a special mission. HALL will support the mission and operate independently. The five support craft will not accompany HALL.

3. Material.

a. A new evaporator will be installed by the shipyard prior to sailing. Requests have been made via message for funds to start the above job.

b. An additional package of work requests have been submitted to the shipyard for completion prior to sailing.

[redacted]

UNCLASSIFIED

[redacted]

[redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

02:JSD:dlm
3500
Ser 018
12 MAR 1970

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 6 March 1970; submission of (U)

1. Personnel. ENS John NMN MARTIN, USNR, 757998/1105 reported aboard and will become Damage Control Assistant (DCA).

2. Operations.

a. The HALL and Support Craft remain in RAV. Pearl Harbor Naval Shipyard continues to work on the large work request package submitted by HALL for the upcoming deployment.

b. Prior to deployment, HALL will get underway for a period of approximately ten (10) hours for "shakedown" purposes. The Shipyard will determine when HALL is RFS.

c. SC 80 began salvage operations for COMSERVRON FIVE on 31 January 1970. Operations were terminated on 5 March 1970 with negative results.

d. SC 81 was underway from 2 to 4 March 1970 for towing operations.

e. SC 85 lit off main engine on 6 March 1970. All yard work on the 85 has been completed.

f. SC 87 refueled from the USS QUAPAW (ATF-110) on 4 March 1970. Cost borne by COMSERVRON FIVE.

g. SC 80 refueled from the USS NOXUBEE (AOG-56) on 31 January 1970. Cost borne by COMSERVRON FIVE.

h. COMSERVPAC has assigned support craft and DTC personnel (not essential to forthcoming deployment) to COMSERVRON FIVE pending the commencement of test 69-33. This is in accordance with request of DTC 091630Z MAR 70.

[redacted]

GROUP 4
Downgraded at 3 year intervals; declassified after 12 years

Downgraded at 3 year intervals; declassified

UNCLASSIFIED

[redacted]

DEPARTMENT OF THE NAVY
USS GRANVILLE S HALL (YAG-40)
FPO SAN FRANCISCO 96601

UNCLASSIFIED

[redacted]

21:JSD:dlm
3500
Ser 024

1 APR 1970

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 27 March 1970; submission of(U)

1. Personnel.

a. LCDR Norman C. LACHAPELLE has received orders to Naval Hospital, Oakland, California, for May 1970.

b. LT Neil R. DALAGER has been ordered to report to the USS GRANVILLE S. HALL (YAG-40) as Executive Officer to relieve LCDR BODENNER; estimated time of changeover: June 1970.

c. LT Richard D. WASNICH was admitted to the hospital on 25 March 1970. Diagnosis: Gastro-Hemorrage.

2. Operations.

a. The USS GRANVILLE S. HALL (YAG-40) got underway at 0715 Monday, 23 March 1970 for sea trials off Oahu, and returned to port at 1400 the same day.

b. Yard work for the upcoming deployment nears completion.

c. Inventory Test 70-C Meteorological equipment was shipped back to DTC.

d. The SC86 was underway for towing operations for the better part of the week.

3. Technical Operations Department.

a. The Tech Ops Department has moved to Building 287 on the Naval Base, Pearl Harbor. Phone not yet installed.

b. The Tech Ops Department assisted Mr. DALTON on an inventory of Test 70-C Meteorological equipment.

c. Shipyard lab work utilizing Tech Ops personnel continues.

[redacted]

UNCLASSIFIED

Reg F 642

[redacted]

E-IV
4/15

Commanding Officer
USS GRANVILLE S. HALL (YAG-40)
Fleet Post Office
San Francisco 96601

[redacted]

UNCLASSIFIED

06:NCL:rjf
3500
Ser 050
8 APR 1970

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100 Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly status report for period ending 3 April 1970; submission of (U)

1. Personnel

a. LTJG Harry L. DEAS III, USNR, has been ordered as a relief for LT Neil DALAGER, USN. LT DALAGER has received orders as prospective Executive Officer of HALL.

b. LTJG DEAS expects to arrive at Pearl Harbor on 25 MAY 1970.

2. Operations

a. HALL got underway 1 APRIL 1970 at 1430 for Nice Dog/ Pockmark operations.

b. Support Craft towing operations were as follows:

(1) SC 85 - 9 March through 13 March 1970.

(2) SC 87 - 16 March through 20 March 1970.

(3) SC 86 - 23 March through 27 March 1970.

(4) SC 85 - 30 March through 2 April 1970.

c. SC 85 refueled from USS ARIKARA (ATF 98). Cost borne by COMSERVRON FIVE.

d. Support Craft activated and moved to Pier Yankee Two on 23 March 1970. A potential berthing problem was alleviated by Support Craft personnel re-activating this pier.

3. Technical Operations Department.

[redacted]

700

UNCLASSIFIED

Commanding Officer
USS GRANVILLE S. HALL (YAG-40)
Fleet Post Office
San Francisco 96601

[redacted]

06:NCL:rjf
3500
Ser 030
15APR 1970

UNCLASSIFIED

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100, Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 10 April 1970; submission of (U)

1. Personnel. LT J. R. CARLO, MSC, USNR, has been ordered to Deseret Test Center in Technical Operations Department on board USS GRANVILLE S. HALL (YAG-40) as a replacement for LT SCHEIFINGER, MSC, USNR. His expected reporting date is on or about 1 June 1970.

2. Operations.

a. SC 81 took on 8349 gallons of fuel from USS QUAPAW (ATF-110) on 9 April 1970. Cost borne by COMSERVRON FIVE. Conducted towing operations on 8 and 9 April 1970.

b. All Support Craft are moored at Pier Yankee Two.

3. Technical Operations Department.

a. The E-4 dissemination system was transferred from Manana Building #13 to SC 80 on 8 April 1970 for an operational check. The system functioned most satisfactorily using potable water as the disseminating agent. Each of the two E-4 agent tanks has a 20.8 liter capacity.

b. Four laboratory technicians are continuing to assist Commander, Pearl Harbor Naval Shipyard in conducting physical examinations and blood analysis on shipyard personnel involved in nuclear power work. One Preventive Medicine Technician (E-7) is conducting medical/sanitation inspections for the Fourteenth Naval District Sanitation Officer.

c. The Laboratory Officer completed the 1970 Census of HALL, Support Craft and Technical Operations personnel

[redacted]

Downgraded at 3 year intervals; Declassified after 12 years

Reg # 706

UNCLASSIFIED

vals; Declassified after 12 years

DEPARTMENT OF THE NAVY
USS GRANVILLE S. HALL (YAG-40)
FPO SAN FRANCISCO 96601

[redacted]

UNCLASSIFIED

06:NGL:wdb
3500
Ser 031
20 APR 1970

[redacted]

From: Commanding Officer, USS GRANVILLE S. HALL (YAG-40)
To: Commanding Officer, Deseret Test Center, Building 100 Soldiers' Circle, Fort Douglas, Utah 84113

Subj: Weekly Status Report for period ending 17 April 1970; submission of (U)

1. Personnel.

a. The following personnel assigned to Technical Support Group have reported on board this week: EN3 CARNAGEY on board SC 81; ETN2 MERHOFF on board SC 87; and EM3 MURPHY on board SC 86.

b. The following personnel have been ordered to Technical Operations/ Support Departments:

1. HM3 BECHER (NEC 8412) arrival in JUN 70.

2. HM2 UHLICH (NEC 8412) arrival in MAY 70.

3. HM3 TINKHAM (NEC 8412) arrival in JUN 70.

4. DC2 JACOBS (NEC NA) arrival in JUL 70.

2. Operations.

a. SC 81 provided towing services for COMSERVRON FIVE on 14 and 15 April 1970. Cost of fuel borne by COMSERVRON FIVE.

b. All Support Craft are moored at Pier Yankee Two.

3. Technical Operations.

a. Commander, Service Squadron FIVE, inspected Building #13 at Manana on 17 April 1970.

b. Four laboratory technicians are continuing physical and blood analysis work on shipyard personnel involved in nuclear power work. One Preventive Medicine Technician is conducting medical/sanitation inspections for the Fourteenth Naval District Sanitation Officer. One laboratory technician is assisting Preventive Medicine Unit No. Six(PMU 6) in a streptococcal viral study of Navy-Marine personnel.

[redacted]

Reg 707

UNCLASSIFIED

[redacted]

UNCLASSIFIED

[redacted]-DEPE

2 NOV 1966

SUBJECT: Letter of Appreciation (U)

TO: Commanding Officer
193d Infantry Brigade
Fort Kobbe, Canal Zone

1. (U) During the summer of 1966 Deseret Test Center conducted Program 217. This program required the support of 60 personnel from your unit. The Brigade S-3, Major Warren Rhoades, was designated by SOUTHCOM as coordinating officer for the program.

2. (U) The nature of Program 217 required specially cleared personnel and came at a time when the Brigade was heavily committed to other training requirements. However, Major Rhoades gave this program his full support and, as a result, the program requirements were met in a timely and efficient manner.

3. (U) It is with pleasure that I express my sincere appreciation for the personnel support by your unit and for the excellent assistance provided by Major Rhoades.

JOHN J. HAYES
Brigadier General, USA
Commanding

Prepared by: Capt Bills/nl/2564
26 Sep 66

M/R: Self explanatory.

COORD: _____
P&E _____
XO _____

SPECIAL HANDLING REQUIRED
Not Releasable to Foreign Nationals
Except . . . None . . . . . .
By Authority of CG, OTC . . . . . .
Date 26 Sep 66

DOWNGRADED AT 12 YEAR INTERVALS:
NOT AUTOMATICALLY DECLASSIFIED.
DOD DIR 5200.10

[redacted]

Declassified

[redacted]

UNCLASSIFIED

AMCPM-DEPE

2 NOV 196[illegible]

SUBJECT: Letter of Appreciation (U)

THRU: Commanding Officer
193d Infantry Brigade
Fort Kobbe, Canal Zone
APO NY 09832

TO: Commanding Officer
3rd Bn (Abn), 508th Infantry
Fort Kobbe, Canal Zone

1. (U) During the summer of 1966 the 3rd Bn (Abn), 508th Infantry, was assigned the task of supporting Deseret Test Center's Program 217 with personnel. It was recognized that the request for unit personnel with special clearances during a time the battalion was heavily committed in training programs posed a difficult requirement. However, through the excellent cooperation you and your staff gave the program, the requirement was met in a most commendable manner.

2. (U) I would like to personally acknowledge the help we received from your S-3, Captain F.C. Vencen, and SFC Delmont. These two men were responsible for obtaining the required personnel from the companies of the battalion, arranging for medical examinations, and having the qualified personnel report for participation in Program 217 on a 24-hour notice. I would also like to acknowledge the assistance of your battalion medical officer, Captain Skipton. He and his staff at the battalion dispensary were most cooperative in providing space, records, and equipment in assisting our own medical officer in accomplishing the required physical examinations of personnel selected to participate in Program 217.

3. (U) The men selected for participation in Program 217 displayed an attitude of cooperation and enthusiasm in performing the task required of them. Their manner of professionalism and discipline were a credit to your unit and its cadre.

4. (U) I take great pleasure in expressing my sincere appreciation for a job well done to those in your unit who contributed to the success of our program.

Prepared by: Capt Bills/nl/2564
26 Sep 66
M/R: Self explanatory

COORD:
P&E
20

JOHN J. HAYES
Brigadier General, USA
Commanding

[redacted]
Commanding

SPECIAL HANDLING REQUIRED
Not Re[illegible]
Except None
By Authority of CG, OTC
Date 26 Jan 66
Not Re[illegible]

DOWNGRADED AT 12 YEAR INTE
NOT AUTOMATICALLY DECLASSI
DOD DIR [illegible]

DOWNGRADED AT 12 YEAR INTE

UNCLASSIFIED

[redacted]
HEADQUARTERS
Deseret Test Center
Building 100, Soldier's Circle
Fort Douglas, Utah 84113

STEPD-PA(S) 30 MAR 1970

SUBJECT: Use of the Biological Tracer BG (U)

THRU: Commanding General
U.S. Army Test and Evaluation Command
ATTN: AMSTE-NB
Aberdeen Proving Ground, Md. 21005

Commanding General
U.S. Army Materiel Command
ATTN: AMCRD-U
Washington, D. C. 20315

TO: Chief of Research and Development
Department of the Army
ATTN: CRDNCB
Washington, D.C. 20310

1. (U) Reference DA 032119Z msg, dated 3 Mar 1970, Subject: Deseret Test Center FY 70 Joint Operational Test Program (U).

2. (U) Several Deseret Test Center defensive biological test programs require the use of Bacillus subtilis var niger (BG). This is a harmless sporeforming bacterium that has been used for many years as a biological tracer in aerobiological field tests and laboratory experiments. The niger variety was selected for use as a tracer because of its peculiar characteristic of producing an orange pigment when grown on a nutrient medium. This pigment helps to differentiate BG from other closely related bacilli that occure naturally in soil and atmospheric dust which normally produce a white to grey colony when grown on nutrient media. BG has been aerosolized on numerous occasions by the British, the Canadians and the U.S. during the course of various test programs over both populated and non-populated areas. To date there have been no reports of ill effects or relationship to any disease to exposed populations in test areas. The completely innocuous nature of this organism has led to its adoption as a biological simulant over populated areas. The fact that Bacillus subtilis exists so universally over the

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DTC 70-33

DTC 70-33

UNCLASSIFIED [redacted]

STEPD-PA(S)
SUBJECT: Use of the Biological Tracer BG (U) 30 MAR

world in soil and retting organic matter indicates the constant exposure of the world population to this harmless soil-inhabiting micro-organism.

3. (U) Inclosure (1) reviews available scientific literature concerning the nature of Bacillus subtilis and its morphotype BG. This document can serve as a basis for consideration by the USPHS committee charged with the responsibility for review of use of biological simulants and tracers. It is apparent from this report that BG can be used with absolute safety in future Deseret Test Center field trials.

4. (S) The Deseret Test Center program as revised in accordance with recently announced national policy includes several defensive biological field studies. These include: (a) 71-32, which will determine the vulnerability to biological operations of a U.S. Naval Task Force dispersed over a large area; (b) 71-71, which will employ a biological such as BG to evaluate defensive shipboard countermeasures against biological aerosols; (c) 71-31, which will study the feasibility of using LIDAR/RADAR as a means for early detection of a biological agent aerosol; (d) 71-72, which will assess the vulnerability of U.S. ICBM silos and NORAD headquarters to biological Operations; (e) 70-73, which will examine the secondary aerosol or residual hazard to U.S. troops from deposited biological agent following biological agent attack; and (f) 69-33, which will investigate the vulnerability of U.S. coastal defenses and ports to biological attack during fog. The last test mentioned, i.e., 69-33, Phase A, requires the release of both biological tracer BG and zinc cadmium sulfide FP along the California coastline in an area which would include Eureka, California. Pending concurrence by the USPHS for use of BG, only FP is planned for release at this time. However, in order to fully evaluate the vulnerability of a coastal area to biological attack in fog, it is deemed essential that BG be used in conjunction with FP studies.

5. (C) It is requested that concurrence be given to use BG as a biological tracer in future Deseret Test Center defensive field tests, recognizing that it can be released with complete safety to adjacent populated areas.

1 Incl
as

ROBERT MULDROW
Colonel, USAF
Commanding

COORDINATION:

Chief Scientist [redacted] Dir, T&TS

Chf, M&SO

[redacted]

Page 2 of 2
Copy 4 of 4

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UNCLASSIFIED [redacted]

BACILLUS SUBTILIS VAR. NIGER (BG) IN BIOLOGICAL TEST PROGRAMS (U) [redacted]

1. (U) INTRODUCTION

a. Research and development of biological systems were initiated in the United States in about 1942 with the activation of Camp Detrick (now Fort Detrick), located on the outskirts of Frederick, Maryland. In most studies requiring release of aerosols of biological materials in the atmosphere, it was recognized that pathogenic biological agents could not be released because human populations would be exposed. For this reason, simulants and tracers had to be substituted for actual agents. These studies have included exposure of people in both urban and rural areas, in laboratory experiments, in ship penetration trials, and in tactical military training exercises. In studies of defense against biological attack use of these simulants and tracers must continue.

b. Simulants and tracers were chosen that could be easily identified and, at the same time, would produce no ill effects upon the exposed populations. Bacillus subtilis var. niger (BG) has been used extensively with satisfactory results for the purposes stated above. This brief study report presents a review of this work and other information about BG relative to its interaction with man and animals.

2. (U) TAXONOMY

The Sixth Edition of Bergey's Manual[1] describes a pigment producing organism Bacillus globigii (BG), which is designated as a morphotype of Bacillus subtilis. So far as can be determined, BG and B. subtilis are identical both morphologically and physiologically with the single exception that BG produces a red or orange pigment.[2] It is the production of this pigment, plus the harmlessness and ruggedness of the organism, that make it easily identifiable and desirable as a simulant or aerosol tracer. The Seventh Edition of Bergey's Manual[2] does not recognize the name Bacillus globigii but classifies the organism as a variety of B. subtilis (variety niger) and states that the ability of the organism to produce the pigment may be lost and that cultures established in a colorless condition are indistinguishable from B. subtilis. Although there is a small amount of literature on the natural occurrence of BG, there is considerable literature on B. subtilis. For our purpose here, since they are essentially the same organism, it is assumed that their occurrence in nature is identical.

3. (U) NAUTRAL OCCURRENCE

a. Bacillus subtilis is perhaps the most common of all bacteria naturally existing in soils around the world. It is easily recovered from the atmosphere, particularly under windy and dusty conditions. As a normal constituent of the atmosphere, it has been found in such widely diverse places as Antarctica[3] and far out at sea.[4] It is a naturally occurring soil saprophyte and is found in most soils in relatively large numbers. Because it sporulates readily, large numbers

relatively large numbers. Because it sporulates readily, large numbers

of spores occur in soil, even when the soil is dry. Thus, the organism can exist airborne in dust. Recent figures(5) indicate that in dry or desert soils, spores of sporeforming bacteria number from 0.6 to 1.5×10^6 (average 10) per gram of surface soil. Of these, from 2 to 13 percent (average 9.6 percent) may be spores of Bacillus subtilis. The spores in the surface of dry agricultural soils can be carried into the air with dust particles. Thus, any exposure to a dust storm by man constitutes an exposure to aerosolized Bacillus subtilis. Stallings(6) states that a wind of 5 mph velocity can carry approximately 19 g of soil particles per cubic meter of air in size range of 1 micron diameter particles. Using the figures previously presented, it is possible that dust carried by a wind of 5 mph velocity could contain as much as 1.6×10^6 spores of B. subtilis per cubic meter of air. Winds of greater velocity would present a proportionally greater carrying capability.

b. In a test where BG was disseminated into the atmosphere from an aircraft at a rate of 7.7×10^{10} spores per meter of line, the concentration of BG estimated at sampling stations 10 kilometers downwind of the release line was 5×10^4 spores per cubic meter of air. This estimate is based on the number of spores collected at the sampling station, and an assumed cloud residence time of 5 minutes. It should be understood that an aerosol cloud from an instantaneous source such as an aerial line is of limited duration and affords short exposure time whereas a "natural" cloud of B. subtilis is usually derived from a sustained source and constitutes long exposure. It can be seen that the potential exposure from the disseminated aerosol of BG is no greater than the potential exposure to the natural aerosol.

c. It may be safely stated that if any potential for infection exists from B. subtilis, it would be infinitely greater from the heterogenous population of a natural cloud than from the BG strain of B. subtilis var niger used as BG tracer since the latter has been extensively tested and carefully controlled. It is apparent that the intentional release of BG into the atmosphere would have no more effect than to cause a temporary increase in an already naturally occurring microorganism.

4. (U) PHYSIOLOGICAL RESPONSE

a. Ostrom, et al(7) performed a study in which they exposed volunteers to massive doses of organisms in particles of one to two microns in diameter. These organisms most certainly reached the deepest and most vulnerable (to infection) areas of the lungs. No physiological response or infection was observed. Further, in extensive experiments at Fort Detrick, Decker, et al(8) state that inhalation by man of doses exceeding one million organisms resulted in no observable effect. In DTC/DPG trials (and others by Fort Detrick), munitions and dissemination devices have been routinely filled with BG be essentially unprotected personnel. No infections have ever resulted. One case of hypersensitivity to aerosols of BG has been reported by Wedum(9) in a man who had worked with aerosols of BG for two years. In this case the man was exposed for prolonged periods to spore concentrations of approximately 300,000 spores per liter of air. To avoid this eventuality, Ft. Detrick safety regulations were designed to reduce chronic environmental contamination.

[redacted] spores per liter of air. To avoid this eventuality, Ft. Detrick safety [redacted]

Concentrations over prolonged periods of more than 90 spore bearing particles per cubic foot of air as recoverable by the slit sampler[9] were considered excessive. Because of its apparent harmlessness to man and animals, Wedum[9] considered BG safe for dissemination over inhabited areas.

b. Regarding pathogencity in animals, Wedum[9] reports that guinea pigs were exposed to aerosols of 6,000,000 BG spores per liter of air for an inhaled dose of 2,204,000 spores per animal without ill effect. Other animals were fed concentrated suspension of BG by stomach tube. BG spores appeared in the feces of the animals within four hours and lasted for as long as 72 hours with no sign of infection. Other guinea pigs and rabbits were injected subcutoneously; intraperitoneally and intravenously with as many as 7.5×10^6 spores. "No animals died and all appeared well 13 days after injection." There were no pathologic findings attributable to BG in any of the animals at autopsy. On this basis, it was concluded that the Ft. Detrick strain of BG was non-pathogenic.

c. A statement is made in the 4th Edition (1961) of Topley and Wilson[10] "B. subtilis --- may cause severe eye lesions, notably iridocyclitis and panophythalmitis (Axenfeld 1908), and which may occasionally invade the blood stream of a patient whose powers of resistance are lowered by the attack of some fatal diseases (Sweany and Pinner 1925)". However, no other studies have confirmed these findings. The Seventh Edition of Bergey's Manual[2] does not recognize any pathogenic characteristics of B. subtilis. Certainly the strain of BG used by Ft. Detrick never exhibited pathogenicity. In examination of the original publications of Axenfeld (1908) and Sweany & Pinner (1925), Wedum[11] felt that the strains of B. subtilis were ill-defined, and were probably not B. subtilis. Similarly, in his evaluation of a report by Weinstein and Colburn (1950) of an organism similar to B. subtilis that killed mice in six hours when 0.1cc of an 18 hour broth culture was injected intrapertitoneally he concluded the organism was probably mis-identified. The difficulties and questions involved in the classification of B. subtilis were recognized in 1930 by Conn[12].

d. Wedum[11] felt that the non-pathogencity of the Ft. Detrick strain had received a severe test in January 1958 when five men accidently inhaled billions of dry spores after an accident in a milling plant. An account of this exposure is described by Mr. E. R. Bokesch, Ft. Detrick, in Appendix 1. In this accident, enormous numbers of spores were released into the atmosphere to which persons in the nearby vicinity were exposed. While no epidemiological investigations were made or newspaper coverage given in this accident, there was no reported evidence of untoward effects among persons of the community. It was Dr. Wedum's opinion, (and that of the author's) that the reaction noted by the five exposed men (Appendix 1) was a severe (non-specific reaction to inhalation of a large amount of foreign protein. There was no evidence of actual infection.

e. On the basis of available evidence it may be concluded that BG and B. subtilis are completely non-pathogenic. Authenticated physiological response appears to be related to hypersensitivity and non-specific foreign protein reactions due to massive and prolonged exposure to BG.

5. (S) PRECEDENTS FOR USE OF BG

Table 1 lists test programs in which significant numbers of people have been exposed to aerosols of BG. It will be noted that a variety of tests have been conducted aboard ships and in areas ranging from densely populated cities to sparsely populated rural areas. In these trials, individuals have been exposed to many dosage gradations of BG. In operation "Moby Dick"(18), BG was recovered by samplers along two main highways in concentrations of 100 organisms per liter of air. Total recovery was 100-1000 spores which was the range of spores inhaled by the diverse population in the area. By contrast to experimental work at Ft. Detrick and the accident reported in Appendix 1, this number was small. [A larger total dose was received by the entire population of the Island of Oahu in the DTC Test BIG TOM (65-6)(27). In this test a total of 1000 pounds of dry BG spores with a plate count of 7×10^{10} per grams and 900 gallons of liquid BG with a count of 2×10^{10} spores per ml were disseminated in 19 separate aerial line releases upwind of the island. In these releases, made over a three-week period, the average dose per trial that a person inhaled was about 85 spores. In 19 trials, the average total dose was in excess of 1600 spores. There was no evidence during or after these trials of any untoward effect upon the populace.] In addition to trials shown on the table, there have been many releases at Dugway Proving Ground that may have exposed civilian populations. In all of these trials, covering a period of 20 years, no one single undesirable effects attributable to BG in any individual exposed within the test area has ever been reported.

6. (C) AUTHORITY FOR USE OF BG

Reference 29 outlines procedures accepted for use of BG in field tests where civilian populations were exposed - prior to the Presidents change in national policy regarding Biological Warfare (25 Nov 1969). This procedure applied to both DTC and Fort Detrick. Briefly this procedure was one of releasing the agent after informing the USPHS Service Liaison, located at Fort Detrick, of the intended release. Basically, the USPHS has not required permission to use BG, but simply required that notification be given so that they would be "informed". It has been the position of USPHS representatives, including the Ft. Detrick USPHS Liaison Officer at the annual Deseret Test Center Medical Advisory Committee meetings that these releases have never been a threat to the health of exposed individuals. During these meetings, earnest consideration has been given to the subject of release of simulants and tracers over populated areas and the conclusion has been reached by these public health experts that they would elicit no unfavorable response. Experience of Deseret Test

Center releases shown in Table 1 bears testimony to the validity of their opinion.

7. (C) CONCLUSION

The available information overwhelmingly demonstrates the innocuousness of BG to man. The use of this material in the contemplated DTC test program will elicit no observable effect in any of the exposed populations.

[redacted]

UNCLASSIFIED

[redacted]FERENCES

1. Bergey's Manual of Determinative Bacteriology, Sixth Edition. Robert S. Breed, E.G.D. Murray and A. Parker Hitchens. Williams and Wilkins Company, Baltimore. 1948.

2. Bergey's Manual of Determinative Bacteriology, Seventh Edition, Robert S. Breed, E.G.D. Murray, and A. Parker Hitchens. Williams and Wilkins Company, Baltimore. 1957.

3. Darling, G.A. and Siple, P.A. Bacteria in Antarctica, J. Bact. Dis. 42: 83-98 (1941).

4. Rittenberg, S. C., Investigations on Microbiology of Marine Air, J. Mar Res. 2: 208-217 (1939).

5. Mischustin, E.N. and Mirsoeva, V.A., Sporeforming Bacteria. In The Ecology of Soil Bacteria, Edit. Gray, T.R.G. and Parkinson, D. 1968.

6. Stallings, J. H., Soil Conservation, 1957, Prentice-Hall, Inc., Englewood, Cliffs, N.J., P. 79.

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[redacted]

APPENDIX 1

EXPOSURE TO BACILLUS GLOBIGII SPORES

A contract was entered into with the Sturtevant Mill Company, Boston, Mass. to grind 200 lbs. of dry Bacillus globigii spores. The milling was done in the 15" micronizer mill at a rate of 90-100 lbs per hour. The spores were ground to a MMD of five microns. The size of the dry spores before grinding was approximately 20-30 microns, MMD. The grinding operations were carried out on Tuesday 21st January 1958 at the plant in Boston, Mass.

The Sturtevant Mill Company is located in the Dorchester section of Boston. This is a densely populated area. The plant is adjacent to domestic housing. Traffic, both vehicle and pedestrian, is heavy around the plant. There is evidence of a school nearby as children were observed walking to and from school. The plant is of sheet metal construction. There are three employees in the plant. Two of the employees were assigned to the grinding of the Bacillus globigii spores. The facilities for handing dry spores are crude and inadequate. This plant is equipped to handle materials such as sand, cement and other inorganics. The company does custom grinding on contract. They readily agreed to grind the spores to a MMD of five microns.

The grinding operations were started on the 21st January 1958 about 9:00 A.M. The dried spores were fed into the grinder at a rate of 90 lbs. per hour. The feed pressure was 105 psig of air. The cfm required was 330. The ground spores were collected in a bag connected directly to the discharge port of the grinder. There was some leakage of spores at the connection. The operators wore masks and their personal clothing. The masks were complete rubber-faced type with a filter attached to the nose piece. The plant superintendent, Mr. Peter Hooper, and I were observing the operations at a distance of approximately 25 feet from the mill. We wore no masks or respirators. The ground spores were collected in the bag and the 330 cfm of air was dissipated through the walls of the bag into the plant. All operations were carried out in the open. There is a 24" exhaust fan in the roof of the plant. No other exhaust system in the plant.

About 9:30 A.M. the bag collector burst causing a dense cloud of Bacillus globigii spores in the plant. Mr. Hopper and I got out of the plant as quickly as possible. The two operators shut down the equipment before leaving the plant. The other operator, working on another project, also was caught in this cloud of spore dust. While outside the plant, I noticed the exhaust fan pouring out a heavy cloud of spores. This heavy cloud continued for several minutes. The cloud was carried away by a slight wind.

[redacted]

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About 15 minutes later we entered the plant. All the Bacillus globigii spores had settled. The plant looked like it had just been painted a light orange color. The spore dust covered everything - rafters, piping, walls, windows, floor and equipment.

The torn bag was removed and replaced with a new bag. It was decided to sweep up the heavy concentration of spore dust on the floor. This amounted to approximately 20 lbs. No measures were taken to remove the spore dust from the walls, windows, piping and equipment. It was recommended to wash the plant down after the grinding of the spores was completed. Operations were resumed without any further mishap. Since there was some leakage at the bag connection and plenty of residual spore dust in the plant, no doubt a considerable amount of BG spores were exhausted out of the plant. The grinding operations required six hours.

About 9:00 P.M. of the same day (Tuesday) I became very ill. My whole head ached. My stomach was upset. I could not keep anything down. The slightest movement induced vomiting. I would take a drink of water and a few minutes later this would come up. I vomited so much that I started to bleed. I did not have any fever or chills. I took several aspirin between 10:00 P.M. and 3:00 A.M. the next morning, 22nd January (Wednesday). The vomiting had ceased. The headache persisted and I felt nauseated. During the course of the day I did not eat anything. I took more aspirins during the day. I checked with the plant by 'phone and learned that Mr. Peter Hooper suffered the same reactions as I did and was absent from work. The three operators complained of severe headaches but no vomiting. The operators did not report for work on the 22nd January. Mr. Hopper was unable to report to work for the remainder of the week. The two operators reported back for work on the 23rd January.

I returned to Fort Detrick on the 23rd January (Thursday) by plane. During the course of the day I ate nothing. The nauseated feeling and headache persisted. Friday 24 Jan. I remained in bed. The headache persisted but the nauseated feeling had disappeared. I started to eat regularly on this day. By Monday morning, 27th January, I was feeling good except for the headache. I reported to Dr. Kadull explaining what happened as described above. Dr. Kadull prescribed some medication. However, by Wednesday, 29 January, the headache still continued. At this time I was advised to stay out of the plant. I remained home until the 3rd February. During this time my headache disappeared.

s/
ELMER R. BOKESCH
Chief, SPP Branch
Fort Detrick

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...Y MAT	MATERIAL RELEASED	MEANS OF DISSEMINATION	GENERAL AREA COVERED	PRINCIPAL OBJECTIVES	REFERENCE	
...ick...	BG/FP	From moving vessel 2.5 to 10 miles off shore	San Francisco, California	Travel of aerosols in urban areas	13-14	Extensive cov not result in effects in th
	BG	Elevated line from Aero X14A mounted on F7F jet aircraft	Ship task force	Vulnerability of Naval Task Force at sea	15	Large concent from air on d force. No eff
	BG	Point & aerial line sources from various experimental CmlC munitions	Ft. McClellan & Anniston, Ala	Tactical training exercise against troops	16	Area of Ft Mc city of Annis exposed to ae observed effe individuals.
	BG/FP	X-14B Fixture	Navy Mine Counter-Measures Station, Panoma City, Fla.	Sea-to-land cloud travel	17	
	BG/FP/SM	X-14B Mine	Port Hueneme and Port Mugu, Calif	Sea-to-land cloud travel	18	
	BG/FP	E61R4-BG	Camp Cooke near Sampoc, Calif	Meteorological	19	
	BG/FP/SM	E61R4/PT-12	Camp Cooke	Meteorological Study on downwind diffusion	20	
	BG	From point source on tug (E2 Generator)	YAG 39	Ship penetration & various defensive items	21	
	BG/FP	Aerial line release (Aero 14B-USAF A/B 45Y-1 tanks)	Canal Zone & Republic of Panama	Jungle canopy Penetration	22	
	BG	Aerial line release (Aero 14B)	Group of operational ships, DD, APA, LST	Vulnerability of operational ships to biological operations	23	BG isolated f of exposed pe
	BG		Ft McClellan, Alabama	Protective clothing test	24	

Y ATE	MATERIAL RELEASED	MEANS OF DISSEMINATION	GENERAL AREA COVERED	PRINCIPAL OBJECTIVES	REFERENCE	REMA
	BG	Aerial Line Release (USAF A/B45Y-1 tank)	Big Delta, Alaska	Travel of biological aerosols in an arctic environment	26	
	Liquid & Dry BG	Aerial Line Release (Aero 14B (liquid) A/B 45Y-4 (Dry)	Oahu, Hawaii	Test of operational attack on Island Complex	27	
	Dry BG	Aerial Line Release (USAF A/B 45Y-4 tank)	Medicine Hat Alberta, Canada	Area coverage of Y-4 tank in frigid environment	28	

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DEPARTMENT OF THE NAVY
U. S. NAVAL ORDNANCE TEST STATION
CHINA LAKE, CALIFORNIA 93557

DMMC Control # 2003154-0000005
2003154-0000005

IN REPLY REFER TO

4031/JNS:md
Serial 00139
23 July 1965

[redacted]

From: Commander, U. S. Naval Ordnance Test Station
To: Commanding General, Deseret Test Center (w/o encl)

Subj: BIG TOM/777 Test Report; forwarding of [redacted]

Encl: (1) Doc. #40-766 of 24 June 65 [redacted]

1. The BIG TOM/777 trials were conducted under the direction of the Deseret Test Center, Fort Douglas, Utah, during the period of 19-30 April 1965. Participation by this Station was of an advisory nature and was concerned with the shipboard system for the storage and dispensing of the munition simulant.

2. Enclosure (1) is a narrative report of this Activity's efforts and observations during these trials, and is hereby transmitted for information and retention. The scope of this report is primarily limited to the performance of the shipboard installed weapon system, however, some discussion of related support activity is offered. Any comments made regarding test results associated with the prime objectives of the BIG TOM/777 trials should be verified by a detailed analysis of the results of airborne and contact samples taken during the trials.

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Harold F. Metcalf

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U. S. NAVAL ORDNANCE TEST STATION
China Lake, California
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24 June 1965

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BIG TOM TEST REPORT
FOR
PROJECT 777 [redacted]

I. INTRODUCTION

A. The BIG TOM tests were conducted under the direction of the Deseret Test Center (DTC), Fort Douglas, Utah, during the period 19-30 April 1965. [redacted] Project 777 equipment tests required the integrated participation of several government agencies and a fleet operating command. [redacted]

GROUP 1

[redacted]

Enclosure [1]

[redacted] IC 65 15. Cy 1 14 pages

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[redacted] Cy 1

[redacted]

C. Information contained with the fill material shipping invoices indicated the following:

1. Neutralizer - BPL

a. Manufacturer: Celanese Corporation of America

[redacted]

2. Simulant - BG

a. Manufacturer: International Mineral & Chemical Corp.
Bioferm Division
Wasco, California

[redacted]

V. SEA TRIAL NO. 1

A. BIG TOM trial #1 was scheduled to be conducted in two 4-hour runs off the east coast of Oahu. [redacted] The first trial was originally scheduled for 19-20 April, and the second trial for 22-23 April. These dates were later changed due to unfavorable meterological conditions.

B. Weather conditions were satisfactory on 26 April, and USS Carbonero put to sea at 1500W for trial #1. [redacted]

[redacted]

VI. PREPARATION PERIOD AT TEST SITE PRIOR TO SEA TRIAL NO.2

A. The ship arrived in port after the first trial at 2310 on 27 April.

[redacted]

[redacted]

VII. SEA TRIAL NO. 2

A. USS Carbonero put to sea at 1420 on 29 April. [redacted]

[redacted]

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PROJECT 777
PIGGYBACK DATA ANALYSIS
(U)

by

Dall Brune
Analysis Branch A
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INTRODUCTION

A special sea trial was conducted in August 1966 as a piggyback operation to Deseret Test Center (DTC) Test 66-13, Half Note. This test trial used the 777 disseminating vehicle to obtain background information for future testing of this system [redacted]

The trial was divided into two phases of about 4 hours each [redacted]

OBJECTIVES

The overall objectives of the 777 sea trials were twofold

1 To obtain background information for future testing with respect to (a) appropriate grid layout (b) appropriate tactics, and (c) comparison of samplers

2 To obtain preliminary cloud diffusion information with respect to (a) count (dosage) versus downwind distance, (b) horizontal diffusion angle, and (c) limited vertical diffusion data

[redacted]

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[redacted] 1

[redacted] 1

[redacted]

[redacted] the solution was [redacted] Bacillus Globigii (BG) [redacted] and approximately 1% calcofluor [redacted]

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[redacted] 3

[redacted]

[redacted]

[redacted]

Meteorological Data

[redacted] This was observed from the sampling ship (YAG 39) and from the control ship (YAG 40) in close contact with the disseminator. [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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Record Number DTC 68711668

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DA LABEL 90, 1 AUG 66

DTC TEST 68-71

FINAL REPORT

Ronald D Strickett
PLANS OFFICER/TECHNICAL OFFICER

Paul C Gardner, Cdr. USN
TEST DIRECTOR

MARCH 1969

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DTC TEST 68-71

Final Report

MARCH 1969

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PLANS OFFICER/TECHNICAL OFFICER

Paul C Gardner, Cdr. USN
TEST DIRECTOR

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(S) ABSTRACT (U)

(S) DTC 68-71 was conducted primarily to provide the U. S. Navy with a basis for recommending the submarine-biological-disseminator weapon system in the use of FX. A nonpathogenic biological, BG, was released in 10 operational trials against three specific types of targets. [redacted]

(S) [redacted]

(S) [redacted]

(TS) PREFACE (U)

1. (U) SECURITY

Certain aspects of this test involve matters that have been designated by the U. S. Navy as extremely sensitive in nature. For this reason, it has been necessary for the Navy to limit the number of persons having complete knowledge of the current test as well as the overall Project 777. Therefore, the reader is admonished to take extraordinary security precautions in the handling of this document, limiting access to those who must know the contents in order to execute their official duties.

2. [redacted] GENERAL

This report outlines the work accomplished during DTC Test 68-71, conducted in the vicinity of the Island of Oahu, Hawaii, during April and May 1968. [redacted]

3. (U) AUTHORITY

Authority for Test 68-71 is contained in Letter CRDNCB-152, subj: "DTC FY-68 Test Program (U)," dtd 15 June 1967, to CG, DTC, SECRET. Authority for Top Secret Classification: Secret Ltr. CNO/Op-311E/CW, Ser 00317P31, 30 Oct 1968, subj: Security Classification Guidance for DTC Test 68-71 Final Report dated Oct 68 (U).

4. [redacted] ACKNOWLEDGEMENTS

[redacted] Special acknowledgement is made to Captain L. R. Kojm, USN, Commander Submarine Division TWELVE, for his outstanding cooperation in this program, and to the officers and men of USS CARBONERO (SS337), the project submarine.

CHAPTER ONE

OPERATIONAL SUMMARY (U)

SECTION I

PURPOSE (U)

Test 68-71 was designed and conducted so that the results obtained with BG might serve as a basis upon which the U. S Navy could recommend use of the submarine-biological-disseminator weapon system for dissemination of agent FX (Venezuelan equine encephalitis).

SECTION II

RESULTS (U)

1. (S) [redacted]

2. [redacted] Under the conditions of this test--which were considered comparable to operational conditions--no contamination of the submarine's interior was detected. [redacted]

3. (S) [redacted]

4. (S) [redacted]

(S) SECTION III

MILITARY VALUE (U)

1. (S) [redacted]

2. (S) [redacted]

[redacted]

[redacted]

CHAPTER TWO

OVER-OCEAN DOWNWIND TRAVEL (U)

SECTION I

BACKGROUND (U)

1. (S) [redacted]

[redacted]

2. [redacted] DATA BASE

a. The concept of employing a submarine to launch a biological attack has undergone close examination during recent years.

[redacted]

b. [redacted] [2] DTC was given the task of operational testing agency. [3] A preliminary test, conducted in April 1965 (DTC Addendum to Test 65-6), consisted of two biological tracer (BG) trials which were designed to demonstrate the feasibility of such a system and, equally important, to determine the biological-contamination hazard to which the submarine crew would be subjected in

operating the system.[1] [redacted] In September, 1966, the submarine weapon system disseminated a nonpathogenic biological aerosol against the downwind sampling array established for DTC Test 66-13, HALF NOTE.[2] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

SECTION II

OBJECTIVE (U)

[redacted] The objective of this test was to study over-ocean downwind travel of a biological aerosol material when disseminated from a submarine-biological system and to relate these data to agent FX casualty production.

---

[1] DTC 65-6, BIG TOM (U), Final Report, Test Addendum, Jan 1966. SECRET.

[2] Buhlman, E. H., DTC Test 66-13, HALF NOTE (U), Final Report, March 1968. SECRET.

[redacted]

SECTION III

SCOPE (U)

(U) This portion of the test (Group A trials) consisted of six trials designed to ascertain the downwind travel of a biological aerosol produced by the submarine-biological-disseminator weapon system. The biological tracer material BG was released [redacted]

[redacted]

SECTION IV

TEST CONDITIONS (U)

1. (U) TEST SITE

The Group A trials were conducted in a subtropical marine environment approximately 80 naut mi SSW of Oahu, Hawaii. [redacted]

2. (U) GRID ARRAY

Over-ocean sampling was conducted from tugs stationed at predetermined locations along the downwind path of the aerosol. Five tugs were utilized as target vessels in each Group A trial; each target vessel supported two sampling positions. [redacted]

3. (U) METEOROLOGICAL RESTRICTIONS

These trials were conducted under a predominantly trade-wind regime. Restrictions imposed on the trials were: (1) transport

CHAPTER THREE

ISLAND ATTACK (U)

SECTION I

OBJECTIVE (U)

[redacted] To demonstrate, in terms of FX-casualty estimates, the capability of the submarine weapon system to carry out an effective biological attack against an island complex.

SECTION II

SCOPE (U)

1. (S) [redacted]

[redacted] In order to demonstrate the system's capability to attack an island area, sampling stations were established at selected locations on the northern half of Oahu (that portion of the island north of Pearl City). [redacted]

Sampling stations were established at 15 locations selected to best depict movement of the aerosol cloud across the island. Two Group B trials were conducted: B-1 and B-2.

SECTION III

TEST CONDITIONS (U)

1. [redacted] TEST SITE

The northern half of Oahu was chosen as the test site for the

Group B trials. [redacted]

2. (U) METEOROLOGICAL RESTRICTIONS

These trials were conducted under a trade-wind regime. Restrictions imposed on the trials were transport windspeeds of 5 to 20 kts, no generalized frontal activity, and no solar radiation.

3. (U) BIOLOGICAL MATERIALS

BG tracer material was used in both trials. For a general discussion of this material, see Chapter Two (Sec. IV, para. 4).

(S) SECTION IV

TEST PROCEDURES (U)

1. (S) [redacted]

2. (S) [redacted]

TABLE 12 [redacted]: SAMPLING LOCATIONS FOR GROUP B TRIALS (U)

Station number	Location	Sampling units			
		Wagner	Reyniers	LVAS	Andersen
1	Kuaawa Point	X			
2	Laniloa Point	X			
3	Kahuku Point	X		X	
4	Waimea Bay	X			
5	Schofield (West training area)	X	X		
6	Helemano	X	X		
7	Wheeler AFB	X	X		
8	Schofield (Sq. area)	X	X		
9	Kole Kole Pass	X	X		
10	Waimae-Kai	X	X		
11	Dillingham Airfield	X	X		
12	Lualualei MAD	X	X		
13	Waikele MAD	X			
14	Manana	X			
15	Hickam AFB	X			
	Pearl Harbor (ET)	X		X	

CHAPTER FOUR

HARBOR ATTACK (U)

SECTION I

OBJECTIVE (U)

[redacted] To study effects, in terms of estimated FX casualties, of a biological attack against a naval port facility.[1]

SECTION II

BACKGROUND (U)

1. [redacted] Another primary criterion for evaluation of the submarine biological weapon system is its ability to produce an effective biological attack against a major port facility (producing at least 30-percent casualties).

2. (S) [redacted]

[1] [redacted]

3. [redacted] The line-source method of release was selected for the harbor-attack trials; the target chosen was Kaneohe Marine Corps Air Station (KMCAS). [redacted]

[redacted]

SECTION III

SCOPE (U)

[redacted] The port facility attack consisted of two trials (Group C) during which the submarine disseminated along a line off-shore from Kaneohe MCAS. [redacted]

[redacted]

SECTION IV

TEST CONDITIONS (U)

1. [redacted] TEST SITE

Group C trials were conducted at Kaneohe Marine Corps Air Station, Oahu, Hawaii. [redacted]

2. (U) METEOROLOGICAL RESTRICTIONS

These trials were conducted under a trade-wind regime. Restrictions imposed on the trials were: (1) transport windspeed 5 to 20 kts; (2) no generalized frontal activity; and (3) no solar radiation.

3. (U) BIOLOGICAL MATERIALS

BG tracer material was used in both trials. For a general discussion of this material, see Chapter Two (Sec IV, para 4).

CHAPTER FIVE

CONTAMINATION HAZARD ASSESSMENT (U)[1]

SECTION I

BACKGROUND (U)

1. (S) [redacted]

2. [redacted] In order to determine the contamination hazard (to the submarine and crew) associated with the system's use, an elaborate evaluation program was designed. This consisted primarily of aerosol and contact (swab) samples taken from numerous points inside and outside the submarine before, during, and after aerosol dissemination. Procedures to avoid contamination were developed for those shipboard personnel associated with the system's operation, especially critical for topside, posttrial decontamination exercises.

3. [redacted] The contamination hazard assessment (CHA) program has been conducted in conjunction with all previous DTC tests with the submarine system and many more times during special tests. Results demonstrated that interior contamination of the submarine is not a problem so long as prescribed procedures for the system's operation and maintenance are followed.

SECTION II

OBJECTIVE (U)

[redacted] To further study contamination factors and subsequent decontamination techniques associated with the system's use.

[1] [redacted]

[redacted]

SECTION III

SCOPE (U)

U

[redacted] The scope of the CHA plan was limited to the contamination hazard to personnel conducting the agent tank-filling operation and to shipboard personnel during operation of the weapon system. In order to obtain maximum data, interior and exterior assessments were made before, during, and after system operation.

[redacted]S)

SECTION IV

TEST PROCEDURES (U)

1. [redacted]S) [redacted]

2. (S) [redacted]

5. (S) [redacted]

[redacted]

SECTION V

RESULTS (U)

1. (U) [redacted] Although small amounts of contamination were encountered during the 68-71 trials, it was attributed to personnel error and to ineffectiveness of Calcium Hypo-Clorite (HTH) as a decontaminant of exterior surfaces with HTH was effective in concentrations of 6,000 to 7,500 ppm.

2. (U) [redacted] Additional CHA trials in July 68 (following completion of 68-71 trials) were conducted under strict tactical conditions. Beta-propiolactone (BPL), used in lieu of HTH, was found to be

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highly effective in decontaminating the cloud system. No trace of BPL vapor was detected within the submarine during the decontaminant tank-filling operation, or during the system decontamination phase accomplished while under way.

3. (S) [redacted]

4. (S) [redacted]

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NAME (SIGNATURE)	TITLE	DATE
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Cls Gardner WGardner		
Mr Stricklett RStricklett	PTE	7 March 67
Mr Buhlman Mr. EW Buhlman	PAE	7 Feb 67
Mr Eckert		
Mr Dawson E.E. Dawson	Test Eng	6/14/67
AUTHORITY FOR ACCESS TO PROJECT 777 INFORMATION REQUIRED		
[redacted]		
(Count this page)	[redacted]	

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DTC 67-135

DTC 67-135

UNCLASSIFIED DOCUMENT NO. 07-00421

U. S. NAVAL WEAPONS LABORATORY
DAHLGREN, VA.

Copy #8 of 25 Copies

In reply refer to

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8072
Ser 0066527

[redacted]

From: Commander, U. S. Naval Weapons Laboratory
Dahlgren, Virginia
To: Commander, U. S. Naval Ordnance Test Station
China Lake, California

1 DEC 1966

Subj: Project 777 Contamination Hazards Assessment Test Report; submission of (U)

Encl: (1) Project 777 Contamination Hazards Assessment (CHA) Test Report

1. Enclosure (1) is submitted for integration with the Project 777 Operational Test Report for the August 1966 Trials.

Copy to:

NOTS China Lake (Code 4036)(15)

Naval Air Systems Command
Code AIR-532G (2)
Code AIR-53222
Code AIR-350E

D. F. [illegible]
By direction

[redacted]

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DTC 67-135

[redacted]

DTC 67-135

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[redacted]

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PROJECT 777

CONTAMINATION HAZARDS ASSESSMENT
(CHA)

TEST REPORT

1. Purpose

To conduct an operational evaluation of the contamination hazards to the crew of the USS CARBONERO (SS-337) equipped with a biological weapon system.

2. [redacted]

3. Schedule

Tests were conducted during the period 18 August to 2 September, in an assigned operational area off Hawaii.

4. [redacted]

5. [redacted]

Enclosure (1)

[redacted] DTC 67-135

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[redacted] DTC 67-135

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[redacted]

IV. Decontamination

A. General

Decontamination was performed in the mix area, transfer area,

Enclosure (1)

[redacted]

[redacted]

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[redacted]

topside boat area, and for the nozzle. The decon solution used was the same in all applications.

DECON SOLUTION:

To 10 gallons of water add
5 ounces of HTH
Stir

[redacted]

[redacted]

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[redacted]

5. Final Decon of Mix Area

[redacted], 4 BPL sprayed for roughly 20 minutes after which the contents of the van were allowed to soak for 24 hours.

[redacted]

[redacted]

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TECHNICAL MEMORANDUM 33

NAVY PROJECT 777,
NAVY LINE-SOURCE DISSEMINATOR (U)

AUGUST 1963

UNITED STATES ARMY
BIOLOGICAL LABORATORIES
FORT DETRICK

[redacted]

ORIGINAL file-ms

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U.S. ARMY BIOLOGICAL LABORATORIES
Fort Detrick, Frederick, Maryland

TECHNICAL MEMORANDUM 33

NAVY PROJECT 777
NAVY LINE-SOURCE DISSEMINATOR (U)

The work reported here was conducted under Project 4B04-14-030, "BW Munitions Research," The expenditure orders were 2067 and 2111.

G. A. DeShazer

Munitions Development Division
DIRECTOR OF DEVELOPMENT

Project 1C022301A062

August 1963

I. [redacted] INTRODUCTION

[redacted]

C. [redacted] BACKGROUND

[redacted] A series of meetings and events started on 16 May 1962 when Bureau of Ships representatives called for a preliminary discussion leading to a proposed biological disseminator to be placed on conventional submarines. The Biological Laboratories gave direct support to the Navy in providing criteria concerning agent dissemination, estimates of agent effectiveness, proposed nozzle design, and plans for nozzle evaluation.

(U) The support work was held in abeyance between August 23 and October 22, 1962, during a period of Naval planning. Then on October 22, on receipt of two nozzle heads, the Biological Laboratories proceeded with test and evaluation work. All test work was completed, but not reported, by the end of 1962 except for a nozzle flow test originating within the Biological Laboratories. During the tests requested by the Navy, an inconsistency in nozzle liquid flow rate was noticed. Tests for possible answers to this problem were conducted in January 1963, using a difference between gas and liquid pressures to vary the liquid flow rate.

[redacted] UNCLASSIFIED

2003154-0000011

This daily text log pertains to DTC Programs PINE RIDGE, TALL TIMBER, and YELLOW LEAF.

17 March 1966

1. The following individuals were on site prior to the Operations Officers arrival.

a.	Lt Col.	Lyman D. Harper	DTC
b	Lt.	Wayne Williams	DTC
c	Mr.	Harry Lefkowitz	DTC
d	SSgt	Milton H. Yarbrough	DTC
e	MSgt	Joseph F Mac Kissick	DTC
f.	Mr	George M. Joesart	Huachuca
g	Maj.	Wilbur J. Hewitt	Huachuca
h.	TSgt	George Pullin	DTC
i.	A/1c	Michael J. Pefazio	Westover AFB
j	A/1c	Edgar Anderson	Westover AFB
k	A/1c	Gary D. Rose	Patrick AFB
l.	A/1c	William P. Lord	Patrick AFB
m.	A/2c	Thomas DeLiffli	Patrick AFB
n	A/2c	Jerrel T Knott	Patrick AFB
o	A/2c	Hugh A. Pierce	Hickam AFB
p	A/2c	Albert J. Stoll Jr.	Hickam AFB
q	A/1c	Larry J. Schwardener	March AFB
r.	A/1c	Paul Mullins	Chanute AFB
s	A/2c	Bradford W Dabay	Chanute AFB
t	A/2c	Joseph R. Appleby III	March AFB
u.	SSgt	Harvey T Amos	USARHAW
v	SP/5	John Smytho	

[redacted]

[redacted] UNCLASSIFIED

17 March 1966 (CONT.)

1. Maj Ledbetter, Lt De Carlo, Mr. Nielsen, and Mr. Cox departed 0715 from DTC. Party arrived on site in the evening after spending the afternoon at PLO.

[redacted]

3. TSgt George Pullen departed for DTC.

4. Lt Col Lynum D. Harper departed for Japan.

18 March 1966

1. The following personnel arrived on site.

[redacted] [redacted]

b Lt. Dale D Barr Jr. DTC
c. MSgt. Donald A. Prescott
d SFC Suniichi Fujii
e SP4 Lynn J. Winans
f PFC Joseph P. Melchionne
g PFC Gary W. Campbell
h SP5 Dana M. Hagerman
i. SP5 Bond G. Thornton
j. SP5 Curtis Oliver

[redacted]

19 March 1966

[redacted]

2. The following personnel arrived on site.
a. A1C Ernest E. Thomas Jr.
b. A1C Donald M. Holm

2. The following personnel arrived on site.
c A3C Ernest E. Thomas Jr.

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20 March 1966

[redacted]

2. A2c Leland W. Alger and A2c James A. Tilley arrived on site.

21 March 1966

1. Arrivals of personnel on site

a. Officers

(1) Capt. David L. Kitzm... — CRDL
(2) Cmdr. Norbert A Siddleman — SHAD
(3) Lt Norman La Chapelle — SHAD
(4) Lt Peter Hutchinson — (BESS)
(5) Lt Irwin Paik — APC

[redacted]

c. Enlisted men:

TSgt Herbert R. Jordon — USAF
TSgt Guy L. Hatfield — USAF
SSgt. ~~(Rimbey)~~ Allen E Riley — USAF
SSgt. Robert J. Sanders — USAF
TSgt Guy L. Hatfield — USAF
SSgt. Norbert A. Silva — USAF

...ASSIFIED
UNCLASSI...

[redacted] UNCLASSIFIED

21 March 1966 (CONT)

PVT Walter W. Benson
A1C Raymond J. Green
A1C Marvin S. Plue
A1C Thomas W. Reger
A1C Dennis S. Callum
A1C Robert L Bartlett
(~~A1C Paul Mullens~~)
(~~A1C Patrick H. Parker~~)
(~~A1C Joseph E Cain~~)
(~~A1C Ernest E Thomas Jr~~)
(~~A1C Edgar Anderson~~)
(~~A1C Guy D. Rowe~~)
(~~A1C William D Ford~~)
(A1C Julio P. Cordero)
(~~A2C Richard W. Blyze~~)
(~~A2C James A. Tilly~~)
(~~A3C Donald H. Holm~~)
(~~A3C Arthur L. Southey~~)
SFC Julio Carillo
SSgt Joseph W. Pezzella
Sgt Bob J. Peck
SP5 Richard A Tullos
SP5 Andrew Jackson
SP5 Manuel E. Puenzal
SP4 Clyde C. Champion
SP4 Vernon T. Sibbard
PVT John J. Riley
PVT Martin S. Katz
PFC Earl A. Davis
PFC (~~A~~) Girard W. Lenoir
PVT Peter N. Brush
HM1 Harold L. Smith SHAD
HM1 Dale K. Soke SHAD
HM3 James E. Gordon SHAD
HM3 David R. Williams SHAD
HN Douglas E Willhite SHAD
GMG2 Osborne L York SHAD
John W. Alexander
R. V. Reziono
GMG2 Osborne L York [redacted] SHAD
H G. Velasquez [redacted]

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[redacted] UNCLASSIFIED

21 March 1966 (CONT.)

PFC Stephen H Burnum APC
SP5 Foulke, William APC
E-5 Jose H. Cardinale APC
Sp5 William R. Head
PFC Edward I Murray
PFC John C Smith
PFC Timothy Thompson
PVT James J. Kara
Larry Raney
SP4 Henry R. Jaszczurowski
PFC Joe Sancho-Quesada
PFC Carl M. Holiman

22 March 1966

1. The following personnel arrived on site:
A2C Robert Jackson.

[redacted]

23 March 1966

1. The following personnel arrived on site:
a. A1C Patrick H. Parker
b. A1C Joseph E. Cain
c. A1C Jimmie L Doins
d Sdgt. James Weber
e, E-4 Charles R Sdemory
f, PFC Thomas P. Snell
g. PFC George Mueller
h PFC Arthur R. Lindenburch
f, PFC Thomas P. Snell
i PFC Jean A Fiona

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23 March 1966 (cont)

[redacted]

3. Gen. Darnell visited the site

4 Lt Col. Swangren and the JEEP committee visited the area.

[redacted]

24 March 1966

1. Arrivals on site:

Col. Miller PTC

[redacted]

24 March 1966 (CONT.)

[redacted]

25 March 1966

1. Departures:
   Lt Col Swangren PLO

[redacted]

26 March 1966

[redacted]

[redacted]

27 March 1966

[redacted]

28 March 1966

1. Arrivals:
a Lt Robert D. Siciliano DTC
[redacted] [redacted]

2. Departures:
Col. Miller DTC

[redacted]

[redacted] UNCLASSIFIED

29 March 1966

1. Arrivals

L L Reed (Navy Cook)

[redacted]

30 March 1966

[redacted]

[redacted] UNCLASSIFIED

31 March 1966

1. Arrivals:

[redacted]

c. Capt C. Miller DTC

2. Departures:

a. Capt. C. Miller DTC

[redacted]

c. S.Sgt Milton Yarbrough DTC

[redacted]

1 April 1966

1. Arrivals:

a. Lt. Col. Furth

b Lt. Col. Condon DTC

c. Capt J. Miller DTC

2. Departures:

[redacted]

b Lt. Dale Barr DTC

[redacted]

UNCLASSIFIED [redacted]

UNCLASSIFIED [redacted]

1 April 1966

[redacted]

2 April 1966

[redacted]

2. Departures:
a. Lt Col. Faith

[redacted]

UNCLASSIFIED

5 April 1966

1. Arrival :
   401st security . dis personnel

2. Departures
   AGC Hugh Alan Bender SHAD

[redacted]

6 April 1966

[redacted]

UNCLASSIFIED

8 April 1966

1a. Work accomplished:

[redacted]

c. Military personnel relieved at noon today.

2a. Commenced the firing of trials today.

[redacted]

4. 401st security personnel departed.

9 April 1966

[redacted]

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10 April 1966

[redacted]

11 April 1966

[redacted]

12 April 1966

1. Arrivals:
   a. Gen. James Hebbeler DTC

[redacted]

12 April 1966 (CONT.)

[redacted]

4. Departures:

A2C Leland W. Alger ... Kelly AFB

13 April 1966

1. Departures:

[redacted]

[redacted] UNCLASSIFIED

14 April 1966

1. Arrivals:

[redacted]

2 Departures:

a. Gen. James Hebbeler DTC

[redacted]

15 April 1966

[redacted]

[redacted]

16 April 1966

1. Arrivals :
   PFC Eusebio Rosa

2. Departures :
   [redacted]

3. [redacted]

[redacted] UNCLASSIFIED

19 April 1966 (cont.)

2. Arrival: [redacted]

3. [redacted]

4. [redacted]

20 April 1966

1. Arrivals:

a. Lt. Col. Gordon L. Swangren DTC [redacted]

2. Departures: [redacted]

2. Departures [redacted]

[redacted] UNCLASSIFIED

30 April 1966 (CONT)

3. [redacted]

4 [redacted]

21 April 1966

1. Departures:
   a Lt. Col. Gordon L. Swangren DTC
   [redacted]

2. Arrivals:
   HM1 Larry F. Pilkington SHAD

[redacted] UNCLASSIFIED

21 April 1966 (CONT)

3. [redacted]

4. [redacted]

22 April 1966

1. Departures:

a. PFC Joseph Melchionne [redacted]

[redacted]

23 April 1966 (CONT.)

[redacted]

3. [redacted]

24 April 1966

1. Arrivals:

[redacted] [redacted]

2. [redacted]

25 April 1966

1. Arrivals:

Mr. Solomon Davis DPG
SP4 Crowell C. Bowen DPG
SP4 Jack A Erickson DPG
PFC William E. Yorger DPG
PFC Keith J Grossaint DPG
PVT Larry T Mc Dowan DPG
PVT Conrad L. Swann DPG

2. [redacted]

30 April 1966 (CONT)

3 [redacted]

1 May 1966

1. Arrivals: [redacted]

2. Departures: [redacted]

3. [redacted]

2 May 1966

1 Arrivals: [redacted]

cl. Lt Humphreys, Ronald [redacted] SHAD

[redacted] UNCLASSIFIED

UNCLASSIFIED

[redacted]

2 May 1966 CONT

2. Departure:

[redacted]

c. Cmdr Norbert Hellmann SHAP

3 [redacted]

4 [redacted]

[redacted]

[redacted]

[redacted]

UNCLASSIFIED

[redacted]

[redacted]

UNCLASSIFIED

[redacted]

3 May 1966

1. Arrivals:
   a. Lt Col. Shrewsbury
   b Maj Lehman

2. Departures:

[redacted]

3

[redacted]

4.

[redacted]

b

[redacted]

UNCLASSIFIED

[redacted]

[redacted]

5 May 1966

1. Departures

[redacted]

2. [redacted]

6 May 1966

1. Departures.

Chief William Norwood. SHAPE

(departed on emergency leave. Returns in one week)

2 [redacted]

[redacted]

UNCLASSIFIED [redacted]

9 May 1966

1. Arrivals:
   a. SFS Dana M Hagerman
   b. Chief William O. Norwood SHAD

2 Departures:
   SSgt Robert J. Lawless

3 [redacted]

41

13 May 1966

1. Arrivals
   Lt. Col Corwin - - - DTC

2. Departures: [redacted]

3. [redacted]

4. [redacted]

[redacted]

14 May 1966 [redacted] UNCLASSIFIED

1. [redacted]

2. [redacted]

[redacted]

3. Departures:
Capt James Miller DTC

15 May 1966

1. arrivals: [redacted]
b. Lt William Hirsch SHAD

2. Departures: [redacted]
b. Lt. Ronald Humphreys SHAD

3. [redacted]

[redacted] UNCLASSIFIED

UNCLASSIFIED

[redacted] UNCLASSIFIED

19 May 1966

1. Arrivals.

[redacted] [redacted]

2 Departures:

[redacted] [redacted]

b Lt. Robert D Sicaliano DTC

c. A1C Jimmie L. Downs

d. A2C James A Tilley

3 [redacted]

4 [redacted]

[redacted]

[redacted]

UNCLASSIFIED

20 May 1966

1 Departure:
May Wilbur J Kenneth

2 [redacted]

3. [redacted]

21 May 1966

1. [redacted]

2 [redacted]

[redacted]

[redacted]

22 May 1966

UNCLASSIFIED

1. Departures.
   a. HM1 Dale L Cooke SHAD
   b. HM1 Harold L Smith SHAD
   c. HM C William O. Norwood SHAD

2. [redacted]

23 May 1966

1. Departures: [redacted]
   b. AIC Gary D Rose
   c. A2C Thomas McCliffle
   d. A2C William D Lord
   e. A2C Jared T. Knott
   f. Capt. David Kutzer CRDL

2. [redacted]

3. [redacted]

[redacted]

25 May 1966 [redacted] UNCLASSIFIED

1. Departures
   a. SSgt Raymond E. Hall
   b. A2C Appleby, Joseph A. II
   c. A1C Ernest E Thomas Jr

2. [redacted]

3. [redacted]

[redacted] UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

[redacted]

26 May 1966

1. Departures: SHAD
   a. Lt Cmdr Norman La Chapelle SHAD
   b HN Douglas E Wilkhite SHAD
   c HM3 David K Williams SHAD
   d. HM3 James E. Ragsdale SHAD
   e. HM3 Francis A. Sickles SHAD
   f HM3 Lawrence M Tyler SHAD
   g HM3 James E Gordon SHAD
   h GMG-2 Osborne L York SHAD
   i HM2 Charles E Herdegen SHAD
   j. HM2 Reynold Rangel SHAD
   k. HM2 J M Webster
   l A1C Edgar Anderson
   m A1C Dennis L. Callen

2. [redacted]

3. [redacted]

[redacted]

27 May 1966

UNCLASSIFIED

1. Departures:
   a. A2C Bradford W Darby
   b. A1C Paul Mullins

2 [redacted]

3. [redacted]

4. Arrivals
   Maj. Wilbur J Hewett

[redacted]

UNCLASSIFIED

3 June 1966 UNCLASSIFIED

1. [redacted]

2 Departures:

[redacted] [redacted]

c PVT James J. Kasa USARHAW

3 [redacted]

[redacted]

[redacted]

4 Accident:

SP4 Henry R Jaszczurowski and PVT John J Riley were involved in automobile accident. Notified CP at 1535 approx Lt Wilbur Hurd notified Tripler and went to Kilo Hospital to be with Riley who is in serious condition. PAO was notified at 1930. They will notify personnel of USARHAW and DTC

approx "Lt Wilbur Hurd" notified Tripler and went to Kilo Hospital [illegible] "Chapman" case [illegible]

UNCLASSIFIED

UNCLASSIFIED

[redacted]

4 June 1966

1. Departures:
A1C Michael J. DeFazio ... Westover

2. Arrivals: (arrival on 3 June)
SP4 Carl Bell ... USARHAW

3 PVT. John J Riley died at about 0830

4. [redacted]

5 June 1966

[redacted]

[redacted]

UNCLASSIFIED

[redacted]

7 June 1986

1. Departures:
   a SP4. Henry R. Jagegurowski USARHAW
   b SSgt James Webber DFG

2. [redacted]

3. [redacted]

4. [redacted]

UNCLASSIFIED [redacted]

9 June 1966

1. Arrivals:

a Br Gen. Jack Hayes — DTC
b Col. Bentley Harris — DTC
[redacted] — USHRHAW
d. PFC Ralph N Howell

2 Departures:

a. Br Gen Jack Hayes — DTC
b Col. Bentley Harris — DTC
c Maj Harry H. Kulbetter — DTC
[redacted]

3 [redacted]

4 [redacted]

[redacted]

[redacted]

UNCLASSIFIED

UNCLASSIFIED

[redacted]

11 June 1966

1. [redacted]

2 [redacted]

3 Arrivals

a Maj Lehman 401st

b. Capt Thomas 401st

4. Departures

a. Maj Lehman 401st

b. Capt Thomas 401st

c. AIC Larry J Schroeder March AFB

b. Capt Thomas 401st

[redacted] UNCLASSIFIED

UNCLASSIFIED

13 June 1966 (CONT)

[redacted]

3. [redacted]

14 June 1966

1. [redacted]

2 [redacted]

3 [redacted]

15 June 1986 [redacted]

UNCLASSIFIED

1. Arrivals:

[redacted]

2 Departures:

515 Curtis Oliver Maynard

3 [redacted]

4. [redacted]

[redacted]

[redacted]

[redacted]

UNCLASSIFIED

21 June 1966 [redacted]

UNCLASSIFIED

1. Arrivals:

[redacted]

b Lt. Col. Charles Fraleigh DTC

[redacted]

2. [redacted]

3. [redacted]

[redacted]

UNCLASSIFIED

[redacted]

22 June 1966

UNCLASSIFIED

1 Departure:

a Lt Col Charles Fraleigh . . DTC

b. Mr. Jack W. Milam DTC

[redacted]

2. Arrivals:

[redacted]

3.

[redacted]

4. [redacted]

[redacted]

[redacted] UNCLASSIFIED

[redacted]

24 June 1966 CONT. [redacted]

[redacted]

25 June 1966

1. Arrivals : (arrived late 24 June 66)
   a. James Winston Turner, AOC — SHAD
   b. James Edward Ragsdale, HM2 — SHAD
   c. Charles Albert Davis, EM1 — SHAD
   d. Osborne Limon York, GMG2 — SHAD
   e. Glenn Charles Newman, AGAA — SHAD
   f. Liimatta, Michael William, AGAN — SHAD

2. Departures : [redacted]

3. [redacted]

[redacted]

UNCLASSIFIED

26 June 1966

1. Departures:

[redacted]

27 June 1966

1. Arrivals

a. Lt Col Furth [redacted] 401st

c. SSgt Billy J. Owens DTC

d. SFC Marion C Nunn DTC

[redacted]

2. Departures

[redacted]

[redacted]

29 June 1966

1. Departures [redacted]

b. MSGT Joseph F MacKissen DTC
c SP5 Joseph Cardinale APC
d. SP5 William Foulke APC
e. ~~PFC~~ SP4 Stephen H. Burnum APC

[redacted]

2. Arrivals [redacted]

3. [redacted]

30 June 1966

1. Departures:

[redacted]

n. EM1 Charles Albert Davis — SHAP
o A1C Joseph E. Cain — Barksdale
p. A1C Patrick H. Parker — Barksdale
q Mr. Richard Cashinette — DTS
r. Mr Denzel Turner — DTC
s SP4 Cromwell Brown — DPG

2 [redacted]

1 July 1966

1 Departures:

a.	1st Lt Peter Hutchinson	6594
b.	TSGT Herbert R Jordan	6593
c.	TSGT Allen E Rinky	"
d	TSGT Norbert A Silva	"
e	TSGT Guy L Hatfield	"
f.	A1C Raymond J. Green	"
g	A1C Marvin I Blue Jr	Hickam
h	A1C Thomas W. Roger	Hickam
i	MSGT Donald A Prescott	Huachuca
j.	SFC Gunichi Fujii	Huachuca
k	SP4 Lynn J. Winans	Huachuca
l	PFC Gary W. Campbell	Huachuca
m	SP5 Dean M Hagerman	Maynard
n.	SP5 Bond G Thornton	Maynard
o.	Mr Geoff J. Cox	DTC
p	Lt William Hirsch	SHAD

2. [redacted]

Report of the Annual DTC CINCS/Services CB Coordination Conference 10th, Held at Fort Douglas, Utah on April 1972. (U)

DESERET TEST CENTER FORT DOUGLAS UT

1972

REPORT OF THE TENTH ANNUAL

DTC CINCS/SERVICES CB COORDINATION

CONFERENCE, 18-19 April 1972 (U)

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

[redacted]

U

Table 1. [redacted] FY 72 Program (U)

Major Tasks	Current Status[1] P	C	R	F	T
A. Joint Operational Test Program					
Operational	5	1	2	1	9
Technical Investigations	2	3	4	-	9
CB Analytical Studies	-	7	3	6	16
B. Services Developmental Test Program	2	2	2	-	6
Developmental	2	2	2	-	6
Suitability	7	4	4	-	15
Environmental	-	20	4	-	24
C. Customer Service	5	10	2	-	17
D. Joint Contact Point					
CB Technical Data Source Book	-	23	9	-	29

Table 2. (S) FY 72 Program - Joint Operational Tests (J)

Test/Study No.	Short Title	Status[1] P	C	R	F
70-50	Operational Eval of Chemical Incap System	*			
72-30	Aerosol Diffusion in Marine Environment	*			
72-70	Vulnerability of US Coastal Targets to Bio Attack	*			
73-12	Eval of Flame Weapons for Mine/Booby Trap Clearance	*			
69-14,I,II	Evaluate MC-1 Bomb (USAF)	*		*	
70-11	Vuln Installations/Personnel to Chem Spray/ RAIN Attack		*		
69-12	Defense Against Agents GA/GB				*
70-73	Hazard From Secondary Aerosol Bio Agents			*	

[1] P - Planning
C - Conduct
R - Reporting
F - Finished or Completed
T - Total

[redacted] UNCLASSIFIED

[redacted] UNCLASSIFIED

[redacted]

[redacted]

Table 3. [redacted] FY 77 Program - Joint Technical Investigations (U)

Test/Study No.	Short Title	Status[1] P	C	R	F
73-11	Eval Proc For Emergency Destruction of Stockpiled Chemical Weapons	*			
70-C,I,II	Particulate Matter in Marine Atmosphere	*	*		
70-D	Threat to US From High Altitude Offshore Bio Attack		*		
70-10	Scavenging Effects of Vegetation on Nerve Agents		*		
70-74	Effects of Polluted Urban Atmosphere and Solar Radiation on Bio Decay			*	
71-14	Eval of MK 4 Filling Van/Aero 148 Spray Tank			*	
69-33	Effect of Fog on Decay of Bio Aerosol			*	

[redacted]

[1] P - Planning
C - Conduct
R - Reporting
F - Finished or Completed
T - Total

[redacted]

[redacted]

[redacted]

[redacted] MERDC, Fort Belvoir, is currently doing some testing on the CBU-55, and by having coordinated their test plan with DTC and CINCPAC, it is felt that the requirements of PA-10 might be fulfilled. PAC-11 (Develop and Test Emergency Destruction or Neutralization Procedures for the MC-1 Gas Bomb) will be addressed by Test 73-11. PA-14 (Develop Means for Removing Vegetation Other Than by Currently Available Herbicides) has been referred to Dr. Minalk, Vegetation Control Division, Edgewood Arsenal.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

o. Mr. Mel Ludlow, Chief, Analytical and Technical Services Division, DTC, presented the proposed FY 74 program for studies including carryover items. [redacted] Study) 74-110 replaces Test 73-10, and Study 74-111 replaces Test 70-50! Study 74-114 will try to satisfy some of the requirements of Tests 68-10 and 68-12. [redacted]

[redacted]

[redacted]

	REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
NA-2	NA-2 CB agents released in sea fog	Study 71-112 and Test 69-33, Phase	----	Test 72-70 (Biological)	----

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
NA-	NA-4 Determine the behavior of agent clouds from a chemical continuous line source released into the atmosphere at the air-sea interface	Study 71-112	Study 73-111	----	----
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

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SEMIANNUAL STATUS REPORT (U)

JANUARY 1973

CLASSIFIED BY: COMMANDER,
DESERET TEST CENTER, FORT DOUGLAS, UTAH 84113
EXEMPT FROM GDS OF EXECUTIVE ORDER 11652
EXEMPTION CATEGORY 3
DECLASSIFY ON: NA

DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

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Distribution limited to U. S. Government agencies only (Test and Evaluation) January 1973. Other requests for this document must be referred to Commander, Deseret Test Center, Fort Douglas, Utah 84113.

DTC 73-13

[redacted]

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[redacted]

70-D) (I405F) reatS. to U. S. om Hitu/igh Altitude ologtactical Attack	CINCONAD	To determine the potential threat to the U. S. from high altitude offshore biological attack.	Final report was published in August 1972.
70-BA) .0 (I100A) ase tionI, Sorption Nerts ve Agents on getad Sition and Soil	USA	To determine the effects of absorption and adsorption of aerosolized nerve agents by soil and vegetation and to study the scavenging effects of soil and vegetation upon an aerosol.	Work is suspended. A status report was published in November 1972.
70-BA) .1 (T115A) ase eral I, Vulnera- lity/ita/ of Military stal llations echPhasiology Phase)	USA USN USAF	To develop the dissemination, sampling and assessment procedures required as pretest technology for military installation vulnerability analyses.	Testing is in progress. Five of 12 large-scale aerial release trials using chemical simulant tagged with fluorescent particles were conducted using P4 aircraft and the TMU 28/B Spray Tank. Data are being reduced and the analysis is in progress.
70-BN) 11 (T116N) ase ner II, Vulnera- lity/ita/ of Military stal, Pllacions, Per- nneEquil, and Equipment, Masemissive Chemical tack Rac (Toxic Rain)	USA USN USMC CINCLANT	To determine hazards associated with a massive chemical attack (Toxic Rain) on military installations, equipment, and operating units (personnel) and to investigate the associated decontamination problems.	Planning is in progress. Coordination meetings have been held with Edgewood Arsenal personnel and DTC supported Edgewood Arsenal in preliminary work at White Sands Missile Range.
70-BA) 14 (I410A) asefect II, Effects Urbsphean Atmosphere Bid ological rosc ols	USA USAF USN CINCONAD	To determine the effects of polluted urban atmosphere on decay of biological aerosols.	Testing is in progress. Laboratory trials have been completed. Field trials utilizing the microthread/mobile van technique were initiated, however, problems have been encountered in obtaining consistent biological recoveries. Efforts are underway to isolate and correct the problem. Field testing is scheduled for completion by 3rd Quarter FY 73.

[redacted]

[redacted]

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Table [redacted]. Summary of DTC Test Program (DL 14) (U) (Continued)

Test No.	Study Number	Cognizant Agency	Purpose	Status
[redacted]				
T400N Aerosol Diffusion in Atmosphere	72-30 (T400N)	USN	To characterize aerosol diffusion in a marine environment.	Program has been deferred pending approval from higher headquarters.
T405N Vulnerability of U.S. Coastal Targets	72-70 (T405N)	USN CINCLANT	To determine the vulnerability of selected U. S. coastal targets to biological attack from offshore.	Program has been deferred pending approval from higher headquarters.
[redacted]				

[redacted]

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Joint Operational Activities (U)

DESERET TEST CENTER FORT DOUGLAS UT

JUL 1970

[redacted]

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ABC004924

ANNUAL STATUS REPORT

OF

JOINT OPERATIONAL ACTIVITIES (U)

JULY 1970

[redacted] SECURITY INFORMATION

Unauthorized Disclosure Subject to Criminal [redacted]

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DTC 70-94

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DTC 70-94

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CHAPTER 1

[redacted] CHEMICAL TEST SERIES (U)

SECTION 1

INTRODUCTION (U)

A summary of all active DTC chemical tests is presented in Table 1. The disposition of other tests is contained in Appendix I.

Table 1 (U). Status of Active Chemical Tests (U)

Test Program	Date Test Plan Completed	Date Test Conducted or Scheduled	Estimated Publication Date of Final Report
68-13, Phase I	Apr 67	Jul-Aug 67	To be determined[a]
68-13, Phase II	Apr 67	Jun 66-Dec 70	To be determined[a]
68-13, Phase III	Feb 68	May-Sep 68	To be determined[a]
68-53, Phase I	Mar 69	Apr-Dec 69	Sep 70
68-53, Phase II	Jan 70	Aug-Sep 69 and Jan-Mar 70	Sep 70
69-12	Apr 69	Pending[b]	To be determined
69-12 (M)[c]	Sep 69	Oct-Nov 69	To be determined
69-14	May 70	Pending	To be determined
70-10	Pending	Jul-Sep 71	Mar 72
70-11	Pending	FY 72	To be determined
70-12	Pending	FY 72	To be determined
70-50	Pending	Pending	To be determined

[a]Test report will be based on combined data of DTC Tests 68-13I, 68-13II, 68-13III, and 69-12.

[b]Test initiated but not completed. Continuation is planned; however, test is pending approval.

[c]Meteorological study phase of Test 69-12.

[redacted]

Table [redacted] (Cont'd)

Test Number	Cognizant Agency	Agent or Simulant	Munition, System or Concept	Location (environment)	Purpose	Status
[redacted]						
[redacted]						
[redacted]						
69-74	USAF, USN, USMC, USA	Nonpathogens TT, ZZ	Microthread technology study.	Ft. Detrick, Md.	To determine the effectiveness of the microthread technique for defining biological decay rate.	Preliminary report published Sep 69.
[redacted]						
70-10	USA	CB, VX	Downwind hazard of nerve agents.	DPG (test chamber)	To determine the effects of absorption and adsorption by vegetation on aerosolized nerve agents.	Scheduled to begin 1 Jul 71.
[redacted]						

Table 5 [redacted]. (Cont'd)

Test Number	Cognizant Agency	Agent or Simulant	Munition, System or Concept	Location (environment)	Purpose	Status
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
70-30	USA, USN, CINCLANT, CINCSTRIKE, CINCEUR	TT, ZZ, LN, PG	Effects of sunlight on agents.	DPG	To determine the effects of sunlight on agents TT, ZZ, LN and PG.	Deferred.
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

U.S. Army Activity in the U.S. Biological Warfare Programs. Volume II. (U)

DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS (ARMY ...

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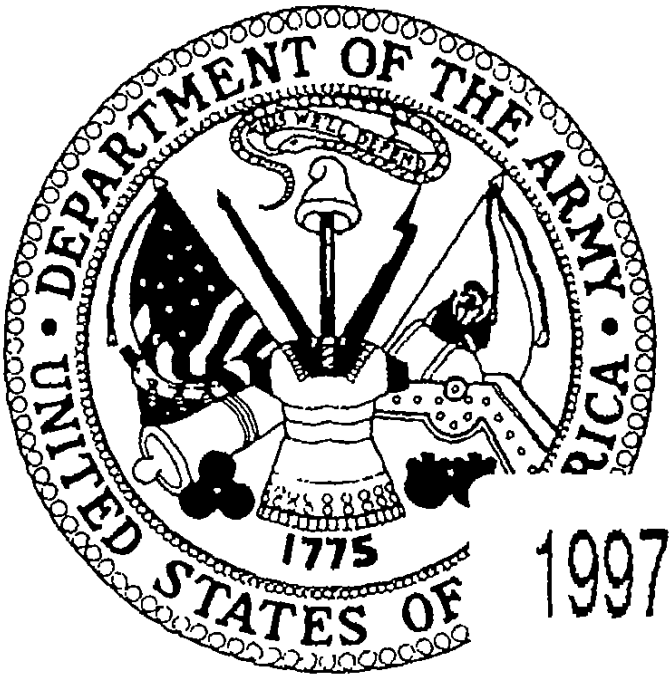

US ARMY ACTIVITY IN THE U.S. BIOLOGICAL WARFARE PROGRAMS

(U)

VOLUME II

25 FEBRUARY 1977

2700879

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Appendix II to Annex L

Correlation of Code Names

AB-1	Brucella suis (liquid)	
AM	Brucella Melitensis	
BG	Bacillus Subtilis Var. Niger (Simulant)	
FX	Venezuelan Equine Encephalitis (Liq.)	Formerly NU-1
JT	Pasteurella Tularensis (Strain 425) (Incap)	
LS	Venezuelan Equine Encephalitis	Formerly NU-1
MN	Coxiella Burnetii (Liq.)	Formerly OU-1
NU	Venezuelan Equine Encephalitis	
PG	Staphylococcus Aureus Enterotoxin Type B	Formerly UC
PG-2	Staphylococcus Aureus Enterotoxin Type B Dry	Formerly UC-2
TD	Venezuelan Equine Encephalitis (Dry)	Formerly NU-2
TT	Pasteurella Tularensis	Formerly UL
TX	Puccinia Graminis Tritici	
TZ	Shellfishpoison	
UC	Staphylococcus Aureus Exterotoxin Type B	
UL	Pasteurella Tularensis	
UL-1	Pasteurella Tularensis (Liq.)	
UL-2	Pasteurella Tularensis (Dry)	
XR	Botulinum Toxin Type A	
ZZ	Pasteurella Tularensis (Dry)	Formerly UL-2

[redacted]

./	Test No./ Name	Location of Test	Date(s) of Test	Nature of Test (Purpose)	Approval Authority	Coordi-nation	Simulant/ Agent Used
[redacted]							
-71	DTC 68-71 FOLDED ARROW	Oahu, Hawaii	Apr - May 1968	To determine area coverage of, and feasibility of submarine transported bio dissemination system.			BG
[redacted]							

IX-F-1-4

DTC Program for FY 72. (U)

DESERET TEST CENTER FORT DOUGLAS UT

MAR 1971

Distribution: DoD only: others to Commanding General, Deseret Test Center, Attn: STEPD-TT-JP(S). Fort Douglas, Utah 84113.

RDTE Project No. 1-X-6-65704-D-L12
USATECOM Project No. 5-CO-473-000-003

DTC PROGRAM FOR FY 72 (U)

MARCH 1971

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

Table 1 [redacted] Summary of Joint Operational Tests, Technical Investigations and CB Analytical Studies, FY 72 (U)

Tests/Studies	Cognizant Agency	Purpose	Status	Proposed Location
OPERATIONAL TESTS[a]				
71-75: Vulnerability of Key Defense Centers to CB attack (C and B simulants)	CINCONAD CINCSAC	To determine whether facilities utilized by the United States in emergency or wartime operations are in fact protected against both overt and covert CB attack.	In FY 71 Revised Program	CONUS
72-30: Large area coverage over water (biological simulant) (Reference 72-E)	USN	To determine large area coverage and effective downwind travel resulting from biological agent releases at sea.	New proposal	At sea.
69-14: MC-1 Bomb with GB Simulant.	USAF	Evaluate the operational effectiveness of the MC-1 weapon system in a wooded environment, and investigate the hazard created when an MC-1 bomb: (1) is subjected to inadvertent release during takeoff and/or landing; (2) subjected to small arms fire; and (3) disposed in accordance with USAF disposal procedures. Testing will be in accordance with National Policy procedures. Simulants will be used when appropriate.	Approved Carryover from FY 71	DPG

[a] Listed in order of recommended priority. Definitions of test and study terms are presented in Appendix II

Table 1 [redacted] Continued

Tests/Studies	Cognizant Agency	Purpose	Status	Proposed Location
70-11· Vulnerability of Selected Naval Installations to Chemical Attack; Troop Degradation Resulting from Chemical Attack. (chemical simulant)	USA USN	To assess the protection afforded personnel by selected naval installation structures when subjected to V agent spray attack; and to evaluate the degree of troop degradation as a function of activity and motivation when subjected to V agent spray attack.	Approved Carryover from FY 71	To be determined
72-70· Vulnerability of Selected US Coastal Targets to Offshore Biological Attack. (biological simulants)	USN USA USAF	To assess the vulnerability of selected United States coastal targets to offshore biological attack.	New proposal	CONUS
70-73: Secondary Aerosol Hazards to Moving Troops (biological simulant)	CINCEUR	To obtain defensive data relative to secondary aerosol hazard to personnel traversing a variety of road surfaces contaminated by biological materiel.	Test completed. Report in preparation	N/A
TECHNICAL INVESTIGATIONS				
70-C· Marine Background Particulate Study (No agent)	USN	To investigate naturally occurring airborne particles in marine atmosphere as they may impact on operation of biological detection devices.	In FY 71 Revised Program	At sea
70-D· Vulnerability of US to Biological attack from High Altitudes (biological simulant)	CINCONAD	To determine the vulnerability of the United States to a biological attack with agent release from altitudes of 20,000 to 50,000 feet.	Approved Carryover from FY 71	Western US

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Table 1 [redacted] Continued

Tests/Studies	Cognizant Agency	Purpose	Status	Proposed Location
70-74 Decay of Biological Aerosols in Urban Environment (biological simulants)	USAF USA CINCONAD CINCSTRIKE CINCLANT	Determine the effects of urban atmospheres on biological aerosols.	In FY 71 Revised Program	CONUS
70-10· Scavenging of G and V by Vegetation and Soil (G and V agents and simulants)	USA	To determine the scavenging effects of vegetation and/or soil in removing G and V agent vapor and V aerosol during downwind travel.	Approved Carryover from FY 71	DPG (test chamber)
69-33: Effect of fog on particulate aerosols (simulant)	USA USN	To determine the interaction between fog droplets and particulate biological aerosols.	Investigation completed in FY 71. Report prepared in FY 72	Contractor Test Facility
CS ANALYTICAL STUDIES				
71-110: Threat to U.S. Forces from G and V agents in Temperate Environment.	CINCAL CINCEUR	Examine effectiveness of G and V agents in temperate environment against United States and friendly troops in Europe.	-	
71-112· Effects of Fog on Airborne Chemicals.	USN	A study of the effects of fog on the integrity, diffusion, travel, and deposition of airborne chemical agents.	-	
72-110: Evaluation of Riot Control Agent Artillery Free Rocket.	USA	Area coverage and contamination density data from XM99 testing will be related to other CS munitions effectiveness data. These, together with other available data, will be used to extrapolate munition effectiveness to a jungle environment	-	

Table 1 [redacted]. Continued

Tests/Studies	Cognizant Agency	Purpose	Status	Proposed Location
71-116 Hazards of Operational Spray Missions.	USAMC	Evaluation of available chemical spray mission data concerning hazard to flight line and service/maintenance personnel, contamination of equipment and facilities, and decontamination requirements	-	
72-111. Decontamination	USA	Evaluation of time and effort required for the decontamination of standard equipment and clothing under operational conditions (chemical agents).	-	
71-123: Systemic Effects of Toxic Phosphorus Esters in Plants.	Secretary of Army, Surgeon General	An extensive survey of insecticide literature to obtain data on organophosphorus ester effects in plants.		
71-151: Long-range, Post Attack Implications Associated with Ecology and Epidemiology of Potential Biological Agents.	USA CINCONAD	Identification of long range ecological and epidemiological (E&E) problems following biological attack on the United States or U.S. Forces; evaluation of E&E potential of two selected agents in CONUS areas of interest; evaluation of E&E potential of selected agents in OCONUS areas of interest.		

Table 1 [redacted] Concluded

Tests/Studies	Cognizant Agency	Purpose	Status	Proposed Location
72-114* Urban Targets - Secondary Effects.	CINCLANT	Concomitant effects on a target population associated with and following a biological attack; dissemination and effectiveness of chemical agents in urban areas.	-	
72-112* Criteria for Recognition and Identification of Biological Agent Attack.	CINCONAD	Develop criteria that will provide a capability to identify the occurrence of a biological attack as opposed to a natural outbreak of a disease.		
CARRY-OVER TEST FROM FY 71				
MK-4 Filling Van	USMC	Evaluate and validate proposed safety rules for the employment of the MK-4 MOD-0 Filling Van under operational conditions.	Test plan in preparation	DPG

[redacted]

[redacted]

PRECEDING PAGE BLANK-NOT FILMED.

[redacted]

[redacted] DTC JOINT OPERATIONAL TEST 71-75 (U)

1. [redacted] RATIONALE (U)

[redacted] Deseret Test Center has received a requirement from CINCONAD[1] to evaluate the integrity of the CB defense system of the Combat Operations Center (COC) located in Cheyenne Mountain near Colorado Springs, Colorado. CINCSAC[2] has also requested an evaluation of CB protection afforded the SAC Command Operations Center, and ICBM sites.

[redacted]

[redacted]

1 [redacted]

2 [redacted]

[redacted]

[redacted]

2 (C) PURPOSE (U)

To determine whether facilities utilized by the United States in emergency or wartime operations are adequately protected against both overt and covert CB attack.

3. [redacted]

[redacted]

[redacted]

[redacted]

3. [redacted] SCOPE (U)

3.1 [redacted] DTC 70-D will consist of a two-phase technical investigation during FY 72 followed by an operational test phase in FY 73, if warranted by the data from the first two phases.

Phase One: Pretest Technology and Calibration, FY 72 (U)

This phase will involve the development of a suitable candidate replacement for tracer FP, i.e., because of its cadmium content which may pose a potential hazard. A test plan for evaluation of a candidate replacement has been published (Feb) and testing will be conducted at Dugway Proving Ground during the 4th quarter FY 71 and 1st quarter FY 72. It will include laboratory and field technology required for calibration and standardization of the new FP material.

3.2 [redacted] Phase Two: Study of High Altitude Meteorology and Climatological Review, FY 72.

A review of meteorological and climatological studies involving the lower stratosphere and troposphere will be made by an outside source most qualified in high altitude meteorology during 4th quarter FY 71 and 1st and 2nd quarters FY 72 to determine the various meteorological phenomena which tend to bring small particulate material released at these high altitudes down to the earth's surface. This study will define which meteorological processes control advection, dispersion, vertical displacement and general trajectories of particulate clouds as they relate to high altitude attacks that could be effected against the North American continent.

[redacted] If warranted by results, a number of small tracer releases will be made to confirm the findings of the study and to determine the best possible

[redacted]

[redacted]

vertical and geographical location of release lines in relationship to the best probability of success of operational releases.

[redacted]

3.3 [redacted] Phase Three- Large-Scale Defensive Evaluation of U.S. Vulnerability, FY 73 (U)

This phase will involve the conduct of 3 to 5 operational field trials along flight paths and at specific altitudes previously determined by completion of Phase Two. [redacted]

[redacted]

Table 2 [redacted] PROPOSED DTC JOINT TEST AND STUDY PROGRAM, FY 72 (U)

1. OPERATIONAL TESTS

Title*	Agency	Purpose	FY 72 Est Cost ($K)	Total Est Cost ($K)	Estimated Time Frame (FY)
71-75	CINCONAD CINCSAC	To determine whether facilities utilized by the United States in emergency or wartime operations are in fact protected against both overt and covert CB attack. (Simulant)	750	2,500	72-73-74
72-30	USN	To determine large area coverage and effective downwind travel resulting from biological agent releases at sea (Simulant)	600	1,200	72-73
69-14	USAF	Evaluate the operational effectiveness of the MC-1 weapon system in a wooded environment and investigate the hazard created when an MC-1 bomb: (1) is subjected to inadvertent release during takeoff and/or landing; (2) subjected to small arms fire; and (3) disposed of in accordance with USAF disposal procedures. Simulants will be used when appropriate. (Simulant and Toxic agent)	800	2,500	72-73-74

Table 2 [redacted]. Continued

Title	Agency	Purpose	FY 72 Est Cost ($K)	Total Est Cost ($K)	Estimated Time Frame (FY)
70-11	USA USN	To assess the protection afforded personnel by selected naval installation structures when subjected to V agent spray attack; and to evaluate the degree of troop degradation as a function of activity and motivation when subjected to V agent spray attack. (Simulant)	800	1,500	72-73-74
72-75	USN USA	To assess the vulnerability of selected United States coastal targets to offshore biological attack. (Simulant)	250	1,500	72-73
		TOTAL REQUIRED FOR A/E JOINT TESTS, FY 72	3,200K		
2. TECHNICAL INVESTIGATIONS					
70-C	USN	To investigate naturally occurring Airborne particles in marine atmosphere as they may impact on operation of biological detection devices. (No agent)	85	900	72-73
70-D	CINCONAD	To determine the vulnerability of the United States to a biological attack with agent release from altitudes of 20,000 to 50,000 feet. (Tracer)	300	1,600	72-73-74
70-74	USAF USA CINCONAD CINCSTRIKE CINCLANT	Determine the effects of urban atmospheres on biological aerosols. (Simulant/Tracer)	25	1,500	72-73-74
70-73	CINCEUR	To obtain defensive data relative to secondary aerosol hazard to personnel traversing a variety of road surfaces contaminated by biological material. (Simulant)	100	1,400	72-72

Table 2 [redacted] Continued

Title	Agency	Purpose	FY 72 Est Cost ($K)	Total Est Cost ($K)	Estimated Time Frame (FY)
70-10	USA	To determine the scavenging effects of vegetation and/or soil in removing G and V agent vapor and V aerosol during downwind travel. (Toxic agent)	290	290	71-72
69-33	USA USN	To determine the interaction between fog droplets and particulate biological aerosols.	3	33	71-72
		TOTAL REQUIRED FOR ALL TECH. INVEST, FY 72	$833K		

3. CB ANALYTICAL STUDIES

71-110	CINCAL CINCEUR	Examine effectiveness of G and V agents in temperate environment against United States and friendly troops in Europe.	30	42	71-72
71-112	USN	A study of the effects of fog on the integrity, diffusion, travel, and deposition of airborne chemical agents.	34	54	71-72
72-110	USA	Area coverage and contamination density data from XM99 testing will be related to other CS munitions effectiveness data. These, together with other available data, will be used to extrapolate munition effectiveness to a jungle environment.	25	25	72
71-115	USMC	Evaluation of available chemical spray mission data concerning hazard to flight line and service/maintenance personnel, contamination of equipment and facilities and decontamination requirements	29	44	71-72

Table 2 [redacted]. Concluded

Title	Agency	Purpose	FY 72 Est Cost ($K)	Total Est Cost ($K)	Estimated Time Frame (FY)
72-111	USA	Evaluation of time and effort required for the decontamination of standard equipment and clothing under operational conditions (chemical agents).	15	20	72-73
71-127	Secretary of Army, Surgeon General	An extensive survey of insecticide literature to obtain data on organophosphorus ester effects in plants.	24	48	71-72
71-151	USA CINCONAD	Identification of long range ecological and epidemiological (E&E) problems following biological attack on the United States or U S. Forces, evaluation of E&E potential of two selected agents in OCONUS areas of interest.	84	125	72
72-114	USA NORAD	Concomitant effects on a target population associated with and following a biological attack; dissemination and effectiveness of chemical agents in urban areas.	40	80	72-73
72-112	CINCONAD	Develop criteria that will provide a capability to identify the occurrence of a biological attack as opposed to a natural outbreak of a disease.	25	60	72-73
		TOTAL REQUIRED FOR ALL ANAL. STUDIES, FY 72	$306K		
		OVERALL FUNDING REQUIRED	$4,339K		
		FUNDING GUIDANCE	3,245K		

[redacted]

[redacted]

APPENDIX II

TEST AND STUDY TERMS

JOINT OPERATIONAL TEST

A detailed test of an agent or weapons system, defensive system, or combination, under field conditions and involving requirements from more than one Service or Unified or Specified Commander. Normally requires large scale release of agent or simulated agent under various environmental conditions. May be conducted at Dugway Proving Ground or at other test sites.

JOINT TECHNICAL INVESTIGATION

A detailed evaluation of a joint CINC/Service requirement that does not involve the use of large amounts of live agents or munitions; the investigations involved are often accomplished with simulants. Normally conducted within a military installation, but conforming to field requirements and conditions.

CB ANALYTICAL STUDY

A detailed consideration and in-depth analysis of a specific requirement in the CB area, based upon a careful evaluation of CB data already available. An in-house "paper" study, as compared to a field study.

CB TECHNOLOGY INVESTIGATION

An evaluation of a specific detail which requires more than a CB Analytical Study, but below the scope of a field study. Normally conducted in-house between the study group and the laboratory or

test chamber. Includes all efforts directed towards eliminating major technical barriers and providing unique solutions to technical problems.

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PROPOSED DTC FY-70

TEST PLANS (U)

SEPTEMBER 1968

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DTC 68 1230

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3. [redacted]

4. APPLICATIONS

Information to be obtained in Test 69-74 and from Test 70-74 will define the influence of the urban environment on the biological decay of aerosolized materials. [redacted]

5. [redacted]

[redacted]

6. (U) RELATED EFFORTS

The conduct of Test 70-74 is contingent upon the success of Test 69-74. [redacted]

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DPG TEST 74-010 PHASE I
OPERATIONAL EVALUATION OF MASSIVE
CHEMICAL ATTACK
FINAL REPORT
SEP 76

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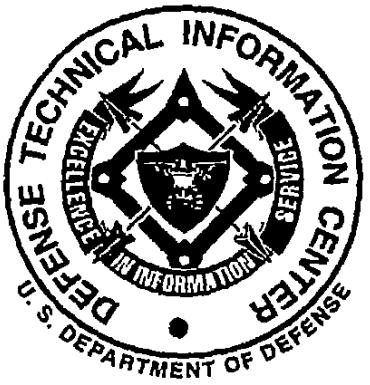

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TECOM Project No. 2-CO-210-049-001

DPG Document No. DPG-FR-T117M

Test Sponsor Commandant, US Marine Corps

DPG TEST 74-010 PHASE I
OPERATIONAL EVALUATION OF MASSIVE CHEMICAL ATTACK (U)

FINAL REPORT

BY

CPT RICHARD E. D'ANDREA
CPT DAVID L. BLEYLE
WILBERT T. TAYLOR

SEPTEMBER 1976

U.S. ARMY DUGWAY PROVING GROUND
Dugway, Utah 84022

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4. TITLE (and Subtitle): DPG-Test-74-010-Phase-1, DPG-FR-T1:7M Operational Evaluation of Massive Chemical Attack (U)	5. TYPE OF REPORT & PERIOD COVERED: Final Report - Sep — Oct 1973
	6. PERFORMING ORG. REPORT NUMBER: DPG-FR-T1:7M
7. AUTHOR(s): [redacted]	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: US Army Dugway Proving Ground, Dugway, UT 84022	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS: Commandant, US Marine Corps, ATTN: Code RD, Washington, DC 20380	12. REPORT DATE: September 1976
	13. NUMBER OF PAGES: 135 p.
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17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)
[redacted]

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
The operational evaluation of massive chemical attack against Landing Vehicle, Tracked, Personnel, Model 7 (LVTP-7) was conducted to evaluate and assess vulnerability of a marine amphibious force, in LVTP-7 vehicles, when subjected to selected forms of chemical attack. Nine trials (seven trials plus two repeats) were conducted in September and October 1973 at US Army Dugway Proving Ground. The LVTP-7 containing an amphibious force was subjected to simulated chemical attacks with agents GB, VX and thickened GD while performing selected tactical missions. [redacted]

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while performing selected tactical missions. [redacted]

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SECTION I [redacted]. INTRODUCTION (U)

1.1 [redacted] BACKGROUND (U)

1.1.1 ([redacted] Test Requirement (U)

Included in the US Army Dugway Proving Ground (DPG) FY74 Program Plan was a request from the US Marine Corps (USMC) to "Evaluate and assess the degradation and vulnerability of a marine amphibious force embarked in LVTP-7 amphibious vehicles when subjected to a G and V agent aerial spray attack during and following an amphibious assault."[1] This requirement was modified during a DPG-USMC planning meeting in April 1973, changing the words "G and V agent aerial spray" to read "primary chemical threat." In light of budgetary constraints and further joint interpretation, the requirement was reduced in scope until the evaluation involved study of a single, manned LVTP-7 in several operational modes. The primary chemical threat was agreed upon as being a thickened nerve agent delivered via a high-altitude missile airburst ("toxic rain" concept). The test requirement was expanded to include an evaluation of the vulnerability of an LVTP-7 to the effects of chemical weapons employed by retaliating friendly forces. DPG Test 74-010 Phase I was conducted in response to this modified USMC requirement.

1.1.2 [redacted]

[redacted]

1.2 [redacted] DESCRIPTION OF MATERIEL (U)

1.2.1 (U) Landing Vehicle Tracked Personnel (LVTP-7) and Crew (U)

The LVTP-7 is a full-tracked amphibian, providing armor-protected transport for landing forces, their support equipment, and supplies

[redacted]

[redacted]

[redacted]

(Figure 1). The vehicle is 26 1/2 feet long, 10 1/3 feet wide and 10 1/3 feet high. It carries a crew of three and 25 combat troops (or 10,000 lb) and weighs 52,000 lb when combat-loaded. The LVTP-7 is equipped with the M8A3 collective protection unit (CPU) which the crew uses in conjunction with the M14A2 protective masks and M5 hoods. When appropriately warned, crew and passengers would wear clothing (ID NR, 05485A, FSN 815-782-3240 through FSN 8415-782-3244) consisting of socks, gloves, liner shirt and liner trousers, and passengers would wear the M12A1 protective mask and M6A2 hood. In addition to their uniforms and protective gear, troops participating in these field trials wore a white overgarment, including hoods and booties. This overgarment was used for chemical sampling (Figure 2).

1.2.2 (U) Simulants (U)

Dimethylmethylphosphonate (DMMP) thickened with 2.3 percent PMMA of high molecular weight (= 10^6) and dyed with 0.5 percent oil red dye was used to simulate thickened Soman (GD). The viscosity of the simulant was 960 centistokes at 25° F. Trichloropropane (TCP) was used to simulate nerve agent GB, and bis-(2-ethylhexyl)hydrogen phosphite (BIS) was used to simulate nerve agent VX.

1.2.3 (U) Chemical Disseminators (U)

The spray system used for dissemination of thickened DMMP and later for BIS consisted of three 1/4 J pneumatic atomization nozzles mounted in line, an agent reservoir and two compressed air sources (Figure 3). Methods of operation are described in paragraph 2.2.1.

The entire apparatus was mounted upon the boom of a High-Ranger service truck. The boom was traversed over the grid to produce a required area coverage (Figure 4).

For the single trial in which TCP was disseminated, two atomizer nozzles connected to a single Tygon tube in a Sigma pump and a compressed-air source were used.

1.2.4 (U) Decontaminant (U)

The only decontaminant solution tested that proved to be effective in this test was a 10 percent solution of monoethanolamine (MEA) in water, to which 0.3 percent Van Waters and Rogers 9N9 nonionic surfactant (also known as Triton X-100) was added. One or two M12A1 power-driven decontamination apparatuses (PDDA) were used to apply the decontamination solution to the LVTP-7

[redacted]

[redacted]

1.3 [redacted]

[redacted]

1.4 [redacted]SCOPE (U)

The test was conducted in the fall of 1973 at DPG. The test consisted of nine trials (seven scheduled and two repeats) involving three simulant chemical agents and the vehicle operating modes shown in Table 1.

[redacted]

[redacted]

[redacted]

SECTION 2 [redacted] DETAILS OF TEST (U)

2.1 (U) TEST OBJECTIVES (U)

a. To determine exterior and interior contamination levels on an LVTP-7 exposed to a chemical attack using thickened simulant

b. To determine vapor contamination level inside a closed LVTP-7 exposed to a simulated GB attack, and to verify the effectiveness of the M8A3 CPU

c. To determine difficulty involved in decontaminating an LVTP-7 after an attack with a methacrylate-thickened material.

d. To determine the effect of amphibious operations on an LVTP-7 contaminated with thickened simulant and VX simulant

e. To determine the amount of contamination personnel will receive while egressing from a contaminated LVTP-7 in an uncontaminated area

f. To determine the amount of contamination an LVTP-7 picks up while traversing areas contaminated with VX simulant and thickened GD simulant

g. To determine the effects of thickened simulant on painted surfaces of an LVTP-7

2.2 (U) METHODS (U)

2.2.1 (U) Chemical Dissemination (U)

The three-nozzle spray system operated as follows: air pressure forced the agent simulant into a second airstream, which dispersed it out all nozzles equally. Agent-simulant air pressure and free-flow air pressure were adjusted to produce the desired droplet size distribution. More than one pass of the disseminator over the grid was required in most trials to produce the desired contamination density.

For Trial 3 in which a massive TCP vapor concentration was required, the disseminator described in paragraph 1.2.3 was utilized inside an enclosed shelter to generate and maintain the required TCP vapor concentration around the LVTP-7 for 90 minutes.

2.2.2 [redacted] Decontamination (U)

The LVTP-7 amphibious vehicle was contaminated with from 1 to 7 gm/m^2 of the thickened DMMP, and various decontaminants were evaluated. Decontaminants and methods tried included:

[redacted]

[redacted]

Soap and water
Soap and water, hot, with scrubbing
Steam cleaning
MEA (10 percent monoethanolamine in water with 0.3 percent Van Waters and Rogers 9N9 nontoxic surfactant (Triton X100))
MEA, hot

The soap and MEA solutions were applied with M-12 PDDA's (Figure 5), and the vehicle was scrubbed with stiff-bristle brushes and brooms (Figure 6).

2.2.3 (U) Effects of Thickened DMMP on Painted Metal Surfaces of the LVTP-7 (U)

Detailed observations were made of all exposures of painted metal surfaces of the LVTP-7 to thickened DMMP. During two trials, the LVTP-7 was hosed down with water before dissemination of the simulant.

2.2.4 (U) Effects of Amphibious Maneuvers on Thickened DMMP and Unthickened BIS Contamination Levels (U)

During Trials 4, 4R1, 5 5R1, 6 and 7, the LVTP-7 entered a pond deep enough to free-float the vehicle in an effort to decontaminate itself by swimming. M12A1 decontamination units hosed down the top of the vehicle to compensate for the absence of surf in the pond (Figure 7). Detailed observations were made of experimental results, and swab samples were taken to check for DMMP contamination after the swimming maneuver.

2.2.5 (U) Simulant Pickup by Personnel Egressing from a Contaminated LVT-7 onto Uncontaminated Terrain (U)

The LVTP-7 vehicle was contaminated and then driven to a clean area. Troops wearing white overgarments egressed from the rear of the vehicle and were immediately inspected for evidence of contamination. Cloth samples were taken of all observed contamination and suspect areas such as the soles of the booties and parts of the gloves.

2.2.6 (U) Contamination Pickup by an LVTP-7 during Traversal of Contaminated Terrain (U)

One trial each was conducted with thickened DMMP and unthickened BIS. The test grid was contaminated with simulant agent and an LVTP-7 vehicle with an external sampling array (see Appendix A) traversed the contaminated area at 10 mph. Samples were collected and assayed to determine the amount of simulant picked up by the vehicle. Vapor samplers on the ground, and on top of and inside the vehicle, measured vapor dosage levels for each trial.

[redacted]

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VULNERABILITY OF MARINE WING WEAPONS UNIT
FINAL REPORT
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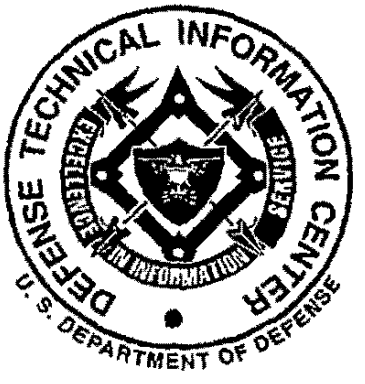

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TECOM Project No. 2-CO-210-049-001

DPG Document No. DPG-FR-T118M

Test Sponsor Commandant, US Marine Corps

DPG Test 74-010 PHASE II

VULNERABILITY OF MARINE WING WEAPONS UNIT (U)

FINAL REPORT

BY

CPT RICHARD E. D'ANDREA
CPT DAVID L. BLEYLE
WILBERT T. TAYLOR

SEPTEMBER 1976

U.S. ARMY DUGWAY PROVING GROUND
Dugway, Utah 84022

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4. TITLE (and Subtitle): DPG-Test-74-010-Phase II, Vulnerability of Marine Wing Weapons Unit (U).	5. TYPE OF REPORT & PERIOD COVERED: Final Report, Apr[redacted] — May 1974
	6. PERFORMING ORG. REPORT NUMBER: DPG-FR-T118M
7. AUTHOR(s): [redacted]	8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Commandant, US Marine Corps, ATTN: Code RD, Washington, DC 20380	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: (12) 197 p.
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18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)
[redacted]

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
(U) DPG Test 74-010 Phase II, Vulnerability of Marine Wing Weapons Unit, was conducted to assess the degradation of a Marine Wing Weapons Unit in the performance of its mission in a simulated toxic agent environment.

[redacted] In seven trials, conducted April-May 1974 at US Army Dugway Proving Ground, UT, the Nuclear Assembly Team (NAT) of an MWWU performed its mission after being subjected to a simulated massive chemical attack [redacted]

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1.2.2 (U) Simulants (U)

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The entire apparatus was mounted upon the boom of a High-Ranger service truck. The boom traversed the grid to provide the required area coverage (Figure 4).

1.2.4 (U) Decontaminant (U)

The only decontaminant solution tested that proved effective was a 10% solution of monoethanolamine (MEA) in water to which 0.3% Van Waters and Rogers 9N9 nonionic surfactant (also known as Triton X-100) was added. One M12A1 power-driven decontamination apparatus (PDDA) was used to apply the decontamination solution to the SATS and the covered training weapon.

1.3 [redacted]

[redacted]

[redacted]

[redacted]

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2003154-0000028

Outline Plans for Testing in FY 68. Supplement 2 (U)

DESERET TEST CENTER FORT DOUGLAS UT

JAN 1967

Controlling Office: Deseret Test Center, Fort Douglas, UT 84113.

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DESERET TEST CENTER

OUTLINE PLANS FOR TESTING IN FY 68 (U)

SUPPLEMENT 2

January 1967

Prepared by

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CHEMICAL TEST

1. [redacted] GENERAL INFORMATION

   a. Test Number: 68-14.

   b. Nickname: CHANNEL CRAB (U).

   c. [redacted]

   d. Environment: Sea-Land interface in fog (temperate).

   e. [redacted]

   f. [redacted]

2. [redacted] SYSTEM USED IN TEST

   a. Agents: CS and GB.

   b. Delivery: Multiple point-line source and line source.

   c. [redacted]

3. [redacted] BACKGROUND

   a. The U. S. Navy desires information on the effectiveness and possible degradation of effectiveness of aerosol and vapor cloud of agents CS and GB when employed in fog--particularly against naval shore installations. Behavior of these agents, though studied in a number of environments, has not been studied in fog. The occurrence in many coastal areas of a high incidence of fog presents a possibility for operational utilization of these agents in fog.

   b. [redacted]

4. [redacted]

DMMC Control #
2003154-0000031

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[redacted]

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Report Number DTC 650100M

OBSERVATIONS ON SHIP DECONTAMINATION (U)

TECHNICAL MEMORANDUM

by

J J Lehane, Lt, USN

Test Operations Directorate

NOVEMBER 1965

HEADQUARTERS DESERET TEST CENTER · FORT DOUGLAS, UTAH

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DPG 65-2449

ABSTRACT

Effective methods for chemical and biological decontamination of interior spaces on the USS GEORGE EASTMAN (YAG 39) had to be determined in order to make proper preparation for DTC Test Series FLOWER DRUM (U), Chemical, and ERRAND BOY (U), Biological. FLOWER DRUM (U) was to use nonpersistent chemicals only; therefore, it was decided that extensive air-wash of the ship's interior was sufficient for decontamination. This memorandum reveals the methods, techniques, and procedures that were developed for decontamination of biologicals by the use of vapor-phase disinfectant, beta-propiolactone (βPL), in preparation for Test Series ERRAND BOY (U).

U

1. [redacted] BACKGROUND

During May 1963, representatives of Headquarters, Deseret Test Center (DTC), Chemical Research and Development Laboratories (CRDL), Naval Biological Laboratories (NBL), Project SHAD Technical Staff, and the U.S.S. GEORGE EASTMAN (YAG 39) conducted an engineering survey aboard the U.S.S. GEORGE EASTMAN (YAG 39). The objective of the survey was to prepare the interior of the ship for chemical and biological decontamination. It was decided on the basis of known test requirements that reduction of chemical contamination would be accomplished by extensive airwash. The vapor-phase disinfectant, beta-propiolactone (βPL), was selected as the bacteriological decontaminant. Modifications of air circulation and ventilation were determined necessary in the interior spaces of the ship in order to provide complete dispersion of βPL. These modifications as recommended by the representatives of DTC, CRDL, NBL, SHAD, and the U.S.S. GEORGE EASTMAN (YAG 39) were designed, accomplished, and checked by Pearl Harbor Naval Shipyard (PHNSY). Systems qualification tests were conducted in July and August 1963 by personnel from DTC, NRL, and the YAG 39. These tests were conducted both in port and at sea. Determinations resulting from these tests were reported in the DTC engineering report entitled, "Report on Preparations for Decontamination of the U.S.S. GEORGE EASTMAN (YAG 39)."

In September 1963, personnel from Headquarters, DTC, NBL, ABL, and SHAD gathered aboard the GEORGE EASTMAN to attempt a demonstration of the effectiveness of βPL as a disinfectant for the interior spaces of the ship.

U

2. [redacted] GENERAL

On 4 September 1963, all personnel concerned had arrived on site. [redacted] It was decided the effort would be conducted at Buoy X-9, East Loch, Pearl Harbor, instead of at sea. On 6 September, the ship got underway from PHNSY, was moored to Buoy X-9, and decontamination was begun in Zones I and II.

U

3. [redacted] PERSONNEL

Personnel from organizations participating were as follows:

(1) Deseret Test Center

(a) Engineering Branch, Test Operations Directorate

Mr. Dawson

Ltjg Lehane, USN

Mr. Newell

(b) Chemical-Biological Division, Test Operations Directorate

2d Lt Tucker, USA

(c) Medical Liaison and Safety Office
Mr. Mayes
Capt. Sudduth, USN

(d) Planning and Evaluation Directorate

Mr. Morrison

(2) Naval Research Laboratories

Dr. Ramskill

Dr. Young

(3) U.S. Army Biological Laboratories (Bio Labs)

Mr. Spiner

(4) U.S. Naval Biological Laboratories (NBL)

Mr. Chatigny

Mr. Lief

(5) Project SHAD Technical Staff

(a) Officer in Charge

LCdr Bridge, USN

(b) Laboratory Division

LCdr Beam, USN

LCdr Devine, USN

(c) Medical and Safety Division

Lt Browning, USN

Lt Dunbar, USN

(6) U.S.S. GEORGE EASTMAN (YAG 39)

Officers and men assigned to the Decontamination Bill shown in Appendix C.

1. [redacted] CHRONOLOGY

[redacted]

During the conduct of the exercise it developed, due to operational necessities, that a different schedule was actually carried out. The last zone was not completed until 16 September. On 17 September, an experimental trial was conducted in Zone III, which entailed the use of wet steam to speed up the aeration process. [redacted]

2. [redacted] OPERATING AREA

[redacted] Objections interposed by medical authorities at PHNSY to the use of βPL in Pearl Harbor had required preliminary plans to consider decontamination of the ship at sea. [redacted]

Buoy X-9 in East Loch, Pearl Harbor, was selected as the most advantageous point from which to conduct the trials without downwind hazard to the shore. [redacted]

[redacted]

1. [redacted]

[redacted]

2. [redacted] TEMPERATURE AND HUMIDITY CONTROL

[redacted]

Before each trial, control samples in the form

[redacted]

16

[redacted]

of patches contaminated with known numbers of microorganisms (77,000/patch) were set out in the zone. Their purpose was to check the effectiveness of the decontamination. Swab samples were also taken before each trial to check the actual presence of BG contamination in the zones. The zone was then closed to all personnel and decontamination teams returned to the Safety Citadel and commenced dressing procedures.

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3. [redacted] DRESSING PROCEDURES

a. Dressing was accomplished in the Safety Citadel under the supervision of the decontamination officer and the team leader. Two types of protective clothing, permeable and impermeable, were employed. Permeable clothing (cotton coveralls) was used by all personnel engaged in the exercise except those entering spaces containing high concentrations of βPL vapor. Personnel who entered such spaces wore impermeable clothing (rubber).

[redacted]

[redacted]

(3) [redacted]

(4) [redacted]

(5) [redacted]

(6) Certification of Safe Air

It was the duty of the Medical and Safety Officer to certify that air on the zone being decontaminated

was safe. Thus, when there was no indication of βPL (from samples taken) within the zone, the medical and safety officer declared the zone safe and it was opened to normal operations.

9. [redacted]

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Report Number: DTC 670131G

DESERET TEST CENTER

SEMI-ANNUAL STATUS REPORT (U)

— CURRENT ACTIVITIES TO 15 FEBRUARY 1967

FEBRUARY 1967

Prepared by

Headquarters • Deseret Test Center • Fort Douglas, Utah • 84113

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TABLE 21 ([redacted]): DTC TEST PROGRAMS FOR FY 64 (U)

Test number-nickname	Cognizant service	Type test-agent	Munition or system	Location (environment)	Major objectives and remarks	Scope (trials)	Status
64-1 ERRAND BOY	USN	Biological-SR-DK	Y4 disseminator	Pacific	Penetration of shipboard protective devices-decontamination	12	Penetration aspect cancelled. Decontamination study published 10 Nov 65.
[redacted]							

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Report of the Annual DTC CINCS/Services CB Coordination Conference (9th) held at Dugway Proving Ground, Utah, on 22-24 June 1971 (U)

DESERET TEST CENTER FORT DOUGLAS UT

JUN 1971

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REPORT OF THE NINTH ANNUAL

DTC CINCS/SERVICES CB COORDINATION

CONFERENCE, 22-24 June 1971 (U)

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HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

DTC 71-463

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CONFERENCE RECORD

NINTH ANNUAL DTC CINCS/SERVICES
CB COORDINATION CONFERENCE (U)

1. (U) PURPOSE. This report is a summary of presentations, discussions, and agreements reached at the Ninth Annual DTC CINCS/Services CB Coordination Conference. The conference was held at Dugway Proving Ground, Utah, 22-24 June 1971. Representatives from the Services and Unified and Specified Commands (CINCS) were in attendance, as well as representatives from Deseret Test Center (DTC), Joint Chiefs of Staff, Defense Intelligence Agency, the Office of the U. S. Surgeon General, Central Intelligence Agency, Joint Technical Coordinating Group for Munition Effectiveness, Foreign Science and Technology Center, Naval Science and Technology Intelligence Center, and Department of Agriculture. A roster of attendees is provided in Appendix 1, the conference agenda is given in Appendix 2.

2. [redacted] PRESENTATIONS AND DISCUSSIONS:

a. [redacted] Since FY 69, the last year in which we had a full program, our operations have decreased from seven safari tests in that year to one joint test conducted in FY 71.

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1. Mr. Boyle, Chief, Chemical Systems Division, DTC. Mr. Boyle reviewed the accomplishments of the FY 71 chemical test programs and the anticipated FY 72 and FY 73 test programs. For the FY 71 program he described tests involving: (1) the XM687 binary projectile; (2) determination of the fate of GB and VX in soil and plants; (3) the XM99 CS rocket developed as an ENSURE item; and (4) the spinning disc disseminator. Mr. Boyle reported that the XM99 rocket had a warhead reliability of 97.7 percent, a submunition reliability of 98.7 percent, and a slant range precision of 95.5 percent. The area coverage in 30 seconds was found to fall between 3 and 4 hectares per ripple. The XM99 has since been released for use in Southeast Asia. An explanation was given of how the XM687 projectile and the spinning disc disseminate the agent.

For the FY 72 program, five carryover chemical tests were visualized: (1) DTC Test 69-14, utilizing the MC-1 bomb; (2) DTC Test 70-10, a study of sorptive losses of chemical agents in soil, and scavenging effects of vegetation on liquid aerosol clouds; (3) DTC Test 70-11, which is a chemical vulnerability test; (4) the final test of the USAF Universal Decontamination System; and (5) the completion of the M-55 rocket

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demilitarization program. The latter two are both open air tests. Environmental impact statements have been prepared. Four chemical test programs were anticipated for FY 73. (1) DTC Test 68-12; (2) DTC Test 69-12; (3) the final phase of DTC Test 69-14; and (4) DTC Test 70-50.

[redacted]

k. Dr. Adams, Chief, Biological Systems Division, DTC. Dr. Adams reviewed the accomplishment of the FY 71 biological testing program and the anticipated FY 72 and FY 73 test programs. For the FY 71 program, he described tests involving: (1) assessment of marine particulate background (DTC Test 70-C); (2) studies preliminary to high altitude release of fluorescent particles (DTC Test 70-D); (3) determination of the defensive aspects of the hazard posed to troops by secondary biological aerosols (DTC Test 70-73); and (4) work preliminary to conduct of DTC Test 70-74 which involves tests of the vulnerability of U. S. cities to biological attack. Tests anticipated for FY 72 include a continuation of all FY 71 tests, the initiation and/or conduct of three additional tests, as follows: (1) DTC Test 71-75, which is a test of the vulnerability of key defense centers in the U. S. to biological attack; (2) DTC Test 72-30, which will examine particulate diffusion in a marine environment over large areas (up to 100 miles downwind of the release line); and (3) DTC Test 72-70, a test of the vulnerability of coastal targets to biological attack. The FY 73 program will continue DTC Tests 70-C, 70-D, 70-74, 71-75, 72-70, and will also include Test 69-33, which is a test of the effects of coastal fog on the viability and diffusion of biological agents. Data derived from Test 69-33 will be used to examine the vulnerability of coastal installations to covert biological attack during a fog. In addition, a new test, DTC Test 73-30

[redacted]

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will be conducted in FY 73. This test will examine the effects of solar radiation upon biological aerosols. It will be an extension of an earlier test (69-32) in which microorganisms survived solar radiation to a greater extent than was expected.

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APPENDIX 3

DESERET TEST CENTER

CINC AND SERVICE REQUIREMENTS

DIRECTOR, PLANS AND ANALYSIS
STANLEY MONTUNNAS, CAPTAIN, USN

LIAISON OFFICERS

MAJOR IRA M. CLICK, USA
LIEUTENANT COLONEL RICHARD G. FRANCEY, USAF
LIEUTENANT COLONEL THOMAS W. NELSON, JR., USMC

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US ARMY REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS SATISFIED, DELETED, OR PASSED TO OTHER AGENCIES	
70	AR-9	Tactical employment of M23/XM42/VX within HE minefields for area coverage and persistency.	Passed to CDC for action.
70	AR-15	Evaluate operational reliability of the M-23 mine as effected by various depths of snow and crusted snow.	Deleted.
73	AR-32	Evolve optimum tactics for use of RCA in controlling civil disturbances.	Requirement referred to USACDC for action.
		REQUIREMENTS BEING ADDRESSED	
68	AR-2	Appraisal of chemicals for barrier operations.	To be satisfied by Study 73-110.
68	AR-3	CB alarms in field situations.	To be incorporated in Tests 68-12, 69-12, 69-14, 70-50, 74-A, 73-10, 72-39 & 72-70.
68	AR-4	Evaluate persistency and secondary aerosol hazard of biological agents.	To be satisfied by Test 70-73.
69	AR-5	Radar signature of CB items.	To be satisfied by Tests 68-12, 69-14, 71-75, 74-A, 73-10 and 72-70.
69	AR-6	Determine residual biological effects from a variety of environments including solar radiation.	To be satisfied by Test 73-30.

FY	Number	Requirement	Status
70	AR-7	Assess the operational capability of Army and Air Force units to perform joint mission in a toxic environment.	To be partially satisfied by Test 70-11.
70	AR-8	Evaluate performance characteristics of available biological warning devices.	To be incorporated in Tests 69-33, 70-B, 70-74, 72-30 and 72-70.
70	AR-10	Develop data on time and effort required to decontaminate.	To be satisfied by Study 72-111.
70	AR-11	Evaluate operational performance of RCA, artillery fire rocket in a jungle environment.	To be satisfied by Source Book and Study 72-110.
70	AR-13	Determine operational effectiveness and relationship of agent concentration and response time by perti-chrome analyzes.	To be incorporated in Tests 69-33 and 72-30.
70	AR-14	Provide integrated program capability for rapid, repetitive, safe testing of pathogenic aerosols.	To be satisfied by methodology study currently in progress.
70	AR-16	Characterize the long range E&E problems on disease entities and host-vector systems of interest for specific biological agents.	To be satisfied by Study 71-151.
70	AR-19	Determine downwind hazard of nerve agents to establish threshold sensitivity criteria.	To be satisfied by Study 73-111 & Test 68-12.
70	AR-20	Determine operational effectiveness of passive LOPAIR.	To be incorporated in Tests 68-12, 69-14, 74-A and 73-10.
70	AR-22	Determine effectiveness of detection of VX contamination by aerial photography.	To be satisfied by Tests 68-12 and 69-12.

FY	Number	Requirement	Status
70	AR-24	Determine detection effectiveness by radar of CB agent clouds.	To be satisfied by Tests 69-33, 70-D, 71-75 & 72-70.
70	AR-25	Nonpathogenic agent to derive analog procedure for estimating decay of pathogens.	To be satisfied by Study 71-158.
70	AR-26	Detection of biological agents from aircraft release by radar and optical radar (LIDAR).	To be satisfied by Tests 69-33, 71-75, & 72-70.
70	AR-27	Downwind cumulative dose hazard for personnel up to 50 miles from dissemination point - GA, GB, and VX.	To be satisfied by Study 73-111 & Tests 68-12, 69-12 & 69-14.
73	AR-31	Determine effectiveness of binary lethal agent munitions in temperate, wooded, tropic and arctic environment. Includes evaluation of adequacy of simulants.	To be satisfied by Test 70-50.
		OTHER OUTSTANDING REQUIREMENTS	
67	AR-1	Stockpile to target sequence for chemical items.	A continuing effort on all appropriate tests.
70	AR-17	Evaluate effectiveness of 155mm airborne percutaneous toxic aerosol (APTA) in a jungle, arctic, and temperate forest.	Unsatisfied. Munitions unavailable.
70	AR-18	Evaluate effectiveness of intermediate volatility agents (IVA) in a variety of operational conditions.	Unsatisfied. IVA status being clarified.
70	AR-23	Detection effectiveness of liquid agent detection (LAD).	Unsatisfied. LAD not yet developed.

FY	Number	Requirement	Status
73	AR-28	Evaluate performance of multipurpose and agent detection kit.	To be incorporated in appropriate tests.
73	AR-29	Evaluate combat vehicle chemical agent alarm.	To be incorporated in appropriate tests.
73	AR-30	Evaluate incapacitating agent alarm.	To be incorporated in appropriate tests.
73	AR-33	Refinement of IVA sampling methods and effectiveness evaluation.	Unsatisfied. IVA status being clarified.

CINCEUR REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS SATISFIED, DELETED, OR PASSED TO OTHER AGENCIES	
68	EU-3	Chemical weapon target selection.	Requirement referred to ACSFOR for action.
68	EU-4	Defense against GA and GD.	Requirement referred to USACDC for action.
73	EU-13	Hazard associated with retaining Central Foundry CB-filled 155mm projectile.	Requirement referred to AMC Safety Board.
73	EU-16	Effectiveness of M3 impregnated clothing in stock.	Requirement referred to NATICK for action.
73	EU-17	Feasibility of binary land mines.	Requirement referred to USACDC for action.
73	EU-18	Feasibility of current stocks of M55 rockets.	Requirement referred to USACDC for action.
73	EU-19	Capability of the Services to deliver toxic chemical munitions to EUCOM.	Requirement referred to ACSFOR for action.
		REQUIREMENTS BEING ADDRESSED	
68	EU-1	HJ and LJ vs aircraft delivered CB weapons.	Requirement to be satisfied by study.
69	EU-5	M3 and M5 with CS2.	To be satisfied by current development test and Source Book.

FY	Number	Requirement	Status
69	EU-6	155/8" with GB/VX Temperate environment.	To be satisfied by ST 71-110 and data from Test 65-12 & 66-1.
72	EU-8	Operational effectiveness of new chemical incapacitating agents.	To be satisfied by Test 70-50.
72	EU-9	Operational effectiveness of new binary weapons.	To be satisfied by Test 73-10.
72	EU-10	Operational effectiveness of defoliant agents.	To be satisfied by ST 71-116 and Source Book.
72	EU-11	Operational effectiveness of GD via spray and shells.	To be satisfied by Test 69-12.
72	EU-12	Toxics for barrier operations.	To be satisfied by CT1, CT2, & Source Book & Study 75-110
73	EU-14	Determine the feasibility of using the M-8 Chemical Alarm remoted to a central location to monitor toxic munition storage igloos.	To be satisfied by ST 72-117
73	EU-15	Stockpile-to-target sequence for binary weapons systems.	To be satisfied by Test 73-10.

CINCAL REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS SATISFIED, DELETED OR PASSED TO OTHER AGENCIES	
70/73	AL-2	M23 and pop-up mines in snow.	Passed to USACDC for action.
70/73	AL-6	M8 alarm in Arctic.	Satisfied by Test 63-3.
73	AL-9	Extend casualty tables to -20°F.	Passed to USACDC for action.
70/73	AL-3	BLU 19/33 in soft snow.	Satisfied by Test 65-11.
		REQUIREMENTS BEING ADDRESSED	
70/73	AL-1	GB Spray in Arctic.	To be satisfied by Tests 68-12 & 69-12 & by Studies 71-110 & 71-120.
70/73	AL-4	GB/VX effects in low temperatures.	To be satisfied by Test 69-12.
70/73	AL-7	Binary effectiveness in Alaska.	To be satisfied by Test 73-10 & Study 71-121.
73	AL-8	GA and GD against US in Arctic.	To be satisfied by Test 69-12.

CINCSTRIKE REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS SATISFIED, DELETED, OR PASSED TO OTHER AGENCIES	
70/71	ST-3	CBU 30 in Tropics.	Satisfied by information available in Source Book.
73	ST-5	E8/35mm Cartridge effect in Tropics.	Satisfied by Test 66-10.
		REQUIREMENTS BEING ADDRESSED	
70/71	ST-1	M3 and M5 in Tropics.	To be satisfied by development test & Source Book.
70/71/73	ST-2	CBU 16 with best incapacitating agent.	Unsatisfied. No agent available.
70	ST-4	C-130/A A45Y-1 with defoliants effectiveness.	To be satisfied by Source Book & Study 71-116.

CINCONAD REQUIREMENTS

FY	Number	Requirement	Status
	CO-1	Establish feasibility of high altitude release of biological agents.	DTC Test 70-D.
	CO-2	Evaluate E&E trends as attack indicators.	DTC Study S71-151.
	CO-3	Determine effect of unknown diseases in CONAD facilities.	DTC Study S72-112.
	CO-4	Estimate probable post-attack effects resulting from large scale attack with biological agents.	DTC Study S72-112.
	CO-5	Evaluate detection of biological attack using LIDAR/ RADAR.	Cancelled.
	CO-6	Establish effectiveness of CONAD protective systems.	DTC Test 71-75.
	N/A	Arrange for release of classified defense information to Canada.	

AIR FORCE REQUIREMENTS

FY	Number	Requirement	Status
69	AF-1	Determine opnl effectiveness of MC-1 Bomb in a temporate forested environment.	DTC 69-14
73	AF-2	Determine opnl effectiveness of CBU-16.	Consider delay to subsequent FY effort.
73	AF-3	Determine area coverage and predictable pattern density of TMU-28 with MLU-40 cutter.	Incorporated into DTC 70-11.
73	AF-4	Validate procedures for emergency destruction or neutralization of MC-1 and TMU-28 weapons without creating downwind hazard.	Planning stage.
73	AF-5	Determine ability of a tactical operating base to survive and conduct operations in a toxic environment.	Planning stage.

CINCSAC REQUIREMENTS

FY	Number	Requirement	Status
	SA-1	Determine effectiveness of current defensive measures and operational procedures.	DTC Test 71-75

US NAVY REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS BEING ADDRESSED	
70-71	NA-1	Vulnerability of naval shore facilities to biological and chemical attack in tropical and cold weather environments.	Bio/tropic satisfied by DTC 68-71. Chem aspect to be addressed in DTC 70-11. BW to be addressed in DTC 69-33 and DTC 72-70. Cold weather bio addressed by ST 71-154 to be published 1st Qtr 72.
70-71	NA-2	CW agents released in sea fog.	ST 71-112 to be published 1st Qtr 72.
70-71	NA-3	Large area coverage test using BW agents or simulants.	DTC 72-30 applies.
70-71	NA-4	Determine the behavior of agents clouds from a chemical continuous line source released into the atmosphere at the air/sea interface.	ST 71-112 to be published 1st Qtr 72.
72	NA-5	Test information on BW/CW decay and residual hazard.	Considered large knowledge gap. DTC 70-73 addresses bio final report due 2nd Qtr 72. DTC 70-74, DTC 70-D and CT1 and CT2 applies.
70-71-72	NA-6	Meteorological studies in the Marine environment.	Literature search revealed insufficient data to develop a model. DTC 69-33, 72-30 and 72-70 apply.

FY	Number	Requirement	Status
70-71-72	NA-9	Determine characteristics of nocturnal, long-range (100 n. miles), low-level, over-ocean transport and diffusion of a bio-agent simulant.	DTC 72-30 applies.
72	NA-10	Evaluate the hazards involved in various accidents which might occur in the handling of BC agents and agent munitions throughout the logistic cycle, including disposal.	Will be included in 68-12. DTC 69-14 will provide some info from MC-1 bomb. Results of these two tests will be analyzed and a DTC study will be initiated.
73-74	NA-11	To assess the marine and land/sea interface environments for phosphorescent and fluorescent emission spectra of resident flora and fauna.	DTC 70-C applies.
73-74	NA-12	To assess the contamination resulting from release of a CW agent in one or more compartments on a ship.	Will be partially satisfied by ST 71-111 scheduled for 1st Qtr 72.
73-74	NA-13	Shipboard Evaluation of HYFED Phosphorus Detector and HYFED Multi-Agent Detector Systems.	FY73 developmental test shown in Change #1, DTC FY73 Plan p. 86. DTC 74-A applies.
73-74	NA-14	To evaluate the capability of an Advanced Development Model of the FEST (Fluorescent Enzyme Staining Technique) detector, BMA (Bio Multi-Channel Analyzer), and LIDAR (Laser-Radar Detectors) to discriminate and quantify bacterial and/or fungal populations (vegetative, spore, and fragmented forms) under shipboard conditions in various marine background interferant environments.	FY-73 developmental test shown in Change #1, DTC FY73 Plan p. 87. Evaluation possible in DTC 69-33, DTC 70-C, DTC 72-30 and DTC 72-70.

FY	Number	Requirement	Status
73-74	NA-15	Shipboard evaluation of Army M-8 detector system as adapted to fulfill Navy's requirements for point source CW agent detection. System to be evaluated consists of detector unit, alarm unit, suitable power supplies, and RFI shielding case.	FY73 Development test shown in Change #1, DTC FY73 Plan p.88. DTC 74-A applies.
73-74	NA-16	Shipboard evaluation of passive LOPAIR and SPRADAN.	FY73 Development test shown in Change #1, DTC FY73 Plan p.88. DTC 74-A applies.
73-74	NA-17	Operational evsluation of the ASH/SLASH system for BC decontamination of personnel, vehicles, weapons, electronics, roads, buildings, docks, ships, shiploading structures and equipment.	Can be incorporated in DTC 70-11 and DTC 72-70.
		OTHER OUTSTANDING REQUIREMENTS	
70-71-72	NA-7	Medical aspects of test program.	Considered an open ended requirement on all tests.
70-71-72	NA-8	Defensive devices and/or techniques: e.g., detectors, decontamination means.	Developmental testing applies. Open ended requirement.
73-74	NA-18	Operational evaluation of BC individual protection equipment.	Considered a service action for which DTC will provide atmosphere in appropriate tests. Three experimental suits worn in DTC 71-14 (May 71) in non-toxic atmosphere by USMC, NWL Dahlgren, DTC 69-14 and DTC 72-70 can be used.
73-74	NA-19	Evaluate BIGEYE Weapons System.	Dormant, awaiting USN development of BIGEYE.

USMC REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS BEING ADDRESSED	
73	MC-1	Evaluate the Marine Corps standard operating procedures for the M-4 Mod-0 Filling Van/ Aero 14/B Spray Tank stockpile to target sequence using agents GB and VX.	To be incorporated in DTC 68-12.
72	MC-2	Operational evaluation of the MK4 Filling Van with Aero 14B spray tank.	To be incorporated in DTC 69-12. ST 71-115 partially applicable; scheduled for completion 2nd Qtr 72.
71	MC-3	Evaluate and validate Marine Corps proposed safety rules for the employment of the MK4-MOD-0 Filling Van/Aero 14/B Spray Tank by the Marine Wing Weapons Unit under operational conditions.	Run May 71 with GA. To be continued in Feb 72 with GB.

CINCPAC REQUIREMENTS

FY	Number	Requirement	Status
		REQUIREMENTS BEING ADDRESSED	
69	PA-3	Determine the requirements of anti-personnel (anti-infiltration) barriers for a variety of types of terrain, and climatic conditions.	ST 73-110 applies. Rqmt should also be passed to Army CDC.
70-72	PA-5	Info on predicted coverage and effectiveness of one incapacitating chemical and one riot control agent when used to deter, retard, disrupt, and disorganize a CHICOM amphibious landing force on the beaches, or approach to the beaches, to Taiwan.	General RCA info available in DTC CS Source Book. No incap available. ST 71-111 to be published 1st Qtr 72.
71	PA-7	Current estimates of downwind distance of GB vapor hazard in FM 3-10B appear excessive and would restrict friendly use of GB weapons to those limited occasions when favorable wind conditions prevail. An operational test is required to determine accurate GB vapor and VX downwind hazard distances from friendly fires.	ST 73-111 due out FY73. Need test data prior to study; e.g., DTC 69-12.
73	PA-11	Develop and test emergency destruction or neutralization procedures for the MC-1 gas bomb.	DTC 69-14 applies; three phases; Phase I with simulant commences Jun 71.
73	PA-13	Provide test results of Binary-G weapons as completed.	DTC 73-10 applies. Info of Army developmental test of 155mm M687 binary round will be provided. Other info will be provided as developed.

FY	Number	Requirement	Status
		OTHER OUTSTANDING REQUIREMENTS	
68	PA-1	Survivability of flight crews and/or reduction of their efficiency due to prolonged exposure to chemical agents and requirements for protective handling and maintenance equipment for Army flight crews and aircraft in CBR environment.	Results from AF-5 may be applicable. Some info from DTC 69-14 may apply. USAF tests listed Change #1 DTC FY73 Plan, p.78 will apply.
69	PA-2	Determine the optimum incendiary for use in jungle destruction and the techniques and quantitative requirements for employment under a variety of conditions.	No action.
70-72	PA-6	Present systems for defoliation in SEA require on-the-deck delivery from large, slow aircraft. Broader application could be possible if the material or the dispensing system could be changed to permit spraying from much higher altitudes or permit spraying from high-performance aircraft.	DTC/USAF developmental test shown in Change #1, DTC FY73 Plan, p.94 applies. General defoliation info available in Source Book volumes.
73	PA-12	Upon completion of development test replacement for the M3 toxicological suit. Replacement being engineered by USAF.	Awaiting replacement item and specific test parameters. Referred to CSAF who could not identify.

CINCLANT REQUIREMENTS

FY	Number	Requirement	Status
		SATISFIED REQUIREMENT	
71-73	LT-12	Determine effectiveness of herbicide spray operations when conducted from riverine warfare water craft against tropical vegetation.	Requirement satisfied. DTC report TJ-58, dated Apr 70 (C)
		REQUIREMENTS BEING ADDRESSED	
70	LT-6	What is penetration effectiveness of GB agents released by aerial delivery over tropical rain forest areas.	Bio aspects addressed by ST 71-152 due out 1Qtr72. No action currently planned on chemical aspect.
71-73	LT-9	Situation models should be constructed to study the resultant effect on personnel in various states of readiness and the ability of individuals to perform their mission at the time of attack and at specified intervals thereafter. For example, in assessing the CB agent penetration of ships, also evaluate individual ability to initiate protective measures, conduct equipment and personnel decontamination, and to perform their mission. The total results will give true vulnerability.	Addressed by Volume X of DTC Source Book due out 1Qtr72.
71-73	LT-10	Operationally evaluate various decontaminating materials and methods to ascertain a true relationship between each and the effect on men, material and mission.	Addressed by ST 72-111 due out late FY72.
71-73	LT-11	Operationally evaluate all current and advanced research and development CB warning devices.	Info will be provided as developed. DTC Source Book on individual chemical agents contain applicable info. A separate Source Book on Bio agent alarms will be published.

FY	Number	Requirement	Status
71-73	LT-13	Determine the military value of biological and chemical agents against shore and near shore targets when released as a point source (single and multiple) between shore and three miles off shore.	DTC 68-71 published Mar 69 applies. DTC 69-33 and DTC 72-70 will apply. ST 71-154 to be published 1Qtr72 also applies.
73	LT-16	Evaluate ability of amphibious assault ship (LPH) to conduct an amphibious assault in a toxic environment.	ST 71-111 to be published 1Qtr72 applies.
73	LT-17	Determine whether existing gas-tight integrity of amphibious shipping, including new construction, is adequate for operational requirements.	Related to LT-16, ST 71-111 applies.
		OTHER OUTSTANDING REQUIREMENTS	
69	LT-1	Determine the effectiveness of available herbicides for use in barrier land mine fields overgrown primarily with grasses in a tropical environment. Tests should determine the time cycle for reapplication of agents in order to ensure the grass is killed.	DTC Source Book on Herbicides will partially answer rqmt. After publication, a DTC study will be initiated.
69	LT-2	Determine best method applying defoliants and herbicides to tropical sugar cane fields in order to kill the cane in the shortest time and enhance subsequent burning of the fields by application of napalm.	Same as LT #1.
70	LT-4	Include CINCLANT as an interested party in tests of any new incapacitants.	Will be done automatically. Recommend requirement be withdrawn.

FY	Number	Requirement	Status
70	LT-5	What is the effective downwind travel of surface-released CB over water assuming fifty percent of original strength desired.	DTC informed that answer must come from testing. A reasonable answer could be predicted now. Awaiting clearance for open air release.
70-73	LT-8	Determine effectiveness of high speed low-level aerial delivery of defoliants.	DTC/USAF PAU-8 Developmental Test shown in Change #1, DTC FY73 Plan, p.94 applies.
72-73	LT-14	Determine operationally the effectiveness of chemical incapacitants and associated spray munitions disseminated by high performance aircraft.	Awaiting agent.
73	LT-15	Evaluate the available protective masks to determine individual protection afforded in both smoke and an NBC environment.	Info available in published literature. Recommend either withdraw rqmt or amplify.
73	LT-19	Evaluate an integrated CB defensive equipment system to determine the capability for passive air base defense and to evaluate tactical Air Force capability to operate in a toxic environment.	USAF developmental tests of several items listed in Change #1, DTC FY73 Plan, p. 78 will apply. Could be incorporated into DTC 68-12 and DTC 69-14.

[redacted]

DTC Outline Plans for FY 73. (U)

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MAR 1971

Distribution: DoD only: others to Commanding General, Deseret Test Center, Attn: STEPD-TT-JP(S). Fort Douglas, Utah 84113.

[redacted]

[redacted]

RDTE Project No .-X-6-65704-D-L12
USATECOM Project No 5-CO-473-000-015

DTC OUTLINE PLANS FOR FY 73 (U)

MARCH 1971

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DTC 71-17

[redacted]

[redacted]

[redacted]

A new investigational technique called the microthread has been developed which employs spider webs as a suspending support for aerosolized microorganisms. The spider web is approximately one micron in diameter and the microbial aerosol particle becomes attached to the web that is strung on a little metal racket. Air may be drawn over the suspended microbe, thus somewhat simulating the conditions of a free-floating aerosolized microbe. Using this technique, captive aerosolized microbes can be studied in environments where free-floating aerosols may be considered a hazard Use of this technique is proposed for a study of the effects of air pollutants on bacterial aerosols, and is considered a good supplementary tool for studying the effects of atmospheric pollution The release of free microbial aerosols into the atmosphere of the urban environment, however, is still the best method of studying these effects.

[redacted]

[redacted]

[redacted]

SECTION IV

TEST CONDITIONS (U)

1. [redacted] TEST SITE

HALF NOTE was conducted in a subtropical marine environment, approximately 80 nautical miles south-southwest of Oahu, Hawaii [redacted]

[redacted]

3. [redacted] FLUORESCENT TRACER

The zinc cadmium sulfide used in HALF NOTE was type 3206, green, lot number SCM FPG-.1, produced by Sylvania Electric Products, Inc. [redacted]

4. (U) FP DISSEMINATOR

An EW-2 disseminator was used to disseminate the FP, [redacted]

[redacted]

[redacted]

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OUTLINE PLANS FOR FY '74 (U)

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(12) 160 p.

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Appendix I (S) Status of Joint CINCS/Services CB Requirements (U)

NOTE: AR = USA MC = USMC EU = CINCEUR SA = CINCSAC
NA = USN AL = CINCAL LT = CINCLANT RE = CINCRED
AF = USAF CO = CINCONAD PA = CINCPAC

NOTE:	REQUIREMENT		WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
R-2	AR-2	Appraisal of chemicals for barrier operations.	----	Study 73-110 and Test 70-11, Phase 2	----	----
R-3	AR-3	CB alarms in field situations.	----	Study 73-114	----	----
R-4	AR-4	Evaluate persistency and secondary aerosol hazard of biological agents.	Partially satisfied by Final Report, Test 70-73, Feb 1972	----	----	----
R-5	AR-5	Radar signature of CB items.	----	Study 73-114 and Test 72-30	Test 74-010	----
R-6	AR-6	Determine biological effects in a variety of environments, including solar radiation.	Test 70-74, Phase I	Test 70-74, Phase I	Test 74-030	----
R-10	AR-10	Develop data on time and effort required to decontaminate.	----	Study 73-115	----	----
R-11	AR-11	Evaluate operational performance of RCA, artillery free rocket in a jungle environment.	----	----	----	AR-11
R-16	AR-16	Characterize the long range E&E problems concerning specific biological agents and host-vector systems.	Requirement referred to AMC	----	----	----
R-19	AR-19	Determine downwind hazard of nerve agents to establish threshold sensitivity criteria and downwind cumulative dose hazard for personnel up to 50 miles from dissemination point -- GA, GB and VX.	----	Study 73-111	----	----

	REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
AR-21	Determine effectiveness of CS2 disseminators in open, grass covered terrain, and under jungle conditions.	Addressed by Source Book Volume 2, Part 1, CS, and Study 71-113	Study 73-112	----	----
AR-24	Determine detection effectiveness of radar for CB agent clouds.	----	Study 73-114 and Test 72-30	Test 74-010	----
AR-25	Nonpathogenic agent to derive analog procedure for estimating decay of pathogens.	Test 70-74, Phase 1	Test 70-74, Phase 1	----	----
AR-28	Evaluate performance of multipurpose agent detection kit.	----	----	----	----
AR-29	Evaluate combat vehicle chemical alarm.	----	----	----	AR-29
AR-30	Evaluate incapacitating agent alarm.	----	----	----	AR-30
AR-31	Determine effectiveness of binary lethal agent munitions in temperate, wooded, tropic and arctic environments. Includes evaluation of adequacy of simulants.	----	----	Study 74-110	----
AR-33	Refinement of IVA sampling methods and and effectiveness evaluation	----	----	----	AR-33
AR-34	Hazard assessment of "rain" concept.	Addressed by Study TJ31	Test 70-11, Phase 2	Test 74-010	----
NA-1	Vulnerability of naval shore facilities to CB attack in tropical and cold weather environments.	Partially satisfied by Study 71-154, Phase 1 (Biological)	Test 70-11, Phase 2 (Chemical)	Test 72-70 (Biological)	----
NA-2	CB agents released in sea fog.	Study 71-112 and Test 69-33, Phase 1	----	Test 72-70 (Biological)	----

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	REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
NA-3	Large area coverage test using biological agents or simulants.	Test 72-30 (Planning)	Test 72-30	----	----
NA-4	Determine the behavior of agent clouds from a chemical continuous line source released into the atmosphere at the air-sea interface.	Study 71-112	Study 73-111	----	----
NA-5	Test information on CB decay and residual hazard.	Addressed by Test 70-73 Final Report, Test 70-74, Phase 1, CT1 & CT2	Test 70-74, Phase 2 CT1 and CT2	Test 74-030	----
NA-6	Meteorol al studies in the marine environment.	Test 72-30 (Planning)	Test 72-30	----	----
NA-7	Medical aspects of test program.	----	----	----	NA-7
NA-8	Defensive devices and/or techniques; detectors and decontamination means.	----	Study 73-115	----	----
NA-9	Determine the characteristics of nocturnal, long-range (100s. miles), low-level, over-ocean transport and diffusion of a biological agent simulant	Test 72-30 (Planning)	Test 72-30	----	----
NA-10	Evaluate the hazards involved in various accidents which might occur in the handling of CB agents and agent munitions throughout the logistic cycle, including disposal.	----	----	----	NA-10
NA-11	To assess the marine and land/sea interface environments for phosphorescent and fluorescent emission spectra of resident flora and fauna.	Test 70-C	Test 70-C	----	----

		REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
1	NA-12	To assess the contamination resulting from release of a CW agent in one or more compartments on a ship.	Study 71-111, Phases 2 and 3	----	----	----
1	NA-13	Shipboard evaluation of HYFED Phosphorus Detector and MADS Multi-Agent Detector System.	Test 70-C	----	----	----
1	NA-14	To evaluate the capability of the BMA (Biological Multichannel Analyser) and LIDAR (Laser Radar Detector) to discriminate and quantify bacterial and/or fungal population (vegetative, spore, and fragmental forms) under shipboard conditions in various marine background interferant environments.	Test 70-C (BMA)	----	Service Developmental Test (LIDAR)	----
1	NA-15	Shipboard evaluation of Army M-8 detector system as adapted to fulfill Navy's requirements for point source CW agent detector.	----	Adjunct to appropriate joint test	----	----
	NA-16	Shipboard evaluation of passive LOPAIR.	----	----	----	NA-15
	NA-17	Operational evaluation of the ASH/SLASH system for CB decontamination of personnel, vehicle, weapons, electronics, roads, buildings, docks, shiploading structures and equipment.	----	----	Service Developmental Test	----
	NA-18	Operational evaluation of CB individual protection equipment.	----	Test 70-11, Phase 2	----	----
	NA-19	Evaluate BIGEYE weapon system.	----	----	----	NA-19
	NA-20	Determine effectiveness of radar and visual detection of chemical "rain" type of attack.	----	----	Test 74-010	----

		REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
NA-1	NA-21	Determine concentration-time profiles at the target for simulated long-range BW deliveries at sea.	----	Test 72-30	----	----
NA-1	NA-22	Evaluate the Optimum Wind Track Ship Routing (OWTSR) technique.	----	----	Study 74-112	----
NA-1	NA-23	Determine the respiratory hazard for a sailor who is exposed to a secondary aerosol from another sailor who has been exposed to a biological attack.	----	Study FY 73		----
NA-1	NA-24	Determine effectiveness of visual detection of chemical and biological dissemination.	----	Tests 70-11, Phase 2	Test 74-010	----
AF-1	AF-1	To evaluate (1) the operational effectiveness of the MC-1 bomb when delivered from a jet aircraft and (2) EOD/Safety Procedures for the MC-1 bomb.	Test 69-14, Phase 1	Test 69-14, Phase 2	Study 74-115	----
AF-1	AF-2	To determine/validate delivery tactics, logistic support and stockpile-to-target procedures for the CBU 16A/A incapacitating chemical system.	Deferred until FY 75	----	----	----
AF-1	AF-3	Determine operationally the area coverage and predictable pattern density of the TMU 28/B chemical spray tank/MLU-50/B cutter in a forested environment.	----	----	----	AF-3
AF-1	AF-5	Determine AF units ability to survive and conduct operations in a toxic environment.	----	Test 70-11, Phase 2	----	----

		REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
A	AF-6	Validate procedures for emergency destruction or neutralization of MC-1 and TMU-28/B weapons.	----	Test 73-11.	----	----
A	AF-7	Evaluate the A/E 23 D-1(V) and A/E 23 D-2 Automatic Chemical Agent Alarm Set.	----	----	----	AF-7
A	AF-8	Evaluate the AN/CAQ-1 Alarm Set, Nerve Agent.	----	----	----	AF-8
A	AF-9	Evaluate the CB Disposable Overgarment.	----	----	Defensive Test Chamber	----
A	AF-10	Safety evaluation of the TMU-28/B Spray Tank.	----	----	Test 74-014	----
M	MC-1	Evaluate Marine Corps standing operating procedures for the M-4 Mod-0 filling van/ Aero 14B spray tank stockpile to target sequence using agents GB and VX.	----	----	----	MC-1
M	MC-2	Operational evaluation of the MLu filling van with Aero 14B spray tank.	----	----	Study 74-114	----
M	MC-3	Evaluate and validate Marine Corps proposed safety rules for the employment of the MC-4 Mod-0 filling van/Aero 14B spray tank by the Marine Wing Weapons unit under operational conditions.	Test 71-14	----	----	----
M	MC-4	Evaluate and assess the degradation and vulnerability of a marine amphibious force embarked in LVTP-7 amphibious vehicles when subjected to a G and V agent aerial spray attack during and following an amphibious assault.	----	----	Tests 74-012 and 74-010	----

		REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
MC	MC-5	Evaluate and assess the integrity of the Aero 14B chemical spray tank under operational conditions using agents GB and VX, and standard decontaminants.	----	----	Test 74-116	----
MC	MC-6	Evaluate and assess the contamination hazards to the A4 and A6 aircraft by agents GB and VX when disseminated from the Aero 14B chemical spray tank at all permissible weapons stations.	----	----	Test 74-013	----
MC	MC-7	Evaluate and assess the hazards and determine the maximum safe time that an Aero 14B spray tank can remain with 3-5 gallons residual GB or VX without damaging the tank or hazarding personnel prior to operational recycling or decontamination.	----	----	Test 74-116	----
MC	MC-8	Evaluate and assess the feasibility of the MX-4 auxiliary filling system when used to transfer VX and HD, and determine the possible hazards resulting from vapor pressure.	----	----	Test 74-011	----
MC	MC-9	Evaluate and assess the M12A1 capability to decontaminate the MX-4 chemical filling van and adjacent areas when contaminated with GB and VX.	Test 71-14	----	----	----
MC	MC-10	Evaluate and assess the degradation of the Marine Wing Weapons Unit and the Nuclear Ordnance Platoon in the performance of their missions in a toxic environment.	----	----	Test 74-010	----
AI	AL-1	GB spray in Arctic.	----	----	----	AL-1
AI	AL-4	GB/VX effects in low temperatures.	Partially satisfied by Test 69-12	----	----	AL-4

		REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
-8	AL-8	GA and GD against US in Arctic.	Partially satisfied by Test 69-12	----	----	AL-8
-1	CO-1	Feasibility of high altitude release of biological agents.	Test 70-D, Phase 2	Test 70-D, Phase 2	----	----
-2	CO-2	E and E trends as attack indication.	Requirement referred to AMC	----	----	----
-3	CO-3	Effect of unknown diseases on CONAD facilities.	Requirement referred to AMC	----	----	----
-4	CO-4	Estimation of probable postattack effects resulting from large scale bio agent attack on U.S.	Combined with CO-3	----	----	----
-5	CO-5	LIDAR/RADAR detection of bio agents.	----	Study 73-114 and Test 72-30	----	----
-6	CO-6	Effectiveness of CONAD protective systems.	Study 71-160, Phase 1, Aug 1971	----	----	----
-3	EU-3	Chemical weapon target selection.	Requirement referred to ACSFOR for action	----	----	----
-5	EU-5	M3 and M5 with CS2.	----	73-112	----	EU-5
-6	EU-6	155/8" with GB/VX, Temperate environment.	Study 71-110, Phases 1 and 2	----	----	----
-8	EU-8	Operational effectiveness of new chemical incapacitating agents	----		Study 74-111	----
-9	EU-9	Operational effectiveness of new binary weapons.	----		Study 74-110	----

		REQUIREMENT	WITHDRAWN, CANCELLED, DEFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
EU-1(	EU-10	Operational effectiveness of defoliant agents.	Deferred by CINCEUR	----	----	----
EU-1:	EU-11	Operational effectiveness of GD via spray and shells.	Addressed by Test 69-12	----	----	----
EU-1:	EU-12	Toxics for barrier operations.	----	Study 73-110 and Test 70-11, Phase 2	----	----
EU-1:	EU-13	Hazard associated with retaining Central Foundry GB-filled 155mm Projectile.	Cancelled per information received from AMC Safety Board.	----	----	----
EU-1.	EU-14	Feasibility of M-8 chemical alarm in storage igloos.	Requirement referred to to Edgewood Arsenal.	----	----	----
EU-1	EU-18	Feasibility of current stocks of M55 rockets.	Requirement referred to MUCOM for action.	----	----	----
EU-1	EU-19	Capability of the Services to deliver toxic chemical munitions to EUCOM.	Requirement referred to ACSFOR for action.	----	----	----
EU-2	EU-20	Determine the effectiveness of RCA when employed in a tactical role against enemy forces in a European environment.	----	----	Study 74-113	----
LT-1	LT-1	Determine the effectiveness of available herbicides for use in barrier land minefields overgrown with grasses in a tropical environment.	Source Book: Vol. 7, Part 1, published Dec 1971, and Part 3.	----	----	----
LT-2	LT-2	Determine the best method for applying defoliants and herbicides to tropical sugar cane fields in order to kill the cane in the shortest time and enhance subsequent burning of the fields by application of napalm.	Source Book: Vol. 7, Part 1, published Dec 1971, and Part 3.	----	----	----

	REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
LT-3	What persistency duration can be anticipated for riot control agent CS2 when used as contaminant to deny access to an exterior area such as base perimeter of fence line, or an interior area such as ordnance magazines and supply warehouses.	Addressed by Source Book: Vol. 2, Part 1, CS, published Sep 1970, and Study 71-113.	Study 73-112.	----	----
LT-5	Determine effective downwind travel of surface-released CB over water, assuming 50 percent of original strength desired.	----	Study 73-111.	----	----
LT-6	Penetration effectiveness of CB agents released by aerial delivery over tropical rain forest areas.	Study 71-152, Phase 1. Published July 1971.	Study 71-152, Phase 2	----	----
LT-7	Percentage increase in lethal casualties expected from an incapacitant agent attack on a high-density, malnutritioned, urban population as opposed to test predictions concerning a less vulnerable populace.	Study 72-114. Phase 1, Chemical, and Phase 2, Biological, in progress.	----	----	----
LT-7A	Describe and evaluate the dissemination and effectiveness of biological and chemical agents released in military/industrial urban areas and to establish the number of primary and secondary casualties resulting from the attack.	Study 72-114. Phase 1, Chemical, and Phase 2, Biological.	----	----	----
LT-8	Determine the effectiveness of high speed low-level aerial delivery of defoliants.	----	Developmental Test of the PAU-8/A Spray Tank.	----	----

	REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
LT-9	Situation models constructed to study the resultant effect on personnel in various states of readiness and the ability of individuals to perform mission at the time of attack and at specified intervals thereafter.	----	----	----	LT-9
LT-10	Operationally evaluate various decontaminating materials and methods to ascertain a true relationship between each and the effect on men, material and mission.	----	Studies 72-111 and 73-115	----	----
LT-11	Operationally evaluate all current and advanced research and development CB warning devices.	----	Study 73-114	Test 74-010	----
LT-13	Determine the military value of biological and chemical agents against shore and near shore targets when released as a point source (single and multiple) between shore and three miles off-shore.	Study 71-154, published Aug 1971 (addressed biological only)	Test 70-11, Phase 2	----	----
LT-14	Determine operationally the effectiveness of chemical incapacitants and associated spray munitions disseminated by high performance aircraft.	----		Study 74-111	----
LT-16	Evaluate the ability of the amphibious assault ship (LPH) to conduct an amphibious assault in a toxic environment.	Study 71-111, Phase 1 published Oct 1971, and Study 71-111, Phase 2	Study 71-111, Phase 3	----	----
LT-17	Determine whether existing gastight integrity of amphibious shipping including new construction, is adequate for operational requirements.	Study 71-111, Phase 1 published Oct 1971, and Study 71-111, Phase 2	Study 71-111, Phase 3	----	----

	REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
LT-19	Evaluate an integrated CB defensive equipment system to determine the capability for passive air base defense and to evaluate tactical air force capability to operate in a toxic environment.	----	Test 70-11, Phase 2	----	----
LT-20	Evaluate the Optimum Wind Track Ship Routing (OWTSR) Technique.	----	----	Study 74-112	----
PA-1	Survivability of flight crews and/or reduction of their efficiency due to prolonged exposure to chemical agents; and requirements for protective handling of maintenance equipment and aircraft by Army flight crews in a CB environment.	Requirement referred to CDC for action	----	----	----
PA-2	Determine the optimum incendiary for use in jungle destruction and the techniques and quantitative requirements for employment under a variety of conditions.	Requirement cancelled by requestor, 29 Jan 72	----	----	----
PA-3	Determine the requirements for anti-personnel (anti-infiltration) barriers for a variety of types of terrain and climatic conditions.	Requirement referred to CDC for action	----	----	----
PA-5	Information on predicted coverage and effectiveness of one incapacitating chemical and one riot control agent when used to deter, retard, disrupt and disorganize a CHICOM amphibious landing force on the beaches, or approach to the beaches of Taiwan.	Satisfied by Study 71-111, Phase I. Published Oct 1971	----	----	----

		REQUIREMENT	WITHDRAWN, CANCELLED, REFERRED, SATISFIED OR BEING ADDRESSED	TO BE ADDRESSED IN FY 73	TO BE ADDRESSED IN FY 74	UNFULFILLED/ UNADDRESSED
PA	PA-15	Determine quantity of CS_2 and disposal techniques required to restrict use of bunkers, caves or tunnels for periods of from one week to six months.	-- -	----	----	PA-15
PA	PA-16	Provide information necessary for improving control of herbicide application thereby minimizing unwanted side effects.	Requirement forwarded to Fort Detrick	----	----	----
PA	PA-17	Verify coverage tables in FM 3-7 for the XM629 and M630 base-ejection CS cartridges.	Test EC132 (105 CS Battalion School)	----	----	----
SA	SA-1	Evaluate vulnerability of SAC operational locations to attack by chemical and biological agent.	Study 71-160, Phase 2	----	----	----
SA	SA-2	Identify an agent fill for the MC-1 bomb and SUU-30 dispenser that is capable of sustaining the long duration, high altitude, and cold temperature environment associated with bomber aircraft. If a suitable agent fill cannot be found for existing munitions, investigate the development of a new munition.	Requirement referred to USAF for action	----	----	----
RE	RE-1	Effectiveness of M3 and M5 in Tropics.	----	----	----	RE-1
RE	RE-4	C-130/A/A45Y-1 with defoliants effectiveness.	----	----	----	RE-4

APPENDIX II [redacted]. CB TECHNICAL DATA SOURCE BOOK (U)

VOL.	TITLE	PUBLISHED	SCHEDULED COMPLETION DATE
I	Introduction and Summary	Feb 71	
II	Riot Control and Incaps		
	Part 1: Agent CS	Sep 70	
	Part 2: Agent DM	May 71	
	Part 3: Agent BZ		Feb 72
	Part 4: Agent CN	May 71	
III	G Nerve Agents		
	Part 1: Agent GA		Jun 72
	Part 2: Agent GB		Aug 72
	Part 3: Agents GD, GF		Oct 72
IV	V Nerve Agents		
	Part 1: Agent VX		Apr 72
V	Blood, Blister, & Choking Agents		
	Part 1: Agent H	Mar 71	
	Part 2: Agent AC	Sep 71	
	Part 3: Agents CK, CX		Jun 73
	Part 4: Agent CG		Jun 73
VI	Toxin Agents		
	Part 1: Agent PG		Aug 72
	Part 2: Agent XR		Dec 72
VII	Antiplant Agents and Diseases		
	Part 1: LNX	Dec 71	
	Part 2: TX		Not Started
	Part 3: LNP		
	Part 4: LX		

VOL.	TITLE	PUBLISHED	SCHEDULED COMPLETION DATE
VIII	Antipersonnel Bacterial Diseases		
	Part 1: Agents SR, JT, MO		Jun 72
	Part 2: Agent TR		Jun 72
	Part 3: Agent MX	Jul 71	
	Part 4: Agent LE		Not Started
IX	Antipersonnel Viral Rickettsial Fungal Diseases		
	Part 1: Agent OC		
	Part 2: Agents LH, MN, NT		
	Part 3: Agents DK, FX, TD		Not Started
	Part 4: Agent FA		
	Part 5: Agent KG		
	Part 6: Agent SI		
	Part 7: Agent LU		
X	General Models		May 72
XI	Weapons System Digest		Jun 73
XII	Assay and Data Reduction		Not Started
XIII	Bio Detectors and Alarms		Not Presently Started
XIV	Bio Non-Pathogen Tracers		Not Started
XV	Chemical Simulants		Not Started

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Deseret Test Center Outline Plans for FY 75 (U)

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OUTLINE PLANS FOR FY 75 (U)

FEBRUARY 1973

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EXEMPT FROM GDS OF EXECUTIVE ORDER 11652
EXEMPTION CATEGORY (3)
DECLASSIFY ON: NA

DTC 73-21

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SECTION 1

(U) INTRODUCTION (U)

1. This document outlines the Deseret Test Center (DTC) test proposals for FY 75 and presents an updated collection of validated CB knowledge requirements submitted by the CINCS/Services. The program is designed to provide essential information to evaluate and improve the defensive posture of the United States.

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SECTION 2

(S) DTC FY 75 PROGRAM SUMMARY (U)

Based on requirements received, essential tests and studies proposed for FY 75 are listed in Table I.

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Table 1 [redacted]. Summary of CINC/Service Tests/Studies Proposed for FY 75 (U)

Test/Studies	Disposition	Requirements	Requesting Agency
A. Joint Operational Test/Studies			
S150A Emergency Projectile Disposal	Operations Research Study 1. Study to determine disposal procedures. 2. Limited testing to verify procedures outlined in study.	1. Develop and evaluate procedures for disabling chemically filled projectiles without contamination and to prevent enemy use.	CINCEUR
T150A Effects of Chemical Attack on Tactical Operations	Operational Test DTC 70-11 and DTC 74-010 should be completed prior to answering this requirement.	Determine effects of attack with persistent chemical agents in tactical staging and supply areas to permit a realistic appraisal of the effects of such attacks on tactical operations. Specifically: (1) Area coverage from aerial or missile attack wherein tactical operations would be hazardous; (2) time that terrain and equipment remains hazardous; (3) decontamination measures that are feasible for terrain and equipment; (4) boundary identification for contaminated areas; (5) feasibility of traversal using protective gear; and (6) determine degree of hinderance to operations imposed by the use of protective gear and decontamination requirements.	USA
I450A Vulnerability of Troops to Biological Agents in Barrier Role	Technical Investigation 1. Study required to determine overall scope of testing.	1. Evaluate the threat to troops from biological agents employed in a barrier role with agent deposited on terrain and equipment in particle ranges of 12 to 50 microns.	USA

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	2. Laboratory/chamber testing may be required. 3. Field testing with simulants.	Specifically: (1, Dissemination/ deposition patterns from various devices such as mines; (2) life of the agent, both as aerosol and as deposited agent, to include agent return as secondary aerosol; and (3) necessity and procedures for terrain/equipment decontamination.	
	CARRYOVER		
T400N Aerosol Diffusion in Marine Environment	Operational Test (Tracer)	1. Determine the characteristics of nocturnal, long range (100 nautical miles) low level, over-ocean transport and diffusion of a biological tracer.	USN
T405N Coastal Target Vulnerability	Operational Test (Tracer Diffusion Test)	1. Determine the military value of agents against shore and near-shore targets when released as a point source (single and multiple) between shore and 3 miles off-shore. 2. Determine effectiveness of agents released in sea fog and demonstrate vulnerability of shore facilities to off-shore release of agents during periods of fog.	USN CINCLANT
I110F Emergency Destruction of Stockpiled Chemical Weapons	Technical Investigation (Possible completion in FY	1. Evaluate emergency destruction or neutralization procedures for the MC-1 Bomb and TMU 28/B Spray Tank.	USAF CINCPAC
I125M A-4/A-6 Aircraft Contamination Hazards	Technical Investigation 1. Study 71-115 addressed A-4 aircraft.	1. Evaluate and assess the contamination hazard to the A-4 and A-6 attack aircraft when using the Aero 14B Chemical Spray Tank with agents GB and VX. Determine the hazard to aircraft ground crew and	USMC

Table 1 [redacted] Summary of CINC/Service Tests/Studies Proposed for FY 75 (U) (Continued)

Test/Studies	Disposition	Requirements	Requesting Agency
	2. Study may satify requirement	weapons load'ng team personnel. Consider all available weapons stations.	
I130F Safety Evaluation of ZMU 28/B Spray Tank	Technical Investigation	1. Determine operational hazards associated with the ZMU 28/B Spray Tank when subjected to bullet impact and inadvertent release during takeoff and landing and to obtain data on the stockpile-to-target sequence.	USAF
T410A Effects of Environmental Factors on Bio Decay	Operational Test (Possible completion in FY 74)	1. Determine biological decay as affected by a variety of environments (including sunlight). 2. Obtain test information on biological decay and residual hazard.	USA
B. Developmental Tests			
D450A Biological Detection and Warning System	Engineer Design	Obtain data essential to field evaluation and possible standarization of candidate biological detection alarms and warning systems.	USA
D200A Projectile, 8-inch Lethal Binary	Engineer Design	Demonstrate aerodynamic stability, similitude, and accuracy of the 8-inch binary projectile; and to determine in-flight mixing and dissemination characteristics by use of simulants.	USA
D205A Projectile, 155mm IVA Binary	(RE) Component Development	To confirm metal parts integrity, ballistic stability and similitude, functioning characteristics and dissemination.	USA

D455A Mobile Biological Detection	Advanced Developmental	To evaluate approaches and capabilities of devices which will detect biological agents and which have a high degree of mobility for use in ground and air configurations.	USA
D210A Aerial Rocket Incapacitating	Component Development (RE or PE)	To establish functional reliability of component assemblies selected for the warhead design and establish performance characteristics.	USA
D215A Binary Rocket	Component Development	To demonstrate the feasibility of the proposed system and the suitability of the system components being evaluated to accomplish: (1) Satisfactory performance during flight; (2) timely initiation of binary reaction; and (3) satisfactory mixing of the binary reactants to produce the desired chemical reactions.	USA
D220F A/E 23D-1 (V) and A/E 23D-2	Development	To perform field endurance and reliability trials while challenging with chemical agents under field conditions.	USAF
D650F MOD Kit for Existing Structures	Development	Determine collective protection effectiveness and human factor limitations under simulated agent chemical/biological attack.	USAF

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D151A 155mm Incapacitating Agent Round	Engineer Design Test	To evaluate munition design concepts and to test prototype hardware.	USA
D165A Passive LOPAIR Alarm	Advanced Developmental Test	To assess the effectiveness of the prototype devices to detect and/or identify airborne agents.	USA

Table 1 (C). Summary of CINC/Service Tests/Studies Proposed for FY 75 (U) (Continued)

Test/Studies	Disposition	Requirements	Requesting Agency
D160A Liquid Agent Detector	Advanced Developmental Test	To evaluate optimum supporting technology and effectiveness of the detector to perform under operational use.	USA
D175A Incapacitating Agent Detector Kit	Advanced Developmental Test	To evaluate the effectiveness of the kit to detect incapacitating agents in the normal battlefield environment.	USA
D710A 155mm CS Round	Advanced Developmental Test	To determine degree to which prototype items meet design criteria.	USA
D170A Base Laboratory for Air/Soil Sampling	Feasibility Test	To evaluate the adequacy of prototype sampling and analytical devices for collection and identification of chemical agent.	USA
D185A Rocket, Incapacitating 2.75-inch EA 3834A LSFFAR	Engineer Design Test	To determine the performance of the 2.75-inch incapacitating agent rocket with respect to the Required Operational Characteristics (ROCS) for which it was designed.	USA
D620A Water Treatment Unit, Reverse Osmosis	Engineer Design Test	To evaluate the performance against the requirements in ROCS.	USA
D800A Projectile, 152mm	Engineer Design Test	To evaluate the performance against the requirements in ROCS.	USA
D205A Compositive Simulation Field Test	Feasibility Test	To examine the feasibility of simulating the field behavior of toxic agent disseminated in the XM687 projectile by means of a program of field tests employing a variety of simulants chosen to bracket the appropriate characteristics of the toxic agent.	USA

C. Suitability and Environmental/Surveillance Tests

U150A Effectiveness of Army Wet Weather Gear	Engineering (type) Test 1. Literature search. 2. Laboratory and/or chamber testing may be required.	1. Determine the protection against chemical agents afforded by standard Army wet weather gear (overall wet weather, coat and parka wet weather, coat).	CINCEUR
U100A Projectile 155mm Binary XM687	Engineering/Expanded Service Test	To evaluate whether the item meets the ROCS as specified in the coordinated test program for projectile 155mm GB2 XM687.	USA
U750A Rocket 66mm CS, XM96	Engineering Test	To evaluate whether the item meets the ROCS as specified and provide a basis for type classification.	USA
U650A Modular Collective Protection Equipment	Engineering Test	To provide an engineering test evaluation of the protective capability of the modular collective protection equipment and its capability for satisfactory operations world-wide.	USA
Environmental Surveillance Items	Environmental Surveillance	To evaluate the reliability and storage stability of items during long-term storage under field conditions (environmental surveillance).	USA

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U725A Cartridge 40mm Tactical CS XM651 E3	Engineering Service Test	To evaluate whether the item meets the military and technical characteristics as specified in ROCS.	USA
U740A Cartridge 40mm CS XM627	Engineering Test	To evaluate whether the item meets the military and technical characteristics as specified in ROCS.	USA

Table 1 [redacted]. Summary of CDNC/Service Tests/Studies Proposed for FY 75 (U) (Continued)

:/St	Test/Studies	Disposition	Requirements	Requesting Agency
ype late	USOSA Prototype Munition Candidate for EA 3834	Engineering Service Test	To evaluate whether the item meets the military and technical characteristics as specified in ROCS.	USA

APPENDIX I

[redacted] STATUS OF JOINT CINCS/SERVICES CB REQUIREMENTS (U)

NOTE: AR = USA MC = USMC EU = CINCEUR SA = CINCSAC
NA = USN AL = CINCAL LT = CINCLANT RE = CINCRED
AF = USAF CO = CINCONAD PA = CINCPAC

	Requirement	Withdrawn, Cancelled, Referred, Satisfied or Being Addressed	To Be Addressed in FY 74	To Be Addressed in FY 75	Unfulfilled/ Unaddressed
AR-3	Determine feasibility of using CB alarms in field situations.	-----	Test 74-010 (T117M)	Test T150A	-----
AR-5	Determine radar signature of CB items.	Test 72-30 (T40(M) (Referred)	Test 74-010 (T117M)	Test T150A	-----
AR-6	Determine residual biological effects in a variety of environments, including solar radiation.	Test 73-30 (T415A) Test 70-74 (T41GA)	Test 74-030 (T410A)	Test T410A	-----
AR-10	Develop data on time and effort required to decontaminate equipment and clothing.	Study 73-115 (S605M)	-----	-----	-----
AR-11	Evaluate operational performance of RCA, artillery-free rocket in a jungle environment.	-----	-----	-----	AR-11
AR-16	Characterize the long range M&E problems concerning specific biological agents and host-vector systems.	(Requirement referred to AMC)	-----	-----	-----
AR-19	Determine downwind hazard of nerve agents to establish threshold sensitivity criteria and downwind cumulative dose hazard for personnel up to 50 miles from dissemination point -- GA, GB and VX.	Study 73-111 (S133M)	-----	-----	-----
AR-21	Determine effectiveness of CS2 disseminators in open, grass-covered terrain and under jungle conditions.	Source Book, Volume 2, Part 1, CS; Study 71-113; and Study 73-112 (S700M)	-----	-----	-----

AR-24	Determine detection effectiveness of radar for CB agent clouds.	-----	Test 72-30 (T600M) Test 74-010 (T117M)	Test T600M Test T150A	-----
AR-25	Determine nonpathogenic agent to use in deriving analog procedure for estimating decay of pathogens.	Test 70-74 (T410A)	Test TO-74 (T410A)	Test T410A	-----
AR-28	Evaluate performance of multipurpose agent detection kit.	-----	-----	-----	AR-28
AR-29	Evaluate combat vehicle chemical agent alarm.	-----	-----	-----	AR-29
AR-30	Evaluate incapacitating agent alarm.	-----	-----	-----	AR-30
AR-31	Determine effectiveness of binary lethal agent munitions in temperate, wooded, tropic, and arctic environments. Includes evaluation of adequacy of simulants.	-----	-----	Study 74-110 (S160A)	-----
AR-33	Refine IVA sampling methods and evaluate effectiveness.	Methodology Study	-----	-----	-----
AR-34	Assess hazard of RAIN concept.	Study TJ31 1970; Test 70-11 Phase II (T116M)	Test 74-010 (T117M)	Test T150A	-----
AR-35	Determine effects of chemical attack on tactical operations.	-----	-----	Test T150A	-----
AR-36	Determine vulnerability of enemy employment of bio agents in 12-50 micron particle size in a barrier role.	-----	-----	Test T450A	-----
AR-37	Determine vulnerability of soldiers in a toxic environment to eye contamination from aerosol attack.	(Requirement referred to Edgewood Arsenal, HED Labs)	-----	-----	-----
MA-1	Determine vulnerability of naval shore facilities to chemical attack in tropical and cold weather environments.	Test 70-11 Phase II (T116M)	Test 74-010 (T117M)	Test T150A	-----

[redacted] STATUS OF JOINT CINCS SERVICES CB REQUIREMENTS (U) (Continued)

	Requirement	Withdrawn, Cancelled, Referred, Satisfied or Being Addressed	To Be Addressed in FY 74	To Be Addressed in FY 75	Unfulfilled/ Unaddressed
NA-2	Determine feasibility of releasing CB agents in sea fog.	-----	Test 72-70 (Biological) (T405M)	Test 72-70 (T405M)	-----
NA-3	Determine large area coverage using biological agents or simulants.	Test 72-30 T400M (deferred)	Test 72-30 (T400M)	Test 72-30 T400M	-----
NA-4	Determine the behavior of agent clouds from a chemical continuous line source released into the atmosphere at the air-sea interface.	Study 73-111 (S135M)	-----	-----	-----
NA-5	Test information on CB decay and residual hazard.	Test 70-74 (T410A); Test 70-11 Phase II (T116M); Test 70-74 (T410A)	Test 74-010 (T117M); Test 74-030 (T410A)	-----	-----
NA-9	Determine the characteristics of nocturnal, long-range (100 n.m.), low-level, over-ocean transport and diffusion of a biological agent simulant.	Test 72-30 (T400M)	Test 72-30 (T400M)	Test 72-30 T400M	-----
NA-11	To assess the marine and land/sea interface environments for phosphorescent and fluorescent emission spectra of resident flora and fauna.	Test 70-C (T400M)	Test 70-C (T400M)	-----	-----
NA-12	To assess the contamination resulting from release of a CW agent in one or more compartments on a ship.	Study 71-111, Phase III (S105M)	-----	-----	-----
NA-13	Shipboard evaluation of HYPED Phosphorus Detector.	Service Developmental (D145M)	-----	-----	-----
NA-15	Shipboard evaluation of Army M8 detector system as adapted to fulfill Navy's requirements for point source CW agent detector.	-----	Service Developmental Test	-----	-----
NA-19	Evaluate [redacted] weapon system.	-----	-----	-----	NA-19

MA-20	Determine effectiveness of radar and visual detection of chemical (MAIH type) and biological attacks.	Test 70-11, Phase II (T116M)	Test 74-010 (T117M)	Test T150A	-----
MA-21	Determine concentration-time profiles at the target for simulated long-range biological deliveries at sea.	-----	Test 72-30 (T400M)	Test 72-30 (T400M)	-----
MA-22	Evaluate the Optimum Wind Track Ship Routing (OWTSR) technique.	-----	Study 74-116 (S610M)	-----	-----
MA-23	Determine the respiratory hazard for a sailor who is exposed to a secondary aerosol from another sailor who has been exposed to a biological attack.	(Deferred to Edgewood Arsenal MED Labs.)	Study/Test 74-031 (T420M)	-----	-----
MA-25	Evaluate forward looking infra-red chemical detector (FLIR (CW))	-----	Operational Developmental Test (D190M)	-----	-----
MA-30	Determine vulnerability of aircraft carrier to CB attack.	(Possible future requirement.)	-----	-----	-----
AF-1	To evaluate the operational effectiveness of the MC-1 bomb when delivered from a jet aircraft, and EOD/safety procedures for the MC-1 bomb.	Test 69-14, Phase I, report published October 1972; Test 69-14, Phase II (T111F) and Phase III	Study 74-115 (S160F)	-----	-----
AF-2	To determine/validate delivery tactics, logistic support and stockpile-to-target procedures for the CBU 16A/A incapacitating chemical system.	(Deferred)	-----	-----	AF-2
AF-3	Determine, operationally, the area coverage and predictable pattern density of the TMU 28/B chemical spray tank/MLU-40/B cutter in a forested environment.	Test 70-11, Phase I (T115A)	Study 74-114 (S155M)	-----	-----
AF-5	Determine AF units ability to survive and conduct operations in a toxic environment.	Test 70-11 Phase II (T116M)	Test 74-010 (T117M)	Test T150A	-----

STATUS OF JOINT CINCS/SERVICES CB REQUIREMENTS (U) (Continued)

	Requirement	Withdrawn, Cancelled, Referred, Satisfied or Being Addressed	To Be Addressed in FY 74	To Be Addressed in FY 75	Unfulfilled/ Unaddressed
AF-6	Validate procedures for emergency destruction or neutralization of M55-1 and TMU-28/B weapons.	Test 73-11 (X110F)	Test 73-11 X110F	-----	-----
AF-7	Evaluate the A/E 23 D-1 (V) and A/E 23 D-2 automatic chemical agent alarm set.	-----	-----	Service Developmental Test (D195F)	-----
AF-8	Evaluate the AN/GAQ-1 alarm set, nerve agent.	-----	Service Developmental Test (D200F)	-----	-----
AF-9	Evaluate the CB disposable overgarment.	-----	Developmental Test (D610F)	-----	-----
AF-10	Safety evaluation of the TMU-28/B spray tank.	-----	Test 74-014 (T117F)	-----	-----
AF-11	Evaluate the operational effectiveness of PAU-8.	-----	-----	-----	-----
AF-12	Evaluate MCD kit for existing structures.	-----	-----	Service Developmental Test (D615F)	-----
AF-13	Determine effectiveness of CBU-16 munition to disperse incapacitating agent EA 3834.	(Deferred)	-----	-----	AF-13
MC-1	Evaluate Marine Corps standing operating procedures for the MXA Mod 0 filling van/ Aero 14B spray tank stockpile to target sequence using agents CS and VX.	-----	-----	-----	MC-1
MC-2	Operational evaluation of the MXA filling van with Aero 14B spray tank, with thickened CS in jungle and CD.	----	Study 74-114 (S155M)	-----	-----
MC-3	Evaluate and validate Marine Corps proposed safety rules for the employment of the MXA Mod-0 filling van/Aero 14B spray tank by the Marine Wing weapons unit under operational conditions.	Test 71-16, Phase I and Phase II completed	Test 71-16, Phase III (T106M)	-----	-----

MC-4	Evaluate and assess the degradation and vulnerability of a marine amphibious force embarked in LVTP-7 amphibious vehicles when subjected to a G and V agent aerial spray attack during and following an amphibious assault.	-----	Tests 74-012 (I120M) and 74-010 (T117M)	-----	-----
MC-5	Evaluate and assess the integrity of the Aero 14B chemical spray tank under operational conditions using agents GB and VX, and standard decontaminants.	-----	Study 74-112 (S150M)	-----	-----
MC-6	Evaluate and assess the contamination hazards to the A4 and A6 aircraft by agents GB and VX when disseminated from the Aero 14B chemical spray tank at all permissible weapons stations.	-----	Test 74-013 (I125M); possible study	Test 74-013 I125M; possible study	-----
MC-7	Evaluate and assess the hazards and determine the maximum safe time that an Aero 14B spray tank can remain with 3-5 gallons residual GB or VX without damaging the tank or becoming hazardous to personnel prior to operational recycling or decontamination.	-----	Study 74-112 (S150M): possible test	-----	-----
MC-8	Evaluate and assess the feasibility of the MX4 auxiliary filling system when used to transfer VX and determine the possible hazards resulting from vapor pressure.	-----	Test 74-011 (I115M)	-----	-----
MC-9	Evaluate and assess the M12A1 capability to decontaminate the MX6 chemical filling van and adjacent areas when contaminated with GB and VX.	GB portion satisfie Test 71-14, Phase II	-----	-----	MC-9
MC-10	Evaluate and assess the degradation of the Marine Wing Weapons unit and the Nuclear Ordnance Platoon in the performance of their missions in a toxic environment.	-----	Test 74-010 (T117M)	-----	-----
MC-12	Assess personnel and equipment contamination hazards during an arranged landing A4/A6.	-----	-----	-----	MC-12

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STATUS OF JOINT CINCS/SERVICES CB REQUIREMENTS (U) (Continued)

	Requirement	Withdrawn, Cancelled, Referred, Satisfied or Being Addressed	To Be Addressed in FY 74	To Be Addressed in FY 75	Unfulfilled/ Unaddressed
MC-13	Conduct service acceptance test for USMC on XM256 detector kit (formerly XM235)	(Hold, awaiting development of item)	-----	-----	MC-13
MC-14	Assess MSMU capability with MSA van to support a 72-hour operation.	-----	Test 74-010 (T117M)	-----	-----
MC-15	Assess capability to conduct sustained shore-based arresting gear operations in protective clothing with A-4 or A-6 aircraft.	-----	-----	-----	MC-15
CO-1	Determine feasibility of high altitude release of biological agents.	Satisfied by Report 70-D, published Aug 72	-----	-----	-----
CO-2	Assess K and K trends as attack indication.	(Requirement referred to AMC)	-----	-----	-----
CO-3	Evaluate effect of unknown diseases on CONAD facilities.	(Requirement referred to AMC)	-----	-----	-----
CO-4	Estimate the probable post-attack effects resulting from large-scale bio agent attack on U.S.	Combined with CO-3	-----	-----	-----
CO-5	LIDAR/radar detection of bio agents.	-----	Test 72-30 (T400M)	-----	-----
EU-3	To select chemical weapon target.	(Requirement referred to CDC)	-----	-----	-----
EU-5	To evaluate the use of M5 and M5 dispersers with CS2.	Study 73-112 (S700M)	-----	-----	-----
EU-6	To evaluate the use of 155mm and 8-inch projectiles with CB and VX, temperate environment.	Study 71-110, Phase I published May 72 (G-agent portion); Study 71-110 (S100A) Phase II (V-agent portion)	-----	-----	-----
EU-8	Determine operational effectiveness of new chemical incapacitating agents.	-----	Study 74-111 (S145A)	-----	-----

EU-9	Determine operational effectiveness of new binary weapons.	-----	Study 74-110 (S140A)	-----	-----
EU-10	Determine operational effectiveness of defoliant agents.	(Deferred by CINCEUR)	-----	-----	-----
EU-12	Determine toxics for use in barrier operations.	Test 70-11, Phase II (T116M)	Test 74-010 (117M)	Test T150A	-----
EU-14	Determine feasibility of using M8 chemical alarm in storage igloos.	(Requirement referred to Edgewood Arsenal)	-----	-----	-----
EU-19	Evaluate capability of the services to deliver toxic chemical munitions to EUCOM in an emergency build-up situation.	(Requirement referred to DCSLOG)	-----	-----	-----
EU-21	Evaluate the degradation of the combat effectiveness of military .orces caused by the wearing of protective masks.	-----	Study 74-113 (S705A)	-----	-----
EU-22	Evaluate vulnerability of key defensive centers and operational areas in CINCEUR area.	Study 71-160, Phase III	-----	-----	-----
EU-23	Determine protection afforded by standard Army wet weather gear against chemical agents.	-----	-----	Study	-----
EU-24	Evaluate emergency disabling of artillery projectiles with chemical agent fill.	-----	-----	Test T155A	-----
LT-3	Evaluate persistency duration that can be anticipated for riot control agent CS2 when used as contaminant to deny access to an exterior area, such as base perimeter of fence line, or an interior area such as ordnance magazines and supply warehouses.	Study 73-112 (S700M)	-----	-----	-----
LT-5	Determine effective downwind travel of surface-released GB over water, assuming 50 percent of original strength desired.	Study 73-111 (S135M)	-----	-----	-----

[redacted] STATUS OF JOINT CINCS/SERVICES CB REQUIREMENTS (U) (Continued)

	Requirement	Withdrawn, Cancelled, Referred, Satisfied or Being Addressed	To Be Addressed in FY 74	To Be Addressed in FY 75	Unfulfilled/ Unaddressed
LT-6	Penetration effectiveness of CB agents released by aerial delivery over tropical rain forest areas.	Study 71-152, Phase II (S120N)	-----	-----	-----
LT-8	Determine the effectiveness of high speed low-level aerial delivery of defoliants.	-----	-----	-----	LT-6
LT-10	Operationally evaluate various decontaminating materials and methods to ascertain a true relationship between each and the effect on men, material and mission.	Study 73-115 (S605N)	-----	-----	-----
LT-11	Operationally evaluate all current and advanced research and development CB warning devices.	-----	Test 74-010 (T117M)	-----	-----
LT-13	Determine the military value of biological and chemical agents against shore and near-shore targets when released as a point source (single and multiple) between shore and 3 miles off-shore.	Test 70-11, Phase II (T110N); Test 72-70 (T605M)	-----	-----	-----
LT-14	Determine operationally the effectiveness of chemical incapacitants and associated spray munitions disseminated by high-performance aircraft.	-----	Study 74-111 (S145A)	-----	-----
LT-16	Evaluate the ability of the amphibious assault ship (LPH) to conduct an amphibious assault in a toxic environment.	Study 71-111, Phase III (S105M)	-----	-----	-----
LT-17	Determine whether existing gastight integrity of amphibious shipping (including new construction) is adequate for operational requirements.	Study 71-111, Phase III (S105M)	-----	-----	-----

LT-19	Evaluate an integrated CB defensive equipment system to determine its capability for passive air base defense and to evaluate tactical air force capability to operate in a toxic environment.	Test 70-11, Phase II (T116M)	Test 74-910 (T117M)	-----	-----
LT-20	Evaluate the Optimum Wind Track Ship Routing (OWTSR) Technique.	-----	Study 74-116 (S610M)	-----	-----
LT-21	Evaluate selected key operations center/installations to CB vulnerability.	(Study in FY 73)	-----	-----	-----
PA-1	Determine survivability of flight crews and/or reduction of their efficiency due to prolonged exposure to chemical agents; requirements for protective handling of maintenance equipment and aircraft by Army flight crews in a CB environment.	(Requirement returned to CINCPAC unfulfilled, by Ltr (S) dtd 13 Dec 72)	-----	-----	-----
PA-3	Determine the requirements for anti-personnel (anti-infiltration) barriers for a variety of types of terrain and climatic conditions.	(Requirement returned to CINCPAC unfulfilled, by Ltr (S) dtd 26 Dec 72)	-----	-----	-----
PA-6	Determine if defoliation material or the dispensing system can be changed to permit spraying from much higher altitudes or to permit spraying from high-performance aircraft.	Source Book: Vol VII Part 1, Dec 71	-----	-----	-----
PA-7	Determine accurate CB vapor and VX downwind hazard distances from friendly firings.	Study 73-111 (S135M)	-----	-----	-----
PA-8	Determine the persistency of CS1 and CS2 under various environmental conditions.	Addressed by Tests 68-52 and 68-53; Source Book, Vol II, Part 1, CS; Study 71-113; and Study 73-112 (S700M)	-----	-----	-----
PA-9	Calculate the drift hazard parameters for CS2 drum drops under a wide range of meteorological conditions.	Addressed by Source Book, Vol. 2, Part 1, CS; Study 71-113, and Study 73-112 (S700M)	-----	-----	-----

[redacted] STATUS OF JOINT CINCS/SERVICES CB REQUIREMENTS (U) (Concluded)

	Requirement	Withdrawn, Cancelled, Referred, Satisfied or Being Addressed	To Be Addressed in FY 74	To Be Addressed in FY 75	Unfulfilled/ Unaddressed
PA-10	Test the use of currently available air-delivered flame weapons (i.e., flame drum drops, napalm bombs) in mine and booby-trap clearance.	(NWEDC CBU-55 Testing Report forthcoming)	-----	-----	-----
PA-11	Develop and test emergency destruction or neutralization procedures for the MC-1 bomb.	Test 73-11 (1110F)	-----	-----	-----
PA-13	Provide test results of binary G weapons, as completed.	Service Developmental Test of Binary 155mm (D104A)	Study 74-110 (S140A)	-----	-----
PA-15	Determine quantity of CS2 and dispersal techniques required to restrict use of bunkers, caves, or tunnels, from 1-week to 6-month periods.	(Summary report mailed 28 Nov 72)	-----	-----	-----
PA-16	Provide information necessary for improving control of herbicide application, thereby minimizing unwanted side effects.	(Requirement referred to Edgewood Arsenal; report expected 4th Qtr FY 73)	-----	-----	-----
SA-1	Evaluate vulnerability of SAC operational locations to attack by chemical and biological agents.	Study 71-160, Phase II (to be published 2nd Qtr FY 73)	-----	-----	-----

[redacted]

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RDTE Project No. 1-X-6-65704-D-L11
USATECOM Project No. 5-CO-473-000-022

U.S. ARMY TEST & EVALUATION COMMAND

DESERET TEST CENTER

REQUIREMENTS AND PROPOSED PROGRAM

FOR FY 73 (U)

OCTOBER 1971

This material contains information affecting the national defense of the United States within the meaning of the Espionage Laws (18 U. S. C. 793, 794), the transmission or revelation of which in any manner to an unauthorized person is prohibited by law

Distribution limited to U S Government agencies only (Test and Evaluation). October 1971. Other requests for this document must be referred to Commanding General, Deseret Test Center, Fort Douglas, Utah 84113

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[redacted] DTC OPERATIONAL TEST 73-12 (U)
[redacted] FLAME WEAPONS FOR MINE/BOOBYTRAP CLEARANCE (U)

1. [redacted] RATIONALE (U)

The neutralization of mines and boobytraps has been one of the (COMUSMACV) most critical research and development problem areas for the past several years. Although much work has been done, no effective solution has been found. As a result, CINCPAC has requested Deseret Test Center to conduct a controlled test to determine the effectiveness of available flame munitions and delivery techniques in clearing mines and boobytraps. CINCPAC has also recommended that the fuel-air explosive bomb be included in the evaluation. Although flame munitions have regularly been used in Southeast Asia in areas known to be wired or boobytrapped, analysis of after-action reports of lessons learned has failed to yield a clear measure of effectiveness. Such an estimate is desired by CINCPAC, an estimate in which identifiable variables would include delivery technique, type of mine and boobytrap neutralized, and the area over which the neutralization occurred. A tabular presentation of the number of munitions required to neutralize 90 percent of the mines and boobytraps within a helicopter-sized landing area is also included in the CINCPAC request.

2. [redacted] PURPOSE (U)

To determine the effectiveness of flame munitions in mine and boobytrap clearance.

3. [redacted] SCOPE (U)

DTC Test 73-12 will consist of a two-phase effort. Phase I will include the study and coordination of the appropriate test matrix. Specific unknown include identification of typical deployment techniques and materials, and heat activation properties of the chemical compounds used to activate enemy devices with consideration given to the thermal sensitivity of the family of explosives of concern to U.S. troops operating in the Southeast Asia theatre. An a priori assessment of environmental variables (such as soil type, moisture, flammability of indigenous vegetation, etc.) will also be required. The second phase will include preparation and coordination of the detailed plan of test, conduct of the tests, and preparation of the test report.

[redacted]

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SEMIANNUAL STATUS REPORT (U)

JANUARY 1973

CLASSIFIED BY. COMMANDER,
DESERET TEST CENTER, FORT DOUGLAS, UTAH 84113
EXEMPT FROM GDS OF EXECUTIVE ORDER 11652
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DTC 73-13

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[redacted]

70-D (I405F) Threat to U. S. from High Altitude Biological Attack	CINCONAD	To determine the potential threat to the U. S. from high altitude offshore biological attack.	Final report was published in August 1972.	
70-10 (I100A) Phase I, Sorption of Nerve Agents on Vegetation and Soil	USA	To determine the effects of absorption and adsorption of aerosolized nerve agents by soil and vegetation and to study the scavenging effects of soil and vegetation upon an aerosol.	Work is suspended. A status report was published in November 1972.	blis
70-11 (T115A) Phase I, Vulnerability of Military Installations (Technology Phase)	USA USN USAF	To develop the dissemination, sampling and assessment procedures required as pretest technology for military installation vulnerability analyses.	Testing is in progress. Five of 12 large-scale aerial release trials using chemical simulant tagged with fluorescent particles were conducted using F4 aircraft and the TMU 28/B Spray Tank. Data are being reduced and the analysis is in progress.	scal snr duct 'ank. in
70-11 (T116N) Phase II, Vulnerability of Military Installations, Personnel, and Equipment, to Massive Chemical Attack (Toxic Rain)	USA USN USMC CINCLANT	To determine hazards associated with a massive chemical attack (Toxic Rain) on military installations, equipment, and operating units (personnel) and to investigate the associated decontamination problems.	Planning is in progress. Coordination meetings have been held with Edgewood Arsenal personnel and DTC supported Edgewood Arsenal in preliminary work at White Sands Missile Range.	ting nnel imir
70-74 (I410A) Phase II, Effects of Urban Atmosphere on Biological Aerosols	USA USAF USN CINCONAD	To determine the effects of polluted urban atmosphere on decay of biological aerosols.	Testing is in progress. Laboratory trials have been completed. Field trials utilizing the microthread/mobile van technique were initiated; however, problems have been encountered in obtaining consistent biological recoveries. Efforts are underway to isolate and correct the problem. Field testing is scheduled for completion by 3rd Quarter FY 73.	hav e iate . t th ompl

[redacted]

Table 1 [redacted]. Summary of DTC Test Program (DL 14) (U) (Continued)

Test/Study Number	Cognizant Agency	Purpose	Status	
[redacted]				
72-30 (T400N) Aerosol Diffusion in Marine Atmosphere	USN	To characterize aerosol diffusion in a marine environment.	Program has been deferred pending approval from higher headquarters.	l fr
72-70 (T405N) Vulnerability of U. S. Coastal Targets	USN CINCLANT	To determine the vulnerability of selected U. S. coastal targets to biological attack from offshore.	Program has been deferred pending approval from higher headquarters.	l fr
[redacted]				

(U)

TEST 64-4-SHADY GROVE (C)
FINAL REPORT

DECEMBER 1964

Prepared by

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

CI MAR 89

ABSTRACT

[redacted]

A total of twenty-five trials were conducted. In nineteen, biologicals were released from an elevated line source by the Aero 14B/A4 weapon system; in six, the release was on the surface by a multi-nozzle, E-2 Disseminator. [redacted]

[redacted]

[redacted]

PREFACE

[redacted]

2. The following guidance concerning pathogenic biological field testing was received from responsible authorities about the time Deseret Test Center was organized in May 1962: (1) the tests were to be conducted with a minimum of equipment, support personnel, facilities, and elapse of time on site; (2) test sites were limited to United States possessions or remote open sea areas; (3) the dissemination of agent materials was to have no protracted or significant effect on the environment -- this included people, domestic and wild animals, birds, or any biological life which might be permanently injured or could create a hazard to man; and (4), tests were to be conducted safely and in accordance with a security plan which would ensure a minimum risk of detection. The first task was selection of a test site which would meet the criteria for causing no significant effect on the environment. The selection of the test site would define the extent of the problem which had to be faced in order to fulfill the other criteria A Medical Advisory Committee was formed composed of eminent scientists from the field of ecology, epidemiology, and related sciences. The Chairman of the Committee was Dr. Dorland J. Davis, M.D., Director, National Institute of Allergy and Infectious Diseases, National Institute of Health. This Committee first met in July 1962, to review information on a number of proposed test sites in the Pacific area with reference to the release of agents Pasteurella tularensis (XX)(XX) Coxiella burnetti (XX), and Venezuelan equine encephalomyelitis (XX). While there was insufficient information available at the time on which to base a final conclusion, an open-sea site was suggested as being most acceptable. A program was

(XX). While there was insufficient information available at

outlined to develop the necessary ecological and epidemiological information on which to base a final decision. The program took into consideration the entire Central Pacific area with emphasis given to Johnston Island, the Hawaiian, Marshall, Gilbert, Phoenix, and Line Islands. The selection of a site in the open sea southwest of Johnston Island seemed logical in view of the Medical Committee's suggestion; and since the site was located away from shipping lanes, it provided the greatest distance of downwind travel free of populated land areas anywhere in the Central Pacific and was known to have a low wildlife population.

3. [redacted]

[redacted]

8. [redacted] Ecological and epidemiological activities were increased during the conduct of the test and for two months following in an effort to detect if any change was made in the biological environment. The DTC Medical Advisory Committee met again on 3 June 1965 to evaluate these data. There were no indications that any change had taken place. [redacted]

9. [redacted]

10. [redacted] However, special acknowledgement should be made for the major services rendered by the following organizations and units:

Dugway Proving Ground, Dugway, Utah

U.S. Army Biological Laboratories,
Fort Detrick, Frederick, Maryland

Marine Air Group 13 Detachment
(A4C and helicopter support)

AEWBARONPAC Detachment

Patrol Squadron Four

Patrol Squadron Six

[redacted]

USS GRANVILLE S. HALL (YAG 40) with SHAD Group

Naval Biological Laboratories

Army Light Tugs 2080, 2081, 2085, 2086, and 2087 manned by Naval personnel

Army Pictorial Center

Meteorology Research, Incorporated

Booz Allen Applied Research, Inc.

[redacted]

SECTION I

TEST OBJECTIVES (U)

1. [redacted] RESTATEMENT

The test objectives, as originally presented in the SHADY GROVE (C) Test Plan 64-4, 12 March 1964, are as follows:

1) To evaluate infectivity of agent UL aerosols over effective downwind distances, utilizing an elevated line source from an operational weapon in a marine environment.

2) To determine the viability decay of UL over effective downwind distances.

3) To characterize atmospheric diffusion in a marine environment.

4) To assess the operational capability of the weapon system.

2. [redacted]

[redacted]

[redacted]

SECTION II

SCOPE (U)

1. GENERAL

a. Phase B utilized both aerial and surface releases of the biological agent UL. [redacted] A total of 13 trials, 9 aerial and 4 surface releases, was conducted under Phase B. UL and biological tracer BG were released in all trials--except for Trial B-8 in which only UL was released. [redacted]

2. METEOROLOGICAL STUDY

Prior to initiation of this program (but in conjunction thereto), a brief meteorological study was made near Hawaii (Phase A). During conduct of Phase B, a more comprehensive series of diffusion studies was conducted 112 to 320km southwest of Johnston Island...the site of Phases B and D of the SHADY GROVE (C) test program. Fluorescent particles of zinc cadmium sulfide (FP) were used during this study to assist in evaluating the meteorological phenomena of the areas.

SECTION III

TEST PROCEDURES (U)

1. SITE

All Phase B trials of SHADY GROVE (C) were conducted in a remote open-sea area approximately 160km southwest of Johnston Island [redacted]

2. TRACER MATERIAL

The biological tracer material Bacillus subtilis var niger (BG) used in this program [redacted]

3. AGENT MATERIAL

The pathogenic biological agent Pasteurella tularensis (UL) used for this program [redacted]

[redacted]

4. [redacted] WEAPON SYSTEM

a. A weapons system consisting of the Aero 14B spray tank mounted on A4C jet aircraft was employed in all aerial trials [redacted]

[redacted] UNCLASSIFIED

[redacted]

[redacted] AC efficiency trials were conducted at Eglin Air Force Base (see Appendix B); UL efficiencies were extrapolated from the data in this test series (See IV, Part I). [redacted]

b. For the surface trials, the multinozzle E-2 Disseminator was employed. [redacted]

[redacted]

[redacted]

[redacted]

5. [redacted] DISSEMINATION PROCEDURES

a. Aerial Trials

In each of the nine aerial release trials, A4C jet aircraft (equipped with two wing-mounted, modified Aero 14B spray tanks) simultaneously disseminated tracer BG from one tank and agent UL from the other tank along each of one to three release lines ranging from 31 to 59km in length. [redacted]

[redacted]

b. Surface Trials

In each of the four surface trials, an LT tugboat, equipped with two E-2 Multihead Disseminators, simultaneously disseminated UL from one head and BG from the other head along a 15-kilometer release line. [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

7. [redacted] SURVEILLANCE

To preclude entry of nonparticipating vessels into the hazardous area of operations, aerial surveillance was conducted prior to and during the conduct of each trial. Three Navy P2V aircraft took part in this operation. [redacted]

TABLE 3 [redacted]: PHASE B TRIALS, DTGTP 64-4 (U)

Trial	Time-date series (local time-1965)		Trial	Time-date series (local time-1965)	
B-1			B-3		
Line 1	0402		Line 1	0433	
Line 2	0433	12 Feb	Line 2	0500	
			Line 3	0528	9 Mar
B-2					
Line 1	0359		B-4		
Line 2	0430	13 Feb	Line 1	0430	
			Line 2	0501	
B-6	0557	18 Feb	Line 3	0527	10 Mar
			B-5		
B-7	0532	19 Feb	Line 1	0400	
			Line 2	0427	
B-8	0529	20 Feb	Line 3	0456	14 Mar
B-S1	0600	27 Feb	B-5a		
			Line 1	0330	
B-S2	0600	28 Feb	Line 2	0355	
			Line 3	0421	15 Mar
B-S3	0600	4 Mar			
B-S4	0559	5 Mar			

[redacted]

c. Aerial surveillance of the operational area (approximately 190,000 mi[a]) was provided by three squadrons from P2V Fleet Airwing Two. AEW BARRONPAC supplied radar-equipped, EC 121 aircraft and personnel for the purpose of air control (positioning and tracking the A4C- and FP-disseminating aircraft along their respective release lines; also, in positioning the LT tug sampling stations. The EC 121 aircraft also served as an aerial command post from which trial operations were directed and, further, assisted in aerial surveillance of the target area during the conduct of each trial.

[redacted]

[redacted]

f. Of the hundreds of personnel (Marine, Navy, Army, Air Force and civilian) that participated in the conduct of these trials [redacted]

[redacted]

SECTION III

TEST PROCEDURES (U)

1. [redacted]

2. [redacted]

3. AGENT

The pathogenic biological agent Coxiella burnetti (OU) used in this test series [redacted]

4. DISSEMINATION PROCEDURES

In both Trials D-1 and D-2, A4C jet aircraft (equipped with two wing-mounted Aero 14B spray tanks) simultaneously disseminated tracer BG from one tank and agent OU from the other tank along each of three release lines about 65km in length (one aircraft per line). [redacted]

[redacted]

[redacted]

TABLE 12 [redacted] PHASE D TRIALS, DTCTP 64-4 (U)

Test number and release lines	Time-date (local time - 1965)	
D-1		
Line 1	2301	
Line 2	2331	
Line 3	2347	22 Mar
D-2		
Line 1	2328	
Line 2	0002	
Line 3	0035	25-26 Mar
D-3		
Line 1	2348	
Line 2	0016	31 Mar - 1 Apr
D-4	0237	3 Apr

[redacted]

[redacted]

SECTION I

INTRODUCTION (U)

1. [redacted]

[redacted]

2. [redacted] OBJECTIVES

a. To obtain a meteorological description of each test environment.

b. To analyze observed dosage results for FP and BG and to compare these results with existing diffusion models.

3. [redacted] SCOPE

a. Phase A tests included six FP releases at heights of 500 or 1000 ft above the sea surface. [redacted]

[redacted]

c. FP was released by the Aero-Commander; BG by jet aircraft. [redacted]

[redacted]

[redacted]

[redacted]

2. [redacted] EY IMAGER SYSTEM

a. Disseminator

[redacted]

(2) The disseminator was changed for Phases B and D to the MRI Model EK-2. This disseminator has a continuous screw feed with two separate hoppers [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

APPENDIX A

SECTION I

TEST OBJECTIVES (U)

1. [redacted] RESTATEMENT

The test objectives as originally presented in the SHADY GROVE (C) Test Plan 64-4 (12 Mar 64) were as follows:

1) To evaluate test procedures prior to conduct of pathogenic trials

2) To determine downwind travel of tracer Bacillus subtilis var niger (BG) over a marine environment when released from an operational weapon system.

[redacted]

[redacted]

[redacted]

APPENDIX A

SECTION II

SCOPE (U)

1. [redacted] GENERAL

a. Phase A of SHADY GROVE (C) consisted of six aerial and two surface release trials wherein biological tracer BG was disseminated upwind from the tug sampling array. [redacted]

[redacted]

[redacted]

[redacted]

APPENDIX A

SECTION III

TEST PROCEDURES (U)

1. [redacted] SITE

All Phase A trials of SHADY GROVE (C) were conducted in an open sea area approximately 175 naut mi southwest of Oahu, Hawaii. [redacted]

2. [redacted] TRACER MATERIAL

Biological tracer (BG) used in this phase of the program [redacted]

3. [redacted] DISSEMINATION PROCEDURES

a. Aerial Trials

In each of the six areial release trials, A4C jet aircraft, equipped with two modified Aero 14B spray tanks, disseminated tracer BG along each of two release lines. [redacted]

b. Surface Trials

In each of the two surface trials, an LT tugboat, equipped with an E-2 Multihead Disseminator, disseminated tracer BG along an 8-mile (naut) release line. [redacted]

[redacted]

APPENDIX B

AERO 14B SPRAY TANK DISSEMINATION EFFICIENCIES (U)

1. [redacted]

2. SCOPE

This test consisted of a series of 11 tower-flyby trials conducted at Eglin Air Force Base, Florida, during the period 5 to 14 October 1965. In each trial, an A4 jet aircraft (carrying an Aero 14B spray tank) disseminated liquid BG upwind from a 91-meter vertical sampling tower. [redacted]

3. TEST PROCEDURES

a. Test Site

Trials were conducted on Eglin Range C52A, located approximately 15 mi northeast of the main base. [redacted]

c. Dissemination Procedures

In each trial, the aircraft carrying an Aero 14B spray tank disseminated BG approximately 91m upwind from the 91-meter sampling tower. [redacted]

[redacted]

[redacted]

[redacted]

d. Sampling Procedures

The 91-meter sampling tower at Eglin AFB was used in all 11 trials. [redacted]

[redacted]

[redacted]

[redacted]

TABLE 31 [redacted]: SUMMARY OF GENERAL METEOROLOGICAL CONDITIONS AT FUNCTION TIME (U)

Trial number	Date	Function time	Wind-speed (kts)	Wind direction	Temp (°F) (6-ft Level)	Relative humidity (%) (6-ft level)
C-1	5 Oct 65	1726:13	9.0	70	68.4	85
C-2	7 Oct 65	1608:05	6.5	290	72.5	61
C-3	9 Oct 65	1659:12	10.0	240	77.3	78
C-4	12 Oct 65	1641:54	3.2	85	78.7	43
C-5	12 Oct 65	1728:52	4.8	202	74.8	60
C-7	13 Oct 65	0645:23	10.0	50	65.2	79
C-8	13 Oct 65	1607:39	8.5	72	78.8	48
C-9	13 Oct 65	1708:28	12.3	61	73.3	61
C-10	14 Oct 65	1543:36	8.5	140	78.2	67
C-11	14 Oct 65	1634:14	5.0	112	76.4	72

[redacted]

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APPENDIX C

ECOLOGY AND EPIDEMIOLOGY STUDY (U)

1. [redacted] INTRODUCTION

As a prerequisite to the SHADY GROVE [redacted] Test Program, a contract was awarded to the Smithsonian Institution, Division of Birds, in January 1963, to initiate a broad general study of avian ecology in the Central Pacific. Preliminary scope of the study included general distribution, migration and movement patterns, food habits, breeding phenology and interrelationships of avian arthropod consorts. Specific areas surveyed included the Hawaiian Leeward Islands, Wake Island, Baker-Howland Islands, Phoenix Islands, and, eventually, the Line Islands. A specialized ecology survey named STAR BRITE was started in July, 1963 as an intensive study of an open-ocean area (about 50,000m^2) southwest of Johnston Atoll, to evaluate and analyze the pelagic bird composition and distribution and related factors that affect their ecological patterns over the proposed grid site for SHADY GROVE [redacted]. Also included were studies of meteorological regimes and oceanographic characteristics that could influence birds found over open ocean 321-482km from land. Following a predetermined grid pattern, routine monthly cruises were conducted to identify the species of birds found in their specific areas, and to observe their distribution, feeding habits, behavior and movement patterns. Concurrently, a team of ornithologists commenced an intensive study of avian ecology on Johnston Atoll with special emphasis upon relationships of the birds on this small atoll with adjacent open-sea areas. A permanent study station was established on Kure Island and routine visits were made to other islands to conduct intensive studies to determine relationships of this islands with the open-ocean area near Johnston Atoll.

2. [redacted] STAR BRITE SURVEY

Beginning in August 1963, studies of species composition, distributional patterns, population dynamics, and feeding habits were conducted over the pre-determined grid at monthly intervals for 19 consecutive months--then continued to complete two annual cycles. All birds observed were plotted according to location, direction of flight, and general behavior patterns (such as feeding, hunting for food, migration, etc), in order to elucidate and define their seasonal cycle. Thirty-three species of birds have been identified as a part of the STAR BRITE grid complex. During the period July 1963 through October 1965, over 80,000 birds were color-tagged (bright orange plastic leg streamer) and banded (U.S.

[redacted]

July 1963 through October 1965, over 80,000 birds were color-

[redacted]

[redacted]

Fish and Wildlife regulation numbered metal band) on Johnston Atoll so that they could be observed and identified while in flight over the proposed open-sea grid area. Two of the 33 species observed in the open-sea grid area have nested on Johnston Atoll since July 1963; 17 species observed at sea have also been observed on adjacent islands. The Sooty Tern was the most abundant species observed in the grid and the only bird (with two single bird exceptions) observed in the grid that had been banded on Johnston Atoll. The species of birds most affecting the density of the grid avifauna for specific months of the year are as follows:

Species	Month
Wedge-tail Shearwater	July-September
Sooty Shearwater	April-May October-November
Sooty Tern	April-June

The yearly density pattern of birds shows a well-defined bimodal distribution as follows: (a) low population from December through March; (b) spring migration peak from April through May; (c) high population from June through August; and (d), fall migration peak from September through November. The Sooty Tern does not become abundant in the grid until several months (April) after it has become well established on Sand Island (which is probably due to early months on the breeding grounds being devoted to courtship and incubation, during which time they tend to remain close to, if not on, the island. Estimated bird populations for the test grid are given in Figure 107 and Table 33.

[redacted]

[redacted]

[redacted]

5. [redacted] OTHER AREAS

Supporting studies, in cooperation with the U.S. Fish and Wildlife Service Bureau of Commercial Fisheries, have analyzed birds observed at sea in an area of 804,672km^2 northwest of the STAR BRITE grid. This grid survey has served as a control or comparison study with the STAR BRITE grid and has been very useful in evaluation of data relative to birds over the open ocean. Specific studies on the Pribilof Islands in the Bering Sea have provided data on movement and migration of certain species of shore birds (mainly the Ruddy Turnstone, Golden Plover, etc).

6. [redacted] MEDICAL SURVEILLANCE

a. Since February 1963, samples of sera, tissues, and blood-sucking arthropods were collected, periodically, from the wildlife on each of the islands visited throughout the Central Pacific. Also, 250 samples of human sera collected prior to 1964 were obtained for serological analyses. The human sera came from five islands in French Polynesia which represent both rural and urban, indigenous adult population. Total specimens collected from island groups and wildlife species are presented in Tables 35, 36, and 37. Intensive collections of sera, tissues, and parasites were obtained on Johnston Atoll and are listed in Table 34 to 39. This critical study of wildlife on Johnston Atoll was conducted because of the island's proximity to the SHADY GROVE test grid.

b. All serum samples were serologically tested for evidence of Pasteurella tularensis and Coxiella burnetti and additional tests were conducted to differentiate any cross-reaction with the Brucella group.

c. Tissues excised from various species of wildlife and blood-sucking arthropods were ground or triturated, one portion of sample plated on appropriate media and the other portion challenged into laboratory animals.

d. Laboratory analyses of tissues and blood-sucking arthropods (ticks, biting flies, mites, and lice) collected on Johnston Atoll were negative for all tests conducted indicating no evidence of P. tularensis or C. burnetti organisms. Prior to January of 1965, the serological analyses of 5638 serum samples indicated presence of P. tularensis and C. burnetti antibodies in wildlife and P. tularensis in the indigenous human population samples of the South Pacific. Serological results of 12,572 wildlife samples collected since February of 1965 indicate no significant change in incidence of antibodies.

[redacted]

of 1965 indicate no significant change in incidence of anti-

[redacted]

[redacted]

7. [redacted] MEDICAL ADVISORY COMMITTEE

During the 21 March 1964 meeting of the DTC Medical Advisory Committee, all aspects of the Ecology and Epidemiology program (including a visit to Johnston Atoll) were presented by various support groups doing both field and experimental laboratory work. The comprehensive reports and briefings were reviewed in detail by the committee. The committee's judgement regarding results and their relation to the proposed test was published under separate cover.

[redacted]

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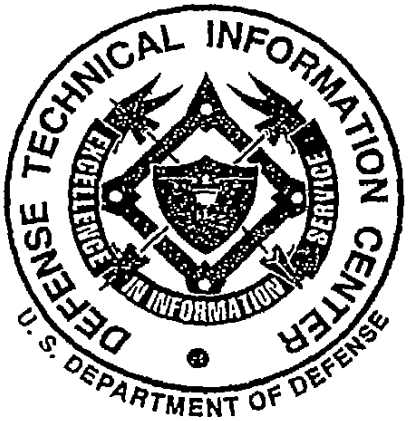

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MRC-DA-262

TECHNICAL REPORT

AD511491

SORPTION OF G AND V AGENT STUDY (U)

Final Comprehensive Report

[redacted]

September 1970

[redacted]

DESERET TEST CENTER
Fort Douglas, Utah 84113

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11. SUPPLEMENTARY NOTES

12. SPONSORING MILITARY ACTIVITY
Deseret Test Center
Fort Douglas, Utah 84113
(Mr. Henry P. Ashcroft, C.O.R.)

13. ABSTRACT The principal objectives of this contract were 1) to collect, evaluate, and summarize all pertinent information on losses of agents by evaporation, impaction, sorption, and decomposition; 2) to investigate existing mathematical models for these losses and synthesize new models were needed; and 3) to recommend future work to advance the state-of-the-art in predicting agent losses. Liquid agents such as VX and HD when sprayed would suffer losses primarily through evaporation and impaction. Gaseous agents such as GB, GD, AC, and CG would suffer losses primarily through sorption on vegetation. In this work a new model which successfully predicts the losses due to evaporation was developed and has been exercised. It can be readily included in the existing WEATAS computer program for predicting agent concentrations. A very simple worst case model for impaction losses was developed which predicts losses for cases where an estimate of foliage density can be given. Considerable development work was also done on models for sorption of agents on both dry and wet foliage, but additional development would be needed before this model would be ready to be validated. Chemical decomposition should not cause a significant loss of agent while it is traveling from the point of dissemination to the target (with the possible exception of hydrolysis of GG in contact with liquid water).

DD FORM 1 JAN 64 1473

[redacted]
Security Classification

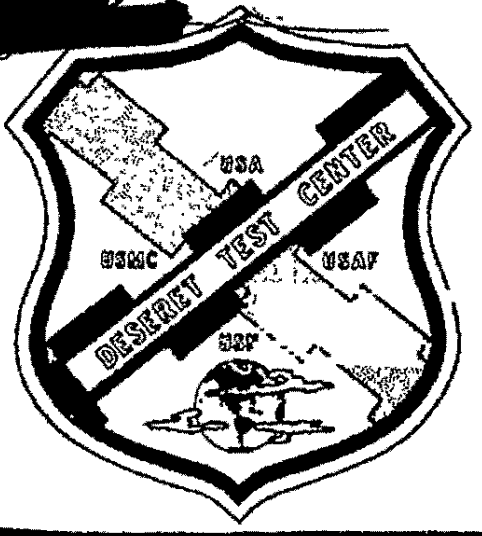
[redacted]

PROJECT DESERET

ANNUAL HISTORICAL SUMMARY

(Reports Control Symbol CSHIS-6(R2I))

1 July 1963 — 30 June 1964



TECHNICAL INFORMATION OFFICE
DESERET TEST CENTER
FORT DOUGLAS, UTAH

[redacted]

2. RED BEVA (U)

[redacted]

b. [redacted] Phase A of the test was conducted in the vicinity of the Hawaiian Islands. [redacted]

c. [redacted]

Phase A was conducted as scheduled during May 1964. [redacted]

[redacted]

2003272-0000003

[redacted]

PROJECT DESERET

ANNUAL HISTORICAL SUMMARY

(Reports Control Symbol CSHIS-6(R2))

1 July 1965 — 30 June 1966

[redacted]

Prepared by

TECHNICAL INFORMATION OFFICE

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH 84113

[redacted]

[redacted]

BY AUTHORITY OF CG, DTC
Date 15 August 1966

[redacted]

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[redacted]

[redacted]

b. Field trials, conducted in Panama during June 1966, are scheduled for completion in August 1966. [redacted]

[redacted]

[redacted]

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[redacted]

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2003272-0000005

DESERET TEST CENTER

PLANS FOR TESTING IN FY 70 (U)

[redacted]

77154

FEBRUARY 1969

DESCRIPTIVE	✓
INDEX	✓
ABSTRACT	

HEADQUARTERS • DESERET TEST CENTER • FORT DOUGLAS, UTAH • 84113

[redacted]

BY AUTHORITY OF CG, DTC
Date: 15 February 1969

[redacted]

[redacted]

DTC 69-266

[redacted]

DTC 69-266

RATIONALE

DTC TEST 70-10

1. [redacted] REQUIREMENT/SOURCE

Investigate the removal of disseminated nerve agents from the airborne cloud through sorption[1] by vegetation and soil.

2. [redacted] AVAILABLE INFORMATION

[redacted]

d. Although the available information on adsorption/absorption from chamber tests indicates that scavenging of vapors by vegetation does occur, air movement as a parameter has not been considered. The results of chamber testing cannot be translated

---

[1] Absorption and adsorption.

[redacted]

into a prediction of nerve-agent losses under a complex variety of environments and field conditions.

[redacted]

RATIONALE

DTC TEST 70-30

1. [redacted] REQUIREMENT/SOURCE

a. Determine the effect of sunlight on biological decay and infectivity of SR, LM, and DK.

[redacted]

c. Determine the degradation of PG when disseminated in daylight.

[redacted]

DTC TEST 70-30

SECTION I

INTRODUCTION (U)

1. [redacted] GENERAL INFORMATION

[redacted]

c. Agents/Tracers: TT, ZZ, PG2, MN, SM, and EC.

[redacted]

SECTION II

OBJECTIVE (U)

[redacted]

SECTION III

TASKS (U)

1. [redacted] FIRST TASK

Investigate viability decay rates or loss in biological

[redacted]

activity (either infectivity or toxicity) for aerosols of agents TT, ZZ, PG2 and MM--and for nonpathogens SM and EC--when released in a field environment under various conditions of sunlight intensity and atmospheric temperature and humidity.[1]

[redacted]

RDTE PROJECT NO. 1-X-6-65704-D-L02

USATECOM PROJECT NO. 5-CO-473-010-001

DTC PROJECT NO. DTC 70-10 (I)

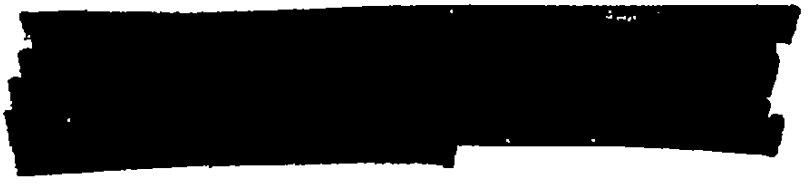
DTC TEST 70-10 PHASE I

TEST PLAN

BY

LEE HANSEN

JUNE 1971



DESERET TEST CENTER
FORT DOUGLAS, UTAH

SECTION 1. INTRODUCTION

1.1 BACKGROUND

[redacted]

1.1.2 Planned Phases for Testing

[redacted]

Deseret Test Center (DTC) Test 70-10 will be conducted in three phases. Phase I will include laboratory investigations required to identify basic variables affecting soil sorptivity. The change in moisture levels needed to produce a significant change in sorptivity values for several soil types will be investigated. Phase I studies will be accomplished by passing the air/agent or simulant vapor stream through soil samples.

Phase II will be planned in greater detail after the results of Phase I have been evaluated. However, in Phase II, wind tunnel tests will be conducted with the same variables as studied in Phase I, except

1-1

that the air/agent or simulant vapor stream will be passed over the soil samples. It is contemplated that Phase II testing will involve approximately 36 trials. A tentative scope of test for Phase II is presented in Appendix II.

Phases I and II will provide data to assist in the estimation of sorptivity values as they relate to significant changes in munition expenditure estimates. Phase III is planned as a field test to confirm the data derived from Phases I and II. It is contemplated that Phase III testing will involve approximately 16 trials. The exact nature of Phase III trials cannot be defined until completion of Phase I and Phase II efforts. A tentative scope of test for Phase III is presented in Appendix III.

[redacted]

SECTION 2. DETAILS OF TEST

2.1 CRITERIA

2.1.1 Soil Samples

Soil samples will be tested at four different levels of moisture content: dry (0 percent), 5 percent, 10 percent and 20 percent. The dry samples will be dried under vacuum in a desicator containing calcium chloride. Moisture content will be determined by vacuum desiccator drying.

2.1.2 Test Limitations

Test limitations are presented in Table 2. All testing will be accomplished within the limits specified in this table.

2.2 METHOD

2.2.1 Test Apparatus

A schematic of the test apparatus is shown in Figure 1.[1] The onstream analyzer is utilized to provide a continuous readout of the agent composition of the air streams.[2] Flow meters are required in conjunction with the onstream analyzers to provide the necessary data to determine the amount of vapor adsorbed or desorbed by the soil sample. A method of controlling the moisture content of the intake air to the vapor generator is required to assure that the moisture content of the soil samples is not changed during each trial.

2.2.2 Preparation of Soil Sample

A representative sample of soil will be placed in the test chamber to allow the flow of the air/agent vapor stream through the sample. The amount of soil to be used in the sample will be based on the configuration of the test apparatus.

2.2.3 Testing to Determine Adsorption on Apparatus Surfaces

For each level of water vapor in the agent laden air, the

---

[1]A flow apparatus is required because the utilization of BET type equipment requires the use of vacuum which would disrupt the constant moisture content required for each trial with moist soil.

[2]An onstream SO_2 analyzer modified for use with GB and VX vapor may be a suitable sampler.

Figure 1. Schematic of Test Apparatus.

Table 2. Test Limitations

Air Temperature	$70^{\circ} \pm 2^{\circ}$ F.
Moisture Content of Moisture Containing Soil	Specified value ±1 percent (absolute)
Concentration of H_2O in Air Stream	Dry for use with dry soil sample. To be determined for each moist soil sample so that moisture level in soil is not disturbed.
Agent Concentration in Air to Test Chamber Inlet[a]	
GB	80 mg/m^3, 40 mg/m^3 (nominal)
VX	10 mg/m^3, 5 mg/m^3 (nominal)

[a]Agent concentrations are to be within ±2 percent of the specified values.

amount of agent that adsorbs onto the surfaces of the test apparatus must be determined. This will be done for GB, VX, and simulant vapors at the concentration specified in Table 2. The trial will be terminated when equilibrium has been achieved between the agent in the air and the agent on the surfaces of the apparatus.

2.2.4 Trials to Determine Adsorption on Soils

Trials specified in Table 1 will be accomplished for GB, VX, and simulants. The individual samples of soil will be exposed to the agent laden air which has a water content that will be in equilibrium with the moisture in the soil samples. The soil samples will be exposed to the agent laden air until equilibrium is achieved.

2.2.5 Trials to Determine Desorption from Soils

After the adsorption of agent vapor has reached equilibrium as specified in paragraph 2.2.4, clean air will be passed through the soil sample to desorb the agent. Desorption will be considered complete when the downstream, onstream analyzer no longer records the detection of agent vapor. The clean air used in each desorption trial will contain the same amount of water vapor as in the adsorption trials.

2.3 DATA REQUIRED

Particle size distribution, base exchange capacity, organic content, pH, classification of soil, and moisture content will be determined for each soil type used. Each soil sample will be weighed before testing. The concentration of agent and water vapor in the air used to challenge the soil sample, and in the air downstream of the sample, will be recorded continuously during the adsorption and desorption phase of each trial. The pressure, temperature, and flow rate of the air upstream and downstream of the soil sample will be recorded continuously during each trial.

2.4 ANALYTICAL PLAN

The amounts of agent adsorbed and desorbed by the soil samples will be determined as functions of time and concentration of agent challenge. The various soils will be compared with regard to the amount of agent adsorbed and desorbed as a function of moisture content and soil type. The effect on sorptivity of pH, base exchange capacity, organic content, and particle size will be investigated. The effect of soil adsorption on chemical munition expenditures will be examined if test data warrant such an analysis.

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DTC Test 69-31. Volume I (U)

DESERET TEST CENTER FORT DOUGLAS UT

29 MAY 1969

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[redacted]

ABSTRACT (U)

DTC Test 69-31 was conducted to evaluate the continued effectiveness of the Shipboard Toxicological Operational System (STOPS) of the USS HERBERT J. THOMAS (DD 833). The STOPS destroyer was challenged by five chemical vapor attacks using methylacetoacetate (MAA), which is a nontoxic simulant for toxic nonpersistent nerve agent GB. An additional 11 attacks were conducted in which the THOMAS was enveloped with the nonpathogenic biological aerosol, Bacillus subtilus var. niger (BG).

[redacted]

[redacted]

[redacted]

(U) FOREWORD (U)

[redacted]

This report outlines the work accomplished during DTC Test 69-31, conducted in the vicinity of San Diego, California, during August and September of 1968. [redacted]

The U. S. Navy provided the following support:

[redacted]

(2) USS HERBERT J. THOMAS (DD 833), as the target test ship.

(3) PCF "swift boats" for agent dissemination.

[redacted]

The U. S. Army provided laboratory personnel from Fort Detrick, Md.

[redacted]

[redacted]

[redacted]

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SECTION 1. [redacted] INTRODUCTION (U)

1.1 [redacted] BACKGROUND (U)

[redacted] In order to reduce the biological and chemical warfare vulnerability of ships, the U. S. Navy developed the Shipboard Toxicological Operational Protective System (STOPS). [redacted] STOPS was previously tested in DTC Test 66-5, PURPLE SAGE (U), and DTC Test 66-6, SCARLET SAGE (U), conducted during January and February of 1966. [redacted] DTC Test 69-31 was conducted in August and September of 1968 to evaluate the continued effectiveness of STOPS after operational deployment.

[redacted]

[redacted]

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1.3 [redacted] OBJECTIVES (U)

The objectives of this test were to demonstrate the continued effective-

[redacted]

[redacted]

SECTION 2. [redacted] DETAILS OF TEST (U)

2.1 ([redacted] INTRODUCTION (U)

[redacted]

2.1.2 Test Site and Test Ship Configuration

DTC Test 69-31 was conducted in a temperate marine environment approximately 80 nautical miles off the coast of San Diego in the vicinity of San Clemente Island and Santa Catalina Island in Fleet Operating Area W-290. The test was conducted during August and September of 1968 during daylight hours. The USS HERBERT J. THOMAS (DD 833) was steamed under normal operating conditions (two boiler operations) throughout the trials. General quarters (GQ) were sounded prior to beginning each trial and maintained through the completion of the sampling schedule. Zone-to-zone transit within the STOPS envelope was not permitted during GQ. Following each biological trial and before securing from GQ, the ship's water-washdown system was activated for approximately 10 minutes to thoroughly flush the topside surfaces.

[redacted]

[redacted]

[redacted]

RDTE PROJECT NO. 1X665704D63402
USATECOM PROJECT NO 5-CO-473-910-001
DTC PROJECT NO. 69-10

DTC TEST 69-10 (U)

VOLUME I

COORDINATION DRAFT

FINAL REPORT

[redacted]

OCTOBER 1969

[redacted]

[redacted]

DESERET TEST CENTER
Fort Douglas, Utah 84113

[redacted]

[redacted]

FOREWORD (U)

Many organizations made significant contributions to the success of the test. The organizations include:

Tactical Air Support	VMA-324, MAG-32, 2d Marine Aircraft Wing
Ships, landing craft, crews, and troops	Landing Force Carib 1-69/BLT 1/8, (attached and supporting personnel from 2d Marine Division)
Security Forces	Force Troops, Atlantic Fleet Marine Force, Atlantic
Evaluators	2d Marine Aircraft Wing 2d Marine Division Force Troops, Atlantic Fleet Marine Force, Atlantic
On-site Support	Atlantic Fleet Weapons Test Range Camp Garcia
Aircraft Munitions	NBC Weapons Section-2 Marine Wing Service Group 27 2d Marine Aircraft Wing
Medical Monitoring of test subjects and Background Studies	Naval Medical Field Research Laboratory
Background Studies	Naval Medical Research Institute

[redacted] ABSTRACT (U)

[redacted] In DTC Test 69-10, units of a [redacted] Marine Corps Ready Group were subjected to a chemical spray attack while engaged in an amphibious assault. The objective of the test was two-fold: (1) to assess the degradation in performance of troops wearing protective clothing and (2) to illustrate the effectiveness of existing chemical weapons. Contamination of ships and equipment supporting the landing was also assessed.

[redacted] The test was conducted in May 1969, on the beaches of Vieques, a small island near Puerto Rico. A harmless liquid, trioctyl phosphate was used to simulate the lethal chemical agent, VX. Attack missions were flown by Marine A-4 aircraft carrying Aero 14B spray tanks.

[redacted]

[redacted]

1.2.3 [redacted] Simulant (U)

The simulant, trioctyl phosphate (TOF), is a quadripartite approved simulant for agent VX.

[redacted]

[redacted]

1.2.6 [redacted] Primary Control Ship (U)

The LSD-30 (USS Fort Snelling) was the target ship for the ship trial. The Snelling is a Thomaston Class, Landing Ship, Dock (LSD).

[redacted]

1.4 [redacted] SCOPE (U)

[redacted] The purpose of DTC Test 69-10 was to determine the operational effects of a persistent, toxic, chemical spray attack on U.S. amphibious forces. The test was conducted in the spring of 1969 on the island of Vieques, which is located six miles east of the island of Puerto Rico.

(U) The test was conducted in two parts: (1) aerial spray attacks against Battalion Landing Team (Minus), BLT(-), and company sized USMC amphibious landing forces; and (2) an aerial spray attack against the primary control ship of an amphibious assault force.[2]

[redacted] During all the trials, a nontoxic simulant for agent VX was

[redacted]

sprayed from Aero 14B spray tanks carried by A-4 aircraft. [redacted]

[redacted]

On the primary control ship trial, an LSD was attacked while it was simulating off loading of troops for an amphibious assault. [redacted]

[redacted]

During all trials, chemical sampling was conducted on exposed personnel to determine if they were contaminated with the simulant. Also, the performance of the troops, the landing craft crews, and the ship's crew was evaluated with regard to the response of personnel to the chemical attack and their subsequent ability to operate in a simulated toxic environment. [redacted]

[redacted]

DTC TEST 66-13. (U)

DESERET TEST CENTER FORT DOUGLAS UT

MAR 1968

ABSTRACT

[redacted] HALF NOTE was designed to determine biological decay rates of nonpathogenic organisms--Escherichia coli (EC) and Serratia marcescens (SM)--in a marine environment and to further investigate diffusion characteristics therein. Biologicals were released in aerosols by A4 aircraft equipped with Aero 14B spray tanks. Downwind recoveries of the disseminated biological materials were computed and compared with standard diffusion models. [redacted]

[redacted]

CHAPTER ONE

OPERATIONAL SUMMARY (U)

SECTION I

PURPOSE (U)

HALF NOTE was designed primarily to determine biological decay rates of nonpathogenic organisms Escherichia coli (EC) and Serratia marcescens (SM) in a marine environment when disseminated from an aerial spray system. [redacted]

SECTION II

RESULTS (U)

Twenty-seven trials were conducted during the period 18 August to 30 September 1966. Trials were conducted in an open sea area off Hawaii, under low windspeed conditions. [redacted]

. Calcofluor, in conjunction with the microaerofluorometer, proved to be a useful tool for determining cloud arrival and departures. [redacted]

[redacted]

SECTION II

OBJECTIVE (U)

To determine biological decay of vegetative nonpathogens in a marine environment and to compare the field decay rates with chamber decay rates when conducted under similar conditions.

SECTION III

SCOPE (U)

The decay portion of HALF NOTE consisted of 27 over-ocean trials divided into four groups. Group A consisted of eight trials in which standard EC and BG were disseminated simultaneously upwind from a target array. Group B consisted of eight trials wherein SM and BG were released simultaneously. Group C consisted of eight trials in which EC (made by the UK process) and BG were simultaneously disseminated. Three of the eight Group C trials used a United Kingdom product; the remaining trials used a Fort Detrick material produced by the United Kingdom process. In each of the trials of Groups A, B, and C, a slurry of BG and the designated nonpathogenic vegetative organism were released from Aero 14B spray tanks, wing-mounted on A4 jet aircraft. The aircraft

flew at operational speeds and heights. Two release lines were made upwind from the target array. Trials were conducted at night. In the three Group E trials, a new test concept was employed in which an A4 jet aircraft disseminated into the wind along a release line directly over the YAG-39. The YAG-39 then traversed upwind, along the line, attempting to stay in the aerosol cloud for several hours. With each HALF NOTE field trial, chamber trials were conducted subsequently at Fort Detrick, Md., and at the Naval Biological Laboratories, Oakland, California. These chamber trials paralleled as closely as possible the meteorological conditions (temperature and RH) observed in the field and used the same lot of material.

SECTION IV

TEST CONDITIONS (U)

1. ([redacted] TEST SITE

HALF NOTE was conducted in a subtropical marine environment, approximately 80 nautical miles south-southwest of Oahu, Hawaii [redacted].

[redacted]

3. ([redacted] BIOLOGICAL MATERIALS

a. Biological Tracer

The biological tracer BG (Bacillus subtilis var. niger), in a liquid form (used during HALF NOTE trials), was produced by Bio-Ferm Corporation, Wasco, California. Phenol (1%) was added to the BG slurry. [redacted]

[redacted]

b. YAG-39

Sampling was accomplished as outlined above, however, instead of two positions, four sampling positions were used--two stations positioned on the main deck and two on the upper bridge level. Andersen samplers to determine particle-size distribution of the cloud were placed at one position on the main deck and one position on the upper bridge level.

3. (U) METEOROLOGICAL MEASUREMENTS AND CONDITIONS

a. Meteorological Measurements

(1) Surface

[redacted] In addition, the YAG-40 took complete surface observations every half-hour during the trials. [redacted]

(2) Aircraft

The HC-47 aircraft was instrumented to record, continuously, the following parameters: pressure altitude, air temperature, relative humidity, infrared surface temperature, ozone concentration, turbulence, aircraft drift angle, compass heading, true airspeed, and ground speed.

[redacted]

[redacted]

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[redacted]

[redacted]

9. [redacted] CALCOFLUOR AND BG TRACER COMPARISON

a. In Tcials D1, SB9, and SB10, calcofluor was added to the BG slurry (1 pct by wt). [redacted]

b. In [illegible] was released with BG and calcofluor, [illegible] to obtain decay data for SM by first using BG and then calcofluor as the tracer. [redacted]

[redacted]

[redacted]

CHAPTER THREE

DIFFUSION CHARACTERISTICS (U)

[redacted]

SECTION III

SCOPE (U)

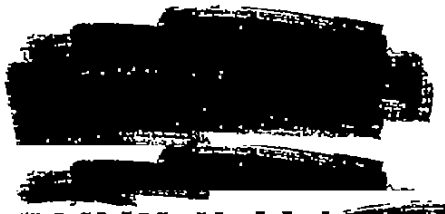
[redacted] For this study, a contractor released and sampled a stable inorganic tracer (FP). [redacted]

[redacted]

DTC Test 69-14, Simulant Phase I, Test of MC-1 Bomb. Volume I.

DESERET TEST CENTER FORT DOUGLAS UT

OCT 1972



[redacted]

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ABSTRACT (U)

(U) Deseret Test Center (DTC) Test 69-14, Phase I, was conducted between July and November 1971 at Dugway Proving Ground (DPG), Utah. The primary test objective was to determine the hazards associated with inadvertent release of the MC-1 bomb during takeoff and landing, as well as the hazards resulting from bomb damage caused by hostile fire. The secondary test objective was to determine the adequacy of leak suppressant and disposal procedures for damaged MC-1 bombs currently used by USAF explosive ordnance disposal (EOD) teams as specified in Air Force Technical Order (AFTO) 60-B-2-2-16, paragraph 5.

(U) Phase I consisted of 26 successful trials. Eighteen bullet-impact trials and eight simulated inadvertent releases were conducted.

[redacted]

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[redacted]

[redacted]

1.1.1.3 (U) Experimental Approach. [redacted] Both water-filled and simulant-filled bombs were subjected to 50- and 30-caliber fire, 20mm armor piercing incendiary (API) fire and 20mm high explosive incendiary (HEI) fire.

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[redacted]

[redacted]

1.2 (U) DESCRIPTION OF MATERIEL (U)

The item tested was the 750-pound MC-1 bomb, simulant and/or water-filled, equipped with or without burster for Phase I, subtests A and B. The item was equipped with adapter booster and the MAU-91 tail fin in "lo-drag" display for the trials conducted under Phase I, subtest C. [redacted]

[redacted]

Table 2 (U). Summary of Trials Conducted under DTC Test 69-14, Phase I

Subtest	Number of Trials	MC-1 Bomb Configuration			Type Projectile Used	Type Liquid Fill	Data Obtained			
		With Burster	Without Burster	With Fuze Adapter and MAU-91 Fin ("lo drag" display)			Photo-graphic	Sampling	Munition	EOD[a]
A (bullet impact)	5	x			50 cal.	DEHP	x	x	x	
	3	x			API	Water	x		x	
	3		x			DEHP	x	x	x	
B (bullet impact)	1	x			20mm	DEHP	x	x	x	
	1	x			HEI	Water	x		x	
	1		x			DEHP	x	x	x	
	1		x			DEHP	x	x	x	x
	1	x			20mm	DEHP	x	x	x	
	2	x			API	Water	x		x	
	2		x			DEHP	x	x	x	
	3		x		30 cal.	DEHP	x		x	
	1	x			API	DEHP	x		x	
	3		x			Water	x		x	
C (inadvertent release)	6		x	x	NA[b]	DEHP	x	x	x	
	2		x	x	NA	DEHP	x		x	

[a] EOD denotes explosive ordnance disposal.
[b] NA denotes not applicable

Secondary Aerosol Study. Volume I

DTC TEST 70-73

DESERET TEST CENTER FORT DOUGLAS UT

APR 1972

ABSTRACT

Deseret Test Center conducted Test 70-73 at Dugway Proving Ground in the summer and winter of 1970. [redacted] The objective of the test was to examine the potential secondary aerosol hazard to friendly troops following a biological agent attack. A secondary aerosol is defined as bacterial, toxic, or viral particles resuspended in the air after once settling from a primary aerosol attack or after the biological agent has been intentionally deposited on surfaces.

The types of biological attack simulated in this study were (a) a liquid filled bomblet point source, (b) an aerial liquid spray line source, and (c) a surface deposition with dry biological spores. [redacted]

SECTION 1. SUMMARY

1.2 DESCRIPTION OF MATERIEL

[redacted]

A liquid slurry of BG was dispersed by an explosive test fixture or by a vehicle mounted generator. The dry form of BG was manually deposited with a gravity test fixture at the designated area for the road deposit trials.

[redacted]

[redacted]

1.4 SCOPE

Twenty trials were conducted under several meteorological regimes between July and December 1970. [redacted]

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SECTION 2. DETAILS OF TEST

2.1 EXPLOSIVE TEST FIXTURE DISSEMINATION

[redacted]

2.1.2.2 Dissemination Equipment and Procedures. [redacted] One Mark IX disseminator was placed on each side of the test fixture to disseminate zinc cadmium sulfide (FP) outlining the aerosol travel. [redacted]

[redacted]

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DTC Test 69-10. Volume II (U)

DESERET TEST CENTER FORT DOUGLAS UT

APR 1971

UNCLASSIFIED

[redacted]

FOREWORD (U)

[redacted]

(C) Many organizations made significant contributions to the success of the test. The organizations include:

Tactical Air Support	VMA-324, MAG-32, 2d Marine Aircraft Wing, FMFLant
Ships, landing craft, crews, and troops	Landing Force Carib 1-69/BLT 1/8, (attached and supporting personnel from 2d Marine Division), Amphibious Squadron 12.
Security Forces	Force Troops, Atlantic, FMFLant
Evaluators	2d Marine Aircraft Wing, FMFLant 2d Marine Division, FMFLant Force Troops, Atlantic, FMFLant
On-site Support	Atlantic Fleet Weapons Test Range Camp Garcia
Aircraft Munitions	NBC Weapons Section-2 Marine Wing Service Group 27 2d Marine Aircraft Wing, FMFLant
Medical Monitoring of test subjects and Background Studies	Naval Medical Field Research Laboratory, U.S. Army Research Institute of Environmental Medicine
Background Studies	Naval Medical Research Institute

[redacted]

[redacted]

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Table 12 ([redacted]. Estimate of Contamination on Landing Force Personnel on First Company Trial (C Co.), 3 May 1969 (U)

Name of individual [redacted]	Name of individual [redacted]
1st Platoon	1st Platoon
Stickles	Paulsen
Maxon	Johnson, E.D.
Guiliano	Williams
Dougherty	Place
Marrow	Vasquez
McCree	Smith
Nick	Harness
Johnson, E.E.	Dolite
Bettroger	Kittle
Schuerman	Baugh, E.
Deese	Ledford
Guevara	Richmond
Allen	Messer
Beecher	Carr
Walsh	Taylor
Wren	Payton
Owens	Meerrifield
Oswalt	High
Brewer	C. Smith
Michniewicz	Macia
Kiawan	
2nd Platoon	2nd Platoon
Sherman	Brown
Christenson	Blaquiere
Richardson	Parnham
Kowalczyk	Steiner
Haigler	Atkins
Tochtesman	Mansue
Raffider	Martens
Rinks	Bell
Shamitkde	Otis
Downing	Porter
Herrera	Whalum

[redacted]

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[redacted]

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Table 12 [redacted]. Continued (U)

2nd Platoon	2nd Platoon
Moody	Diffendorfer
Iliff	J. Johnson
Davis	Stiger
Morant	Scott
Barnes	Hunt
Auntry	Scale
Clerver	Bates
Offerman	Stoker
Hester	Sweeney
3rd Platoon	**3rd Platoon**
Gilbertson	Andrews
Porter	Calcaterra
Gazaille	Vincent
Melawson	Green
Davis	Hayes
Revior	Wilson
Musto	Jacobs
Rinaldi	Chamblee
Weare	Barber
Finkenbinder	Minor
Stradford	Tindall
Karpinski	Tilly
Bevins	Davis
Bitner	Robinson
Garaualia	Brennan
Palmer	Seigler
Scarchilli	Barto
Webber	McDonald
Ziruk	Pougeau
Flint	Mills
Freeman	Landing Craft Crewmen

[redacted]

[redacted]

UNCLASSIFIED

UNCLASSIFIED

[redacted]

UNCLASSIFIED

Table 13 [redacted]. Estimate of Contamination on Landing Force Personnel on Second Company Trial (A Co.), 4 May 1969 (U)

Name of individual [redacted]	Name of individual
1st Platoon	1st Platoon
Simpson	Savage
Cole	Wachacha
Smith	Perry
Ramsey	Tomecer
Poole	Raines
Snarski	Searles
Holmes	Janusczak
Lewis	Armstrong
Finch	Johnson
Cline	Young
Owens	Michalak
Canalems	Rowe
Josefczyk	McRothan
Clark	Taylor
Herre	Bowles
Bunner	Veal
McElhiney	Tyner
Jones	Quick
Kirsch	Newcombe
Marley	Haldeman
Wilkinson	Ramandanes
Hardin	Martinez
Kurtz	Ausey
Botten	Wallace
Fortier	Furtado
Grisson	Wilkins
York	Howard
Platter	Spory
Magnon	Coleman
Tilman	Napou
2nd Platoon	2nd Platoon
Greer	Dotson
Thies	Wagner
Bailey	Robey
Stephens	Brown, G.
Wooten	Satterfield

[redacted]

UNCLASSIFIED

UNCLASSIFIED

Table 15 [redacted]. Continued (U)

2nd Platoon	2nd Platoon
Peter, R.	Berrios
McCain	Richardt
McNamara	Kearny
Hutchison	Perry
Lanceford	Collins
Naujalis	White
Love	Zampler
Mooney	Werden
Strausbeal	Infinger
Anderson	Cavins
Kelley	Slankster
Isabelle	Crim
Praga	Odic
Meeker	McMurray
Gavin	Johnson, B.
Webster	Keen
Hiers	Lehr
Oakley	Fleenda
Wiesner	Bulloea
Bartley	Stein
Brown	Clapprood
Banks	

3rd Platoon	3rd Platoon
Hammer	Briskey
Bokemeyer	Drew
Elliott	Murray
Reece	Black
Gonzalec	Howell
Hamilton	Rader
Brown, E.M.	Anderson
Tuohy	Tomlinson
Agriesti	Norfleet
Tripptree	Clifton
Henderson	Crafton
Hilliard	Malcom
Munson	Pinkerton
Cdomba	Williamson
McFadden	Foster
Hatfield	Sullivan

[redacted]

[redacted]

UNCLASSIFIED

Table 14 [redacted]. Estimate of Contamination on Landing Force Personnel on Third Company Trial (B Co.), 5 May 1969 (U)

Name of individual [redacted]		Name of individual	
1st Platoon		1st Platoon	
Trimback	[redacted]	Appling	[redacted]
Correa		Smith	
Petrie		Canter	
Marsick		Shephard	
Larocoli		Shanks	
Reamer		Peralue	
Schmitt		Smith	
Mathis		Christiansen	
Edward		Chauneck	
Auera		Campos	
Clark		Foley	
Rampe		Young	
Jackson		Williams	
Rautio		Harper	
Mahoney		Zies	
Bates		Palomsi	
Mars		Hesten	
Barnes		Wara	
Sullivan		Crenshaw	
Woods		George	
Almand		Connelly	
Eurell		Hook	
Bajoeli		Glosson	
2nd Platoon		2nd Platoon	
Vasihe	[redacted]	Bestle	[redacted]
Shoop		Spencer	
Wolf		St Francis	
Martin		Threatt	
McDaniel		Scavens	
Davis		Kriger	
White		Wilhite	
Brady		Valdez	
King		Belt	
Noel		Dennis	
Hagan		La Fleur	
Allen		Wi[redacted]d	
Duenes		Df[redacted]	

[redacted]

[redacted]

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Table 14 [redacted]. Continued (U)

2nd Platoon	2nd Platoon
Pere	Shuhl
Baily	Finkbeiner
Guthrie	Deibert
Smith	Rhodes
Seymoor	Bottey
Mohr	Darl
Alexander	Southard
Swanson	Grissom
Hartman	Burns
3rd Platoon	**3rd Platoon**
Milliner	Morris
Flowers	Marshall
Nathaniel	Lyerla
Senna	Scufflam
Smith, F.M.	McGilley
Smith, Larry	Gallagher
Viveiros	Davis
Shelby	Bowers
Routte	Goins
Hart	Severance
Dunning	Husted
Jennings	Baseik
Hill	Eggleston
Maheley	Keeler
Troy	Love
Johnson	Bailey
Derline	McNeal
Shank	Bertrand
Prado	Cruz
Collins	Schmidt

[redacted]

[redacted]

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[redacted]

Table 15 [redacted]. Estimation of Contamination on Landing Force Personnel on BLT(-) Trial, 7 May 1969 (U)

Name of Individual [redacted]	Name of Individual [redacted]
A COMPANY 1ST PLATOON	
Tyner, G.	Wilkins, L.
Brooks, D.	Young, L.
Danes, R.	
Bowles, D.	A COMPANY 2ND PLATOON
Martinez, V.	
Avery, J.	
McKiltham	Banks, L.
Lemon, J.	Werden, K.
Howard, R. L.	Keen, J. A.
Taylor, W.	Bullock
Newcombe, D.	Tooker, C. L.
Haldeman, J.R.	Trimble, M. C.
Furtado, J. A.	Isabelle, W.
Wallace, C. D.	Infinger, J.
Lewis, R. H.	Hainesworth, S.
Napoli, R.	Hutchison
Spory, G.	Abbey, J.
Bunner, E.	Johnson, B.
Herre, J.	Hieps, R.
Searle, C.	Praga, J. F.
Michalaic, M. J.	Greer, J. A.
Armstrong, H. E.	Gavin, D.
Finch, R. A.	Brown, G.
Janusczok, J.	Meeker, H. M.
Tomecek, C.	Datson, N.
Gagnon	Wager, R. C.
Rowe, W. H.	Oakley, A.
Wachacha, M. E.	Crafton, R.
Perry, W. T.	Webster, W.
Johnson, Jerry	Norfleet, W. F.
Cain, Robert	McCain, R. L.
Tillman, W. L.	Hankston, R. A.
Canale, M. J.	Crim, G. T.
Poole, T.	Strausberg, E. A.
Ramsey, R.	Widener, R.
Cline, L. A.	Bailey, O. F
Fczyk, J.	McMurray, J.
Snarski	Love, D. B.
Smith, A.	Stein H. S.
Owens, T.	Lehr, B. R.
Savage, R.	Peter, R. J.
Holmes, J.	Thies, J. R.

[redacted]

[redacted] UNCLASSIFIED

Table 15 [redacted]. Continued (U)

Name of individual [redacted]	Name of individual [redacted]
Kelley, R. D.	Hamilton, C.
Clapprood, M.	Elliott, R.
Anderson, D. C.	Rhodes, R.
Fleenor, D. R.	Reece, G.
Odle, R. L.	Skora, J.
Naujalis	Collins, D.
Malcolm, A.	Barrios, C.
McNamara, W. J.	Barkholz, W.
Wooten, G. C.	Martin, G.
	Pinkerton, T.
A COMPANY	Schooder, M.
3RD PLATOON	Rampler
Drew, R.	B COMPANY
Murray, J.	1ST PLATOON
Howell, J. W.	
Colombo, J.	Marr, R.
Anderson, D. A.	Mathis, R.
Dennis, L. T.	Shanks, J.
Black, A. R.	Barnes, B.
McFadden, D.	Jackson, B.
Brisky	Bates, T.
Kellery, W.	Young, R.
Reader, C. E.	Trimbach, R.
Morrons, W.	Smith, C.
Kniatkowski, J. A.	Williams, A.
Gonsalez, C. D.	Petrie, L.
Agriesti, E.	Clark, M.
Perry, R.	Reamer, J.
Sullivan, E.	Zies, G.
Tomlinson, R.	Mahoney, R.
Brown, G.	Dixon, P. L.
White, T.	Cheuneck, R.
Williamson, D.	Appling, J.
Foster, S.	Darrell, P.
Spano, R.	Connelly, T.
Kaaney, T.	Shepherd, R.
Hatfield	Bailey, T.
Rader, R.	Hewett, H.
Tuohy, D.	Foley, H.
Munson, S.	Richardson, K.
Tripptree, R.	Campos, A.
Hammer, K.	George, R.
Henderson, S.	Carter, C. W.
Sassenhagen, W.	Palonsi, R.

[redacted]

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Table 15 [redacted] Continued (U)

Name of individual [redacted]	Name of individual [redacted]
Pradolm, J.	C COMPANY
Swenson, R.	3RD PLATOON[b]
Love, F.	
Bailey, H.	Chesnault
Collin, B.	Wolfe, R. A.
Smith, F. M.	Rulla
Mihaljevic, T.	Shanklin, R. H.
Sullivan, J.	Webber, O. G.
Unknown	
Davis, F.	LANDING CRAFT
Flowers, D.	CREW MEMBERS
Smith, L.	2ND WAVE
Bascik, G. J.	
Gallagher, J.	Botten, J. E.
Schmidt, L. D.	Jacobus, W.
Davis, J.	Cofiell, R. M.
Sclefham, D. A.	Beleski, E.
Vivairos, R.	Marley, F. W
Senna	Grissom, Z.
Nathaniel, L.	Platter, A.
McGilley, J.	Hardin, N.
	Jones, C.
C COMPANY	Kirsch, G.
1ST PLATOON[b]	Brown, E.
	Cunningham, D.
Kirwan, T. R.	Adams, J.
Williams	Stewart, C.
Beecher, H. R.	Rich, W.
Brewer, F. H.	
Bettinger, C. W.	TANK CREW
Hartman, J.	3RD WAVE
Harris	
Walsh, R. W.	Himes, L. T.
Owens, R. O.	Stassi, T. J.
Orlando, R. G.	Wallace, L.
	Irish, B. A.
C COMPANY	
2ND PLATOON[b]	ONTOS CREW
	4TH WAVE
Hester, J.	
Camacho, J. C.	Traiser, M. H.
Cleaver, R. K.	Defoe, J. S.
Monty, H. M.	Henley, R.
Haigler, D. W.	Buckley, E.
	Pryor, A.

[redacted]

[redacted]

Table 16 [redacted] Contamination on Uniforms (U)

Name of Individual	Platoon	[redacted]	[redacted]
	First Company Trial (C Co.)		
Champlee, R.	3	[redacted]	[redacted]
Baugh, E.	1		
Harness, M.	1		
Harrison, C.	1		
Hartman, J.	1		
Herren, C.	1		
Holliday, R.	1		
Hopkins, D.	1		
Johnson, E.D.	1		
Place, W.	1		
Steiner, P.	2		
	Second Company Trial (A Co.)		
Brown, G.	2	[redacted]	[redacted]
Clapprood, M.	2		
Crim, G.	2		
Love, D.	2		
Dotson, N.	2		
Greer, J.	2		
Johnson, B.	2		
Lehr, B.	2		
Peter, R.	2		
Robey, L.	2		
Wagner, R.	2		
Keen	2		
Webster	2		
Norfleet	3		
	Third Company Trial (B Co.)		
Chauneck, R.	1	[redacted]	[redacted]
Edward, S.	1		
Eurell, T.	1		
Palonai, R.	1		
Reamer, J.	1		
George, R.	1		
Zies, G.	1		

[redacted]

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[redacted]

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Table 16 [redacted] Continued (U)

Name of Individual	Platoon	[redacted]	[redacted]
BLT(-) Trial (B Co.)			
Appling, J.	1	[redacted]	[redacted]
Chauneck, R.	1		
Dixson, P.	1		
Mahoney, R.	1		
Reamer, J.	1		
Smith, C.	1		
Williams, A.	1		
Zies, G.	1		

[redacted]

[redacted]

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