



THE ASSISTANT SECRETARY OF DEFENSE

1200 DEFENSE PENTAGON  
WASHINGTON, DC 20301-1200

HEALTH AFFAIRS

AUG 12 2003

The Honorable John Warner  
Chairman, Committee on Armed Services  
United States Senate  
Washington, DC 20510-6050

Dear Mr Chairman

I am pleased to forward the report prescribed in Section 709 of the National Defense Authorization Act for Fiscal Year 2003. Section 709 of Public Law 107-314 requires the Department of Defense (DoD) to investigate and provide to the Department of Veterans Affairs (VA) medically relevant information concerning occupational exposures servicemembers may have received during Projects 112 and Shipboard Hazard and Defense (SHAD) testing. The law requires that DoD submit an investigation plan within ninety days of enactment and two progress reports, one six months after enactment and one at the completion of the investigation, but not later than one year after enactment.

The enclosed Deployment Health Support Directorate (DHSD) report provides the results of DoD's diligent pursuit of the information envisioned by the Act since the VA's need came to our attention in August 2000. We will continue to work closely with the VA and the veterans for whom this investigation was conducted, assisting them with issues concerning these operational tests through our interactive email and telephone hotline, (800) 497-6261. While I consider this investigation closed, the DHSD will work with veterans involved with Project 112/SHAD and investigate any new information pertinent to the Desert Test Center's activities. We will share any additional information from those efforts with the VA, Congress and the public.

This is a comprehensive report. A list of all documents reviewed is included. This report constitutes DoD's final action under Public Law 107-314. Thank you for your continuing support of the Military Health System.

Sincerely,

A handwritten signature in black ink that reads "William Winkenweider, Jr." in a cursive script.

William Winkenweider, Jr, MD

Enclosure  
As stated

cc  
Senator Carl Levin

**2003 REPORT TO CONGRESS  
DISCLOSURE OF INFORMATION ON  
PROJECT 112 TO THE DEPARTMENT OF  
VETERANS AFFAIRS**

**As Directed By  
PL 107-314**

## **Table of Contents**

- A. Executive Summary.**
- B. Disclosure of Information on Project 112.**
- C. Number of Records Reviewed.**
- D. Each Test under Project 112 Identified.  
(Records and Information Passed to the VA)**
- E. Service Members Present at the Tests.**
- F. Fact Sheets and Cancellation Analysis Sheets (57).**

## EXECUTIVE SUMMARY

Public Law 107-314 requires the Department of Defense (DoD) to investigate and provide to the Department of Veterans Affairs (VA) medically relevant information concerning occupational exposures servicemembers may have received while participating in Projects 112 and Shipboard Hazard and Defense (SHAD). The law requires that DOD submit an investigation plan within ninety days of enactment and two progress reports, one six months after enactment and one upon completion of all activities contemplated by the investigation plan, but not later than one year after enactment. This is the second progress report required by section 709(e) of Public Law 107-314 and documents the completion of all activities contemplated by the investigation plan submitted pursuant to sections 709(a) and (b) of the same law.

The required investigation plan was submitted to Congress on March 20, 2003, although the DoD had begun working with the VA on this effort in August 2000. Because significant progress had already been made when Public Law 107-314 was enacted, the submitted plan was a summary of past investigative strategy, an outline of the remaining effort and a progress report of activities to date. In addition to listing the enormous number of documents the team had located and reviewed to that point, the progress report provided the remaining required information through examples of the web-based information products and tools that had been developed by the investigative team. At the time of the March 23, 2003, progress report, the investigative team could document that, of the 134 tests the Deseret Test Center is known to have planned between 1962 and 1973, at least 62 were cancelled and 46 were conducted. The execution status of the remaining 26 planned tests was not known.

This report is a comprehensive report. Over the past 34 months, the investigative team has located and reviewed over 28,000 pages of potentially relevant information. A list of all documents reviewed is included in this report. Of the 134 planned tests, 50 tests were conducted and 84 tests were cancelled. The medically relevant information for each conducted test has been declassified, provided to the VA, and summarized in a fact sheet. For those tests conducted in phases, a fact sheet has been prepared for each phase, making a total of 56 fact sheets. The fact sheets are publicly available on our web site and are included in this report. Twenty of the tests that the investigative team determined had been cancelled each required some explanation for that conclusion; those explanations are also available on our web site. For all ship-based tests with possible occupational exposures, crew rosters have been compiled and provided to the VA. For those land-based tests for which participating personnel information has been located, that information has also been passed to the VA. As of this report, a total of 5842 individual servicemembers have been identified as having participated in one or more of the Project 112 tests. A test-by-test count is included in this report.

Because the DoD investigation has found classified documents that identify the Deseret Test Center's planned, conducted and cancelled operational chemical and biological warfare tests during its existence from 1962 to 1973 and has provided the medically relevant information to the VA, the DoD has completed its contemplated actions under sections 709(a), (b) and (e) of Public Law 107-314. However, the Deployment Health Support Directorate within the Office of the Assistant Secretary of Defense (Health Affairs) will continue to respond to the questions, comments and concerns of veterans, Congress and the American public about the Deseret Test Center's activities

and will investigate any new information which may be presented. If that activity leads to any changes or additions to the information on Deseret Test Center activities, DoD will inform the VA, and appropriately modify the Deployment Health Support Directorate's SHAD/ Project 112/Deseret Test Center web site to inform the public.

## DISCLOSURE OF INFORMATION ON PROJECT 112

This report is submitted pursuant to section 709(e) of the National Defense Authorization Act for Fiscal Year 2003, Public Law 107-314 and documents completion of Department of Defense activities contemplated by the investigation plan submitted pursuant to sections 709(a) and (b) of the same law. This law called for submission by the Department of Defense (DoD) to Congress and the Secretary of Veterans Affairs (VA) of a comprehensive plan for the review, declassification, and submittal to VA of all DoD information on Project 112 relevant to the provision of VA benefits to Project 112 participants, and then for a six-month progress report and final report upon completion of all activities contemplated by the comprehensive plan. The statute defines Project 112 as the chemical and biological weapons vulnerability testing program conducted by the Deseret Test Center from 1963 to 1969, including the Shipboard Hazard and Defense (SHAD) project.

### HISTORICAL PERSPECTIVE

In 1961, Secretary of Defense Robert McNamara launched a wide-ranging assessment of how the Department of Defense (DoD) was organized and how the armed forces were structured and equipped to secure the nation. Of the approximately 150 sequentially numbered intensive studies undertaken, the 112th addressed chemical and biological warfare capabilities and defense.

Project 112 began during the early Cold War era when the United States faced a nuclear threat from both the Soviet Union and China. The Soviet Union was also suspected of having active chemical and biological warfare development programs. The United States considered chemical and biological warfare as an alternative to nuclear war. However, knowledge of nerve agent behavior in the field and operational decontamination in varying climates and terrain was limited. Despite extensive experimentation by the British and Japanese during World War II, reliable biological agent weaponization had not been achieved. The effects of biological weapons in varying climates and terrain were also largely unexplored. Because DoD's knowledge of chemical and biological warfare agent behavior was so limited, a testing program was begun.

The U.S. Army was directed to establish a test center that would be staffed and funded by all the Services and would coordinate a joint test program. The Army established the Deseret Test Center at Fort Douglas, Utah, in June 1962. That location allowed test center personnel to take advantage of facilities and personnel at Dugway Proving Ground, Utah, to support tests, which were expected to be conducted in the Pacific Ocean or on land in Alaska, Hawaii and the then-Panama Canal Zone. From 1962 to 1973, the Deseret Test Center conducted a series of operational chemical and biological warfare tests in support of Project 112. Project SHAD (Shipboard Hazard and Defense) was a subset of that program. Much of the chemical and biological warfare agent behavior information collected then remains valid today.

The Deseret Test Center's testing objectives and priorities were established at a series of more-or-less annual joint planning conferences attended by representatives of the Services and Joint and Combatant Commands. The Center's biological testing program was significantly curtailed

after President Nixon's November 25, 1969, renunciation of biological weapons and limitation of research to "techniques of immunization and measures of controlling and preventing the spread of disease." A week earlier, passage and signature of Public Law 91-121 had inserted the then-Department of Health, Education and Welfare into the approval process for all open-air tests involving actual chemical or biological agents. A year later, the Clean Air Act of 1970 formally established guidelines on the release of substances into the air. By mid-1971, the Desert Test Center's funding had been severely curtailed and it closed in 1973.

## INVESTIGATION TIMELINE

Beginning in late 1991 and continuing for approximately five years, the Department of the Army, as DoD executive agent for chemical and biological matters, received and responded to several Congressional inquiries on behalf of three possible Project SHAD veterans. In 1992, the Army confirmed the existence of the Project SHAD program and provided, in relation to these specific inquiries, vessels involved, test locations and substances used. In a 1994 response, unclassified or redacted documents were also provided. In 1997 and 1998, there was renewed Congressional, Department of Veterans Affairs and media interest in release of additional information on the testing program. In August 2000, VA Acting Secretary Gober asked DoD to provide information concerning the Project SHAD tests. At the time of the request, information on three tests – *Autumn Gold*, *Copper Head* and *Shady Grove* – was needed to satisfy pending claims, but additional Project SHAD tests were believed to have occurred.

In September 2000, responsibility for the investigation was assigned to the organization now known as the Deployment Health Support Directorate (DHSD). Weekly meetings between the DoD investigative team leader and VA's compensation and health benefits managers ensured that the DoD team was searching for the specific information that the VA needed. That information included the dates and locations of the tests, the vessels involved, lists of the chemical and biological agents, simulants, tracer materials and decontaminants documented to have been used in the tests and rosters of the personnel aboard the vessels.

Investigators received some initial documentation from the Dugway Proving Ground technical library and, once the investigation expanded beyond the first three tests, searched for more in the archives of the Dahlgren Naval Surface Warfare Center. The first major hurdle was the discovery that 'SHAD,' while a valid umbrella term, was not commonly used at the time of the testing and thus was not a helpful search term. Investigators had to identify individual test names and numbers and use those as search criteria. Even with that information, document searches proved to be more difficult than expected because some of the tests had more than one name and/or test number.

When the investigation was expanded beyond the first three tests, DoD decided veterans of individual tests should not have to wait for a full report of the investigation. Investigators were instructed to prepare fact sheets for delivery to the VA and publication as soon as they had compiled and declassified the necessary information. The *Autumn Gold*, *Copper Head* and *Shady Grove* fact sheets were provided to the VA on September 13, 2001, and posted to the

DHSD Web site, DeploymentLINK, to inform the public. The *Autumn Gold* and *Copper Head* tests both used biological simulants; *Shady Grove* used biological warfare agents.

In a joint DoD/VA press conference on January 31, 2002, the *Eager Belle I and II* and *Scarlet Sage* fact sheets were released and were posted to the DHSD Web site to inform the public. Biological simulants were used in all three tests.

The *Flower Drum I and II*, *Fearless Johnny*, *Purple Sage*, *DTC Test 68-50*, and *DTC Test 69-32* fact sheets were released on May 23, 2002. The fact sheets were posted to the DHSD Web site to inform the public. The *Flower Drum* series and *Fearless Johnny* used chemical warfare nerve agents. *Purple Sage* was a chemical simulant test. *DTC Test 68-50* used biological warfare agent and *DTC Test 69-32* used biological simulants.

By this point, the investigation indicated that both shipboard and land-based testing were planned by the Deseret Test Center. The DoD committed to obtaining and providing to VA all medically relevant information and names of servicemembers present during all tests known to have been planned and conducted by the Deseret Test Center from 1962-1973. Document searches had already expanded to Aberdeen Proving Ground, Maryland, Fort Leonard Wood, Missouri, and several sites in the Washington, D.C., area. Investigators developed an understanding of the role the Deseret Test Center played in the planning and execution of the tests. A major breakthrough came with the discovery of several Deseret semi-annual and annual progress reports, which allowed a better understanding of the universe of tests being investigated.

In July 2002, Assistant Secretary of Defense for Health Affairs William Winkenwerder Jr., MD formed a task force committed to completing the search for documents and providing all medically relevant information to the VA by June 2003. To allow public oversight of the team's progress, a chart showing the current status of the investigation was posted to the DeploymentLINK Web site and continually updated. In late August 2002, the investigative team traveled to Dugway Proving Ground, Utah, where they located additional final test reports. The team also secured a complete set of annual planning conference reports, searched and retrieved relevant documents from paper archives, initiated actions to have fragile classified films copied to a more stable media, and interviewed several former Deseret Test Center scientists.

In October 2002, DoD published 33 fact sheets based on newly discovered material from the Dugway, Utah, trip. Personnel information was provided to the VA in advance of a series of activities to communicate with Congress and the public. Publication of the fact sheets and posting the information to the DeploymentLINK Web Site followed a series of briefings to members of Congress and state delegations, Congressional testimony, and a joint DoD/VA press briefing. Fact sheets published included: *Whistle Down*, *Night Train*, *Tall Timber*, *West Side I*, *Magic Sword*, *Big Tom*, *Sun Down*, *Devil Hole I*, *High Low*, *Elk Hunt I*, *Elk Hunt II*, *Pine Ridge*, *Devil Hole II*, *Swamp Oak I*, *Green Mist*, *West Side II*, *Half Note*, *Dew Point*, *Red Cloud*, *Watch Dog*, *Rapid Tan*, *DTC Test 68-53*, *DTC Test 69-10*, *DTC Test 69-12*, *DTC Test 69-14*, *DTC Test 69-31*, *DTC Test 69-75*, *DTC Test 70-73*, *Big Jack A*, *Big Jack B*, *Yellow Leaf*, *Red Oak I* and *Pin Point*. Of the 33 fact sheets, 16 detailed the use of simulants and 17 detailed the use of live chemical or biological agents in the tests.

In December 2002, DoD released one additional fact sheet, *Cliff Rose*, and corrected a previously released fact sheet, *High Low*, based on information provided by several veterans. The information was provided to the VA and posted to the Web Site, DeploymentLINK, to inform the public. The investigative team intensified its search into obscure references to determine the status of the remaining tests.

Final declassification of medically relevant information on eight tests in June 2003 completed the public release of information on all known planned Deseret Test Center chemical and biological operational tests from 1962 to 1973. Fact sheets for three shipboard tests included *Errand Boy*, *Folded Arrow* and *DTC Test 70-C*. Seven fact sheets for five land-based tests included *Blue Tango*, *DTC Test 70-11 Phase I subtest 3*, *DTC Test 70-11 Phase I subtest 4*, *DTC Test 70-74*, *DTC Test 73-30*, *DTC Test 74-10 Phase I* and *DTC Test 74-10 Phase II*. The fact sheets were provided to the VA and posted to the Web site. Two of the shipboard tests – *Errand Boy* and *Folded Arrow*, used biological warfare agent simulants; one test – *DTC Test 70-C* – monitored naturally occurring airborne particulates in a marine atmosphere to gather background data. Of the five land-based tests, two used nerve agent simulants and three used biological simulants. The team also provided updated information on two tests; *Big Tom* and *Half Note*, based on recently located information and provided detailed analyses to explain why 20 tests were presumed to have been canceled.

**Table 1. Released Fact Sheets**

	<b>New</b>	<b>Tests</b>	<b>Revised</b>
September 13, 2001	3	3	
January 31, 2002	3	2	
May 23, 2002	6	5	
October 9, 2002	28	27	
October 31, 2002	5	4	
December 31, 2002	1	1	1
June 30, 2003	10	8	2
	<b>56</b>	<b>50</b>	<b>3</b>

The rosters of personnel aboard participating vessels were extracted from the ships' muster rolls and deck logs archived at National Archives II in College Park, Maryland. Lists of military personnel who participated in land-based tests have been assembled from available test officers' logbooks, temporary duty orders, country clearance messages, overtime reports, letters of commendation, and similar documents.

Personnel rosters for tests *Autumn Gold*, *Copperhead* and *Shady Grove* were provided to the VA beginning in March 2001. By release of the October 2002 fact sheets, personnel rosters were being passed prior to fact sheet publication to facilitate the VA's address acquisition process. Over 8800 records have been passed to the VA, documenting the participation of 5,842 individuals in one or more of the 50 tests.

**Table 2. Summary of Personnel Information Flow to the VA**

<b>Date</b>	<b>No. of Records</b>
March 2001	1535
July 2001	288
January 2002	1549
February 2002	11
May 2002	836
June 2002	126
July 2002	457
September 2002	891
October 2002	18
December 2002	433
January 2003	1275
February 2003	1
April 2003	7
June 2003	1415
	8,842 records
	<b>5,842 individuals</b>

No military personnel data were located for the following land-based tests: *Whistle Down, Big Jack A, Big Jack B, Night Train, Sun Down, Devil Hole I, Swamp Oak I, West Side II, Pin Point, Dew Point, Red Cloud, Watch Dog, Rapid Tan, Cliff Rose, DTC Test 68-53, DTC Test 69-12, DTC Test 69-14, DTC Test 69-75, DTC Test 70-11, DTC Test 70-73, DTC Test 70-74 and DTC Test 74-10*. No personnel data were reported to the VA for the shipboard test *Flower Drum II* because the target vessel was unmanned. No personnel data were reported to the VA for the shipboard test *DTC Test 70-C* because this test only collected air samples of naturally occurring airborne particulates while traveling from San Diego to Panama. No agents or simulants were released.

The purpose of this investigation was to locate information concerning possible exposures to military personnel. During the course of its work, the investigative team did locate documentation substantiating the participation of approximately 350 government civilian employees and contractor personnel.

In its search for medically relevant information, the investigative team has contacted and/or visited every command and government research activity known to have been affiliated with the Deseret Test Center. In general, the type of records found were technical reports on tests plans and results. Such reports were and are classified for national security reasons because information on dissemination characteristics of, and operational countermeasures to, chemical and biological agents and simulants for those agents could be used by adversaries or terrorist organizations with chemical or biological weapons program ambitions. However, without compromising national security information, the identification of agents or simulants, tracers and decontaminants used in tests can be declassified and released in fact sheets to answer questions about veterans' exposures under Project 112. Fact sheets have been published, which meet the VA's criteria for the information needed to evaluate compensation claims and health care needs.

The DHSD will continue to cooperate with the VA should additional information be needed for the purposes of detailed epidemiological studies. Although we have conducted an exhaustive search for information pertinent to possible VA benefits for Project 112 veterans, we cannot agree that any degree of searching records archives of a long ago terminated program would result in complete current documentation of all aspects of the program. Nonetheless, we believe the evidence found produces an accurate total picture of the Deseret Test Center program. We know of no other investigative leads that would meaningfully supplement that picture. However, the DHSD will investigate any new information that may be presented and share any additional or changed information with the VA and the public.

In DoD's investigation, no test-specific medical records or classified medical records were found. Technical reports on tests did not include personally identifiable information on health effects of exposures. The purpose of the tests was not to measure health effects; the purpose was to assess dissemination characteristics and operational countermeasures. Confirming reports from some veterans that in some tests nasal swabs and gargle samples were taken, one test report records results from nasal swab and gargle samples of several individuals, but these results did not include personal identifiers that would tie the results to specific individuals or produce information for medical records. These samples taken from individuals were to test the comparative filtering effects of different types of gas masks. In relation to other tests, several references to possible health surveillance activities and protective measures were also found in technical reports of test plans or results, matters presumably documented, to the extent they actually occurred, in members' individual medical records. We found an indication that in the 11-year history of the Deseret Test Center program there were four infections and no deaths. We found no other information connecting this notation, which might involve Deseret Test Center laboratory workers, to any particular Project 112 test or tests. We found no personally identifiable information on illnesses or medical treatments.

Review of the operational test planning documents and final test report documents and discussions with several of the scientists who planned and conducted these tests have provided substantiation that whenever harmful chemical or biological warfare agents were used as test substances, personnel present were appropriately protected. Actual exposure to such agents would result in acute health effects. However, when chemical or biological simulants or tracer materials were used, there were no efforts made to protect personnel because those substances were not believed to be harmful. For the shipboard operational testing, we have reviewed the ships' deck logs and have not found any indication of acute medical problems (deaths, medical evacuations, or numerous crewmembers becoming ill) at the time of this testing or immediately afterwards. This is also the case for those land-based tests for which we have located test officers' logs. In addition, neither the final test reports nor the Deseret Test Center scientists we talked with indicated any acute medical problems arising from participation in the series of tests we reviewed. Many of the chemical simulants that were used by the Deseret Test Center continue to be used as chemical simulants today. Only one of the biological simulants – *Bacillus subtilis var. niger (Bacillus globigii)* – continues to be used as a biological simulant for operational testing today. The other biological simulants have been replaced with agents having a lower risk of causing acute infections in immuno-compromised individuals. The decontaminants used were recognized to have acute effects on people if proper precautions were not taken; however, these substances are still being used today.

The Institute of Medicine, Medical Follow-up Agency, has been contracted to conduct a study of the current health of those sailors who were present during Shipboard Hazard and Defense (SHAD) testing and to compare their health status with sailors of the same period who were on similar ships which did not participate in operational chemical and biological testing. The results of this study should be concluded in 2005.

Although the information available does not suggest a pattern of illness or disability attributable to Project 112/SHAD participation, DoD believes the information that has been found, declassified, and released will greatly assist both further assessment of the entire project, such as the IOM study, and further analysis of individual veteran's disability claims. For thousands of veterans, the VA will now be able to confirm participation in SHAD and make a determination about exposure to a particular substance of substances. If scientific evidence supports a cause and effect link between such exposure and a disabling illness, the elements needed for a disability compensation award or other veterans benefits will all be established.

The DHSD hears from Project 112 veterans almost daily. Many of those veterans have sent copies of documents that have helped the investigation. Every veteran's account has been heard and factored into the investigation. Their recollections and personal documents have been very helpful in filling in the gaps in the official record.

### **A COMMENDATION TO PROJECT 112 VETERANS**

The Department of Defense wishes to acknowledge the patriotic service of all who participated in the Project 112 program. Publication of this report summarizes a significant effort on the part of many people in the Department of Defense to ensure important information has been made available to service members and the Department of Veterans Affairs. DoD understands that some Project 112/SHAD veterans feel this investigation should have been conducted and the information provided years ago, and hopes that the efforts summarized in this report are responsive to their concerns. This in-depth investigation reflects an individual and collective commitment to veterans and their families to help bring closure and to replace speculation and uncertainty with fact.

### **WHAT WE KNOW TODAY**

The Deseret Test Center planned 134 operational tests in support of Project 112. Fifty were conducted and 84 canceled. Table 3 shows the distribution of land- and sea-based (SHAD) tests.

**Table 3. Distribution of Project 112 tests**

	<b>Project 112</b>	<b>Land-based</b>	<b>Project SHAD</b>
Planned	134	90	44
Conducted	50	31	19
Canceled	84	59	25

Approximately half of the Project SHAD tests were conducted in the open ocean. The remaining tests were conducted in the coastal waters of California, Hawaii, Puerto Rico and the Marshall Islands. Table 4 shows the locations of the 19 completed Project SHAD tests.

**Table 4. Location of Project SHAD Tests**

Atlantic Ocean	1
Vieques, Puerto Rico	1
Pacific Ocean	13
Baker Island	1
Off Hawaiian Islands	3
Off San Diego	5
Open Ocean	4
Oahu, Hawaii	3
Entire Island	2
Pearl Harbor	1
Marshall Islands	1
<b>Total</b>	<b>19</b>

Approximately two-thirds of the Project 112 land-based tests were conducted outside the continental United States. Half of those were conducted in Alaska because the test sites could be used under both temperate and arctic conditions. Most of those conducted in the continental United States were conducted at Dugway Proving Ground, Utah. Table 5 shows the primary locations of the 31 completed land-based tests; some tests conducted a portion of their trials at other listed test sites.

**Table 5. Primary location of Project 112 land-based tests**

Alaska	11
Florida	1
Hawaii	4
Georgia	1
Maryland	1
Utah	7
Canada	1
Canada and Great Britain	1
Panama	3
Unspecified	1
<b>Total</b>	<b>31</b>

Test documentation lists 21 Navy and Army vessels as participating in one or more Project SHAD tests. These vessels are listed in Table 6.

**Table 6. Participating vessels**

USNS <i>Silas Bent</i>
USS <i>Berkeley</i>
USS <i>Carbonero</i>
USS <i>Carpenter</i>
USS <i>George Eastman</i>
USS <i>Fechteler</i>
USS <i>Granville S. Hall</i>
USS <i>Hoel</i>
USNS <i>Samuel Phillips Lee</i>
USS <i>Navarro</i>
USS <i>Okanogan</i>
USS <i>Power</i>
USS <i>Fort Snelling</i>
USS <i>Herbert J. Thomas</i>
USS <i>Tioga County</i>
USS <i>Wexford County</i>
LT2080
LT2081
LT2085
LT2086
LT2087

The fact sheets for each test identify the substances used in that particular test. Summarized below are the substances documented to have been used in one or more of the Project 112 tests along, with their known health effects.

### Warfare Agents

#### **Chemical Agents:**

Tabun (GA). Tabun is an amber, non-persistent liquid, which gives off little odor when vaporizing. The vapor is colorless. When exposed to Tabun, the first symptoms a victim will experience are a runny nose, tightness in the chest and dilation of the pupils. The victim will then encounter difficulty breathing, drooling from the mouth and nausea. Ultimately the victim will become comatose and will suffocate as a consequence of convulsive spasms. Tabun is essentially absorbed through the skin; however, vapors can also be hazardous. If a person does not receive an immediate lethal dose, death will occur after approximately 20 minutes. Those receiving a less than lethal dose who do not receive immediate medical care may suffer permanent neurological damage. There is little information available regarding the long-term human health effects of exposure to low doses of tabun. [Stockholm International Peace Research Institute at <http://www.cbw.sipri.se/docu/cw-agents/tabun.html>]

Sarin (GB). Sarin is a volatile and lethal nerve agent. It can enter the body by inhalation, ingestion, through the eyes, and to a lesser extent through the skin. After exposure to a sufficient dose, symptoms may occur within minutes and include runny nose, watery eyes, difficulty

breathing, dimness of vision, confusion, drowsiness, coma, and death. Very little information is available regarding long-term health effects following exposures to low levels that do not cause acute symptoms. An Institute of Medicine Committee concluded that there was insufficient evidence for or against an association between low-level sarin exposure and long-term health effects. [Centers for Disease Control at <http://www.bt.cdc.gov/Agent/Nerve/Sarin/Sarin.asp>]

Soman (GD). Soman is a colorless liquid, which gives off an odor of rotting fruit when vaporizing. The vapor is colorless. Soman is a persistent agent that can easily remain in a particular area for a day or longer, depending on the atmospheric conditions. Symptoms associated with exposure to Soman include a runny nose, tightness in the chest and constriction of the pupils. These symptoms are followed by difficulty in breathing. Ultimately the victim will become comatose and suffocate as a consequence of convulsive spasms. There is little information available regarding the long-term human health effects of exposure to soman. [Stockholm International Peace Research Institute at <http://www.cbw.sipri.se/docu/cw-agents/soman.html>]

VX. VX nerve agent is extremely lethal. It is an oily liquid that is clear, odorless, and tasteless. Death usually occurs within 10-15 minutes after absorption of a fatal dosage. VX nerve agent is one of the most toxic substances ever synthesized. Symptoms of overexposure may occur within minutes or hours, depending upon the dose. They include: constriction of pupils, headaches, runny nose, salivation, tightness in the chest, nausea, vomiting, anxiety, difficulty in thinking, muscle twitches, tremors, and weakness. With severe exposure, symptoms progress to convulsions and respiratory failure. There is little information available regarding the long-term human health effects of low doses of VX. [Centers for Disease Control and Prevention at <http://www.bt.cdc.gov/Agent/Nerve/VX/ctc0006.asp> or World Health Organization, Department of Sustainable Development & Environmental Protection <http://209.61.192.180/phe/factsheet5.htm>.]

Ester of Benzilic Acid (Agent BZ) (3-quinuclidinic ester of benzilic acid). Agent BZ is a psychochemical compound designed for temporarily disabling an enemy. It is designed to cause stupor, confusion and hallucinations when inhaled or absorbed through the skin. It is a white powder and may cause eye and skin irritation. Agent BZ may also irritate the digestive and respiratory tracts, if inhaled or ingested. While some effects may last several days or weeks, long-term or late-developing health effects have not been documented and seem unlikely. [<http://www.fishersci.ca/msds.nsf> or [http://www.fas.org/nuke/guide/russia/cbw/jptac008\\_194001.html](http://www.fas.org/nuke/guide/russia/cbw/jptac008_194001.html)]

### **Biological Agents:**

Coxiella burnetii (OU). This microorganism (a rickettsial species) can cause acute and chronic infection of the lung, liver, heart valve, nervous system, and other body sites (Q fever). Complications from this infection may be serious, even life threatening, but late-developing health effects would be unlikely. [Chin J, ed., Control of Communicable Diseases in Man, American Public Health Association, Washington DC, 2000, p. 407-11; Marrie, Thomas J., in Principles and Practice of Infectious Diseases, 5<sup>th</sup> edition (vol. 2), Churchill Livingstone, Philadelphia, 2000, p. 2043-50]

Francisella tularensis (TT and ZZ). Formerly identified as *Pasteurella tularensis*, this bacterial species can cause acute infection of the lung, bloodstream, and other body sites (tularemia), and is considered a potential biological warfare agent. While complications of the acute infection may be serious, even life threatening, long-term or late-developing health effects would be very unlikely. [Cross, J et al., in *Principles and Practice of Infectious Diseases*, 5<sup>th</sup> edition (vol. 2), Mandell GL, Bennett JE, Dolin R, eds., Churchill Livingstone, Philadelphia, 2000, p. 2393-2402; and Dennis DT et al., *JAMA* 2001;285(21):2763-73]

Puccinia graminis tritici (TX). This fungal species is toxic to plants, and therefore was considered a potential biological warfare agent directed against agricultural crops. It is not ordinarily considered to have either short-term or long-term human health effects. [Zajtchuk R., ed., *Textbook of Military Medicine* (part 1, *Medical Aspects of Chemical and Biological Warfare*, 1997), Office of the Army Surgeon General, Washington DC, 1997, p. 60, 460; and web site at <http://www.cbwinfo.com>]

Staphylococcal enterotoxin B (PG2). When inhaled, this bacterial toxin can cause fever and cough, incapacitation, and (with large doses) death, and is considered a potential biological warfare agent. When ingested, it commonly causes gastrointestinal symptoms (nausea, vomiting, and diarrhea). Some symptoms may last weeks, but long-term or late-developing health effects would be unlikely. [Ulrich RG et al., in *Textbook of Military Medicine* (part 1, *Medical Aspects of Chemical and Biological Warfare*, 1997), Office of the Army Surgeon General, Washington DC, 1997, p. 621-30]

### **Riot Control Agents:**

CS and CS2. Two of several chemicals commonly called "Tear Gas." CS and CS2 are white, crystalline powders dispersed into the air as either an aerosol or powder. The chemical name for CS and CS2 is ortho-chlorobenzylidene malononitrile. Riot control agents affect the eyes, airways and skin. Exposure to CS causes burning, irritation, tearing and pain in the eyes. Airway symptoms include burning, sneezing, cough, shortness of breath and increased secretions, such as runny nose and increased salivation. High concentrations of CS or CS2 can cause blistering of the skin. With commonly used concentrations, these effects are short-term and the potential for long-term health consequences is low. [http://www.metrokc.gov/health/hazard/riotcontrol.htm#cs and Cornell University, <http://msds.pdc.cornell.edu/msds/siri/files/chl/chlfz.html> ]

### **Simulants**

#### **Chemical Simulants:**

Bis (2-ethyl-hexyl) hydrogen phosphite. This chemical compound used as an additive in industrial lubricants can cause acute irritation of the skin, eyes, and respiratory tract. There is insufficient evidence for or against long-term health effects. [NLM TOXNET at <http://toxnet.nlm.nih.gov>.]

Di (2-ethylhexyl) phthalate (DEHP). This chemical is commonly present in flexible plastics and therefore widespread in the environment and of some concern for the general population. While low level exposures have not been shown to cause serious health effects, acute exposure to high levels of this chemical can cause irritation of the skin, eyes, and respiratory tract. DEHP has caused cancer in some animal testing, but the relevance of this testing to cancer in humans is uncertain. [DHHS PHS ATSDR ToxFAQs, Di(2-ethylhexyl)phthalate #117-81-7, April 1993, and Toxicological Profile for Di(2-ethylhexyl)phthalate (DEHP), September 2000, both available at <http://www.atsdr.cdc.gov>. Also WHO International Agency for Research on Cancer (IARC) Monographs on the Evaluation of Carcinogenic Risks to Humans (vol. 77, Some Industrial Chemicals updated February 23, 2000), and NLM TOXNET, Bis(2-ethylhexyl)phthalate 117-81-7 Human Health Effects, available at <http://toxnet.nlm.nih.gov>]

Diethyl phthalate. This chemical is commonly present in flexible plastics and cosmetics as well as in some insecticides and repellents, and therefore widespread in the environment and of some concern for the general population. While low level exposures have not been shown to cause serious human health effects, acute exposure to high levels of this chemical can cause irritation of the skin and eyes in animal testing. It is mutagenic and carcinogenic in some cell and animal testing, but these effects have not been demonstrated in humans. [DHHS PHS ATSDR ToxFAQs, Diethyl Phthalate #84-66-2, September 1996, and Toxicological Profile for Diethyl Phthalate, both available at <http://www.atsdr.cdc.gov>. Also NLM TOXNET, Diethyl Phthalate 84-66-2, HSDB Human Health Effects and Animal Toxicity Studies, as well as CCRIS, IRIS and other databases, all available at <http://toxnet.nlm.nih.gov>]

Dimethyl methylphosphonate (DMMP). Dimethylmethylphosphonate is used as a flame retardant, a pre-ignition additive for gasoline, an antifoam agent, a plasticizer and stabilizer, a textile conditioner and anti-static agent, and an additive for solvents and low-temperature hydraulic fluids. It may be harmful if inhaled, swallowed or absorbed through the skin. It is a suspected carcinogen. [<http://ntp-server.niehs.nih.gov/htdocs/LT-studies/tr323.html>]

Polymethyl methacrylate (PMMA). Polymethyl methacrylate is a clear plastic used as a shatterproof replacement for glass. It is also found in acrylic latex paints. Little is known about long-term health effects of PMMA, but methyl methacrylate (from which PMMA is made) is considered not likely to be carcinogenic to humans. [EPA, Toxicological review of methyl methacrylate (CAS No. 80-62-6), January 1998, available at <http://www.epa.gov>, and NLM TOXNET, methyl methacrylate, HSDB Human Health Effects, available at <http://toxnet.nlm.nih.gov>]

Methylacetoacetate (MAA). While acute exposure to this compound has been associated with irritation of skin, eyes, respiratory tract, and digestive tract, there is little or no evidence of long-term or late-developing health effects and it is not known to cause cancer in animal testing. [NLM TOXNET, Methyl acetoacetate 105-45-3, HSDB Human Health Effects and Animal Toxicity Studies, available at <http://toxnet.nlm.nih.gov>]

Sulfur Dioxide (SO<sub>2</sub>). This compound is a common product of combustion and an environmental air pollutant. Acute exposure to high levels of sulfur dioxide can cause burning of the nose and throat, difficulty breathing, and even obstruction of the airways. Long-term

exposures have been associated with breathing difficulty and lung damage. Even low level exposures may worsen asthma. It can cause cancer in some animal species, but this has not been clearly demonstrated in humans. [DHHS PHS ATSDR ToxFAQs, Sulfur dioxide #7446-09-5, June 1999, available at <http://www.atsdr.cdc.gov>]

Trichloropropane. This chemical is used as an industrial solvent, paint and varnish remover, and cleaning and degreasing agent. Exposure to high levels for a short time causes eye and throat irritation. [<http://www.atsdr.cdc.gov/tfacts57.html> [http://www.osha-slc.gov/fts/chemicalsmapling/data/CH\\_273200.html](http://www.osha-slc.gov/fts/chemicalsmapling/data/CH_273200.html)]

Trioctyl phosphate (TOF). Used as a simulant for VX nerve agent. This compound, also known as tri(2-ethylhexyl) phosphate, can irritate the eyes, skin, and respiratory tract on contact. It can cause cancer in some animal species, but this has not been demonstrated in humans. [NLM TOXNET, Trioctyl phosphate 1806-54-8 or Tris(2-ethylhexyl)phosphate 78-42-2, HSDB Human Health Effects and Animal Toxicity Studies, available at <http://toxnet.nlm.nih.gov>]

### **Biological Simulants:**

Bacillus globigii (BG). Now considered to be a variety or close relative of *Bacillus subtilis*, this bacterial species was used as a simulant and considered harmless to healthy individuals. *Bacillus subtilis* and similar *Bacillus* species are common in the environment, and are uncommon causes of disease. They have been associated with acute infections of the ear, meninges (brain lining), urinary tract, lung, heart valve, bloodstream, and other body sites, but always or nearly always in individuals whose health has already been compromised. Long-term or late developing health effects would be very unlikely. [Tuazon CU in Principles and Practice of Infectious Diseases, 5th edition (vol. 2), ed., Mandell GL, Bennett JE, Dolin R, Churchill Livingstone, Philadelphia, 2000, p. 2220-6, and US Environmental Protection Agency, *Bacillus subtilis* Final Risk Assessment, February 1997, available at <http://www.epa.gov>]

Escherichia coli (E. coli). This bacterial species is a common inhabitant of the digestive tract but can also cause acute infection, especially when it gains access to other body sites, like the urinary tract, lung, and bloodstream. Long-term or late-developing health effects of *E. coli* infection would be unlikely. [Eisenstein, Barry I et al, in *Principles and Practice of Infectious Diseases*, 5th edition (vol. 2), Churchill Livingstone, Philadelphia, 2000, p. 2299-301.]

Serratia marcescens (SM). This bacterial species can cause acute infections of the urinary tract, lung, bloodstream, and other body sites. These infections commonly occur in individuals whose health has already been compromised, and often in patients who are already hospitalized. Long-term or late-developing health effects would be very unlikely. Its use as a bacterial marker for studying the dissemination of bacterial aerosols was discontinued in 1969. [Eisenstein, BI et al., in *Principles and Practice of Infectious Diseases* (chap. 206), 2000]

T-3 coliphage. Coliphages are viruses (bacteriophages) that infect *E. coli* bacteria and would not be expected to have harmful effects on humans. [<http://www.epa.gov/nerlcwww/1601ap01.pdf>]

## Other Substances

### **Tracer Materials:**

Calcofluor (fluorescent brightener 28). Used as a fluorescent tracer with *Bacillus globigii*. This chemical has been used as a medical laboratory stain and as a whitening agent in detergents. It can cause eye irritation in animal testing, but there is limited evidence for or against human health effects. [NLM TOXNET, Cellufluor 4193-55-9, available at [net.nlm.nih.gov](http://net.nlm.nih.gov), and MSDS available at <http://hazard.com>]

Phosphorous 32. One of the highest-energy beta-emitting radionuclides commonly used in biomedical research. In general Phosphorous 32 does not pose a severe threat from ingestion or inhalation. High-energy betas from Phosphorous 32 pose an external (skin and lens of the eye) dose hazard as well as a potential internal hazard. Radiogenic health effects (primarily cancer) are observed in humans only in doses in excess of 10 rem delivered at high dose rates. Below this dose, estimation of adverse health effects is speculative. Exposure can contribute to development of cancer. [[http://www.uos.harvard.edu/ehs/radsafety/gui\\_p32.shtml](http://www.uos.harvard.edu/ehs/radsafety/gui_p32.shtml)]

Tiara. A luminescent gelatinous material. No other information is available.

Uranine. This chemical compound is added to cosmetics for color and is commonly used (injected or applied) for medical diagnostic purposes (e.g., for vascular imaging and eye staining). It can cause acute skin reactions and acute allergic reactions (including life-threatening anaphylaxis) in some individuals. Long-term and late-developing health effects would be very unlikely. [NLM TOXNET, Fluorescein Sodium 518-47-8 and Fluorescein 2321-07-5, available at <http://toxnet.nlm.nih.gov>]

Zinc cadmium sulfide (ZCdS). This compound was aerosolized as a tracer material for the dispersion of biological warfare agents because it had similar properties. There has been little scientific study on the toxicity of this compound when inhaled. A National Research Council (NRC) committee focused on the cadmium component as potentially most toxic. While higher concentrations and more prolonged exposures to cadmium are associated with the development of lung cancer, the concentrations and duration of exposure in the Army's tests were substantially lower. The NRC committee concluded that the risk of adverse health effects to populations in the area was low. [National Research Council (National Academies), Toxicologic Assessment of the Army's Zinc Cadmium Sulfide Dispersion]

### **Decontaminants:**

Betapropiolactone ( $\beta$ -Propiolactone). This chemical is a disinfectant. Modern uses for  $\beta$ -propiolactone include vaccines, enzymes, tissue grafts, and surgical instruments; to sterilize blood plasma, water, milk, and nutrient broth; and as a vapor-phase disinfectant in enclosed spaces. Its sporicidal action kills vegetative bacteria, pathogenic fungi, and viruses. The primary routes of potential human exposure to  $\beta$ -propiolactone are inhalation, ingestion, and dermal

contact. Acute contact can cause skin, eye, and respiratory tract irritation, sometimes with permanent damage. An International Agency for Research on Cancer (IARC) working group reported no data are available to evaluate the carcinogenicity of  $\beta$ -propiolactone in humans. It is carcinogenic and mutagenic in animal and bacterial cell testing. [Department of Health and Human Services, National Institutes of Health web site at [http-server.niehs.nih.gov](http://server.niehs.nih.gov); EPA Technology Transfer network Air Toxics Website, at <http://epa.gov>, and NLM TOXNET, at <http://toxnet.nlm.nih.gov>]

Calcium hypochlorite. Uses for calcium hypochlorite include bleach, cleaning solutions, and disinfectants for drinking water, wastewater purification systems, and swimming pools. When released into the air, it is broken down by sunlight and compounds commonly found in the air. Ingestion of small amounts can cause gastrointestinal irritation. Larger amounts can cause corrosive injuries to the mouth, throat, esophagus, and stomach and can be life threatening. Inhalation of chlorine gas may cause nasal irritation, sore throat, and coughing. Contact with the skin may cause burning pain, inflammation, and blisters. The International Agency for Research on Cancer (IARC) has determined that hypochlorite salts are not classifiable as to their carcinogenicity in humans. [ATSDR Medical management guidelines for calcium hypochlorite and sodium hypochlorite, available at <http://www.atsdr.cdc.gov>]

Monoethanolamine. This chemical causes eye and skin burns, may be harmful or fatal if swallowed, may cause dizziness and drowsiness, and causes respiratory tract irritation and possibly damage. Chronic exposure to skin may cause a persistent irritation or dermatitis. Repeated inhalation may cause lung damage. [<http://www.astrochemicals.com/10129.pdf>]

**Other:**

*Aedes aegypti* mosquitoes. *Aedes aegypti* mosquitoes used in this test were not infected. Health effects at the time would be the usual swelling and irritation associated with mosquito bites. No long-term or latent effects would be expected.

## NUMBER OF RECORDS REVIEWED

What follows is a list of all records reviewed by the Deployment Health Support Directorate's investigative team and retained for use by its investigators. This list reflects more than 28,000 pages reviewed by DoD's investigators. Prior to the passage of Public Law 107-314, DoD's investigators did not catalog the records they reviewed unless they were retained for investigator use. To date, we estimate that the investigative team has reviewed approximately 10,000 additional pages of records and determined that the material was not germane to this investigation.

## Final Report to Congress on Project 112 (P.L. 107-314)

Document Title	# of pages	clas
A Project Summit Report - Task Night Train Arctic Test Technology for Biological Weapons 31 July 1963	99	CONF
Additional Calculations for Project Big Tom (U)	12	CONF
An Overview of the Deseret Test Center Support and Technical Facilities, October 1972	89	FOUO
Analytical Study Vulnerability of the US and its military forces to antipersonnel biological attack	55	SECRET
Analytical Study Vulnerability of the US and its military forces to antipersonnel biological attack	145	SECRET
Annual Status Report of Joint Operational Activities	46	SECRET
Annual Status Report of Joint Operational Activities, March 1971	30	SECRET
AUTUMN GOLD Test 63-2 Final Report May 1964	85	CONF
Bibliographic Data received from Dugway Proving Ground, UT technical library	326	UNCLAS
Bibliographic Data received from Edgewood technical library	102	UNCLAS
BIG JACK Phase A Final Report May 1964	198	CONF
BIG JACK Phase B Final Report May 1964	154	CONF
Biological and Chemical Ship Penetration 8 June 1965	14	CONF
Biological and Ship Penetration 8 June 1965	10	CONF
Biological Defense Research Vulnerability of a Naval Amphibious task Force to attack by Biological Agents Technical Report	47	SECRET
Brief Summary of DTC Bio Tests, 17 February 1977	22	SECRET
Chemical Weapons in Russia: History, Ecology, Politics 1994	72	UNCLAS
Chronological History of Ernest Harmon Air Force Base	7	UNCLAS
Climatological Survey of Areas of Interest to Ai-personnel BW	88	SECRET
Combat Lady (U)	153	CONF
Combat Lady (U)	157	CONF
Comparison of Penetration During COPPER HEAD versus Penetration During HIGH LOW December 1965	10	CONF

Conference Briefs for the Fourth Annual Deseret Test Center Planning Conference, 8 March 1965	122	SECRET
Coordination Draft of Test 65-16 PINE RIDGE Final Report June 1967	84	SECRET
COPPER HEAD Special Exercise Report 23 March 1965	22	UNCLAS
COPPER HEAD Test Plan September 1964	71	CONF
Critique of DTC Biological Proposed Testing Outline Plans for Testing in Fiscal Year 1969, Volume I, 15 August 1967	43	CONF
Critique of DTC Biological Proposed Testing Outline Plans for Testing in Fiscal Year 1969, Volume II, 15 August 1967	45	CONF
Critique of DTC FY 71-A and B	35	CONF
Critiques of proposed test plans, tests, 70-30, 70-70, 70-31, 70-71, 70-72, 70-73, 70-74	60	CONF
Daily Test Log DTC Programs Pine Ridge, Tall Timber and yellow Leaf	80	CONF
Decision Risk Analysis on Biological Defense Program	92	CONF
Decision Risk Analysis on Biological Defense Program	65	CONF
Deck Log Book, USS Carpenter (DD-825), June 1963	14	UNCLAS
Deck Log Book, USS Carpenter (DD-825), May 1963	47	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), April 1965	33	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), April 1966	40	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), August 1963	33	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), August 1965	51	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), August 1966	38	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), December 1963	37	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), December 1966	32	UNCLAS

Deck Log Book, USS George Eastman (YAG-39), February 1963	33	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), February 1964	59	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), February 1965	49	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), February 1966	31	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), February 1967	30	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), January 1963	71	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), January 1964	63	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), January 1965	57	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), January 1966	33	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), January 1967	32	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), July 1966	33	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), June 1964	61	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), June 1966	31	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), March 1963	63	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), March 1964	63	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), March 1965	36	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), March 1966	47	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), March 1967	32	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), March 1967	35	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), May 1964	64	UNCLAS

Deck Log Book, USS George Eastman (YAG-39), May 1966	38	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), November 1963	21	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), November 1964	37	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), November 1965	31	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), November 1966	33	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), October 1963	35	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), October 1966	32	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), September 1965	54	UNCLAS
Deck Log Book, USS George Eastman (YAG-39), September 1966	34	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), April 1964	13	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), April 1965	16	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), April 1967	39	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), April 1969	29	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), August 1964	1	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), August 1965	20	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), August 1966	47	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), December 1965	18	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), December 1966	17	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), February 1963	29	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), February 1964	34	UNCLAS

Deck Log Book, USS Granville S. Hall (YAG-40), February 1965	34	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), January 1963	5	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), January 1964	51	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), January 1965	12	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), July 1964	13	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), July 1966	42	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), June 1963	14	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), June 1964	9	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), June 1965	26	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), June 1966	34	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), June 1967	33	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), June 1969	29	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), March 1963	63	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), March 1964	55	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), March 1965	36	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), May 1963	66	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), May 1964	36	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), May 1965	24	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), May 1966	39	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), May 1967	42	UNCLAS

Deck Log Book, USS Granville S. Hall (YAG-40), May 1969	41	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), November 1965	21	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), November 1966	31	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), October 1964	25	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), October 1966	40	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), September 1963	32	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), September 1964	6	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), September 1965	34	UNCLAS
Deck Log Book, USS Granville S. Hall (YAG-40), September 1966	55	UNCLAS
Deck Log Book, USS Herbert J. Thomas (DD-833), February 1966	42	UNCLAS
Deck Log Book, USS Herbert J. Thomas (DD-833), January 1966	47	UNCLAS
Deck Log Book, USS Herbert J. Thomas (DD-833), March 1966	39	UNCLAS
Deck Log Book, USS Hoel (DDG-13), May 1963	35	UNCLAS
Deck Log Book, USS Navarro (APA-215), June 1963	20	UNCLAS
Deck Log Book, USS Navarro (APA-215), May 1963	67	UNCLAS
Deck Log Book, USS Power (DD-839), February 1965	43	UNCLAS
Deck Log Book, USS Power (DD-839), January 1965	48	UNCLAS
Deck Log Book, USS Tioga County (LST-1158), June 1963	23	UNCLAS
Deck Log Book, USS Tioga County (LST-1158), May 1963	73	UNCLAS
Defenses Against Biological Attack: A General Assessment	71	SECRET
Defenses Against Biological Attack: A General Assessment	110	SECRET

Department of the Army Correspondence (10 Docs) - SHAD declassification	14	UNCLAS
Deseret Test Center Final Report Test 63-1 EAGER BELLE Phase I (Revised) 30 June 1965	106	SECRET
Deseret Test Center in 1962, January 1963	28	CONF
Deseret Test Center Log for Shad Tests (Autumn Gold and Devil Hole), 17 May 65-10 Sept 65	49	UNCLAS
Deseret Test Center Outline Plans for FY 75, February 1973	43	SECRET
Deseret Test Center Report DTC 64-342, Five Year Testing Program, Extra-continental Testing Program for Chemical and Biological Weapons and Defensive Systems, 1 April 1964	46	CONF
Deseret Test Center Requirements and Proposed Program for FY 74, November 1972	90	SECRET
Deseret Test Center Test Plan 63-2 Revision 1 AUTUMN GOLD April 1963	96	CONF
Deseret Test Center Test Plan DTCP 63-1 EAGER BELLE Phase II December 1962	57	CONF
Deseret Test Center Test Plan DTCP 63-4 BIG JACK November 1962	80	CONF
Deseret Test Center Test Plan DTCTP 63-1 EAGER BELLE Phase 1 October 1962	78	CONF
Deseret Test Center Test Plan Test 64-6 YELLOW LEAF 14 January 1964	66	CONF
Deseret Test Center, Film Inventory	13	SECRET
Deseret Test Center, Outline Plans for FY 74, March 1972	102	SECRET
Deseret Test Center, Outline Plans for Testing in FY 64, 19 February 1963	59	CONF
Deseret Test Center, Outline Plans for Testing in FY 65, December 1963	90	CONF
Deseret Test Center, Outline Plans for Testing in FY 66, 16 December 1964	47	CONF
Deseret Test Center, Outline Plans for Testing in FY 66, Supplement I, 17 December 1964	35	CONF
Deseret Test Center, Outline Plans for Testing in FY 66, Supplement II, January 1966	17	CONF
Deseret Test Center, Outline Plans for Testing in FY 67, December 1965	51	CONF

Deseret Test Center, Outline Plans for Testing in FY 67, Supplement I, December 1965	30	CONF
Deseret Test Center, Outline Plans for Testing in FY 67, Supplement II, February 1966	21	CONF
Deseret Test Center, Outline Plans for Testing in FY 68, January 1967	39	CONF
Deseret Test Center, Outline Plans for Testing in FY 68, Supplement 4, January 1967	38	CONF
Deseret Test Center, Outline Plans for Testing in FY 68, Supplement I, January 1967	28	CONF
Deseret Test Center, Outline Plans for Testing in FY 68, Supplement II, January 1967	33	SECRET
Deseret Test Center, Outline Plans for Testing in FY 68, Supplement III, January 1967	30	CONF
Deseret Test Center, Outline Plans for Testing in FY 69, January 1968	56	SECRET
Deseret Test Center, Outline Plans for Testing in FY 69, Supplement I, January 1968	41	SECRET
Deseret Test Center, Outline Plans for Testing in FY 69, Supplement II, January 1968	26	SECRET
Deseret Test Center, Outline Plans for Testing in FY 69, Tests for Special Consideration, January 1968	29	SECRET
Deseret Test Center, Plans for Testing in FY 70, February 1969	74	SECRET
Deseret Test Center, Plans for Testing in FY 70, Supplement I, February 1969	75	SECRET
Deseret Test Center, Requirements and Proposed Programs for FY 73, October 1971	53	SECRET
Deseret Test Center, Semi-Annual Status Report, Current Activities to 15 February 1966	117	CONF
Deseret Test Center, Semi-Annual Status Report, Current Activities to 15 February 1967	96	SECRET
Deseret Test Center, Semi-Annual Status Report, Current Activities to 15 July 1966	140	SECRET
Deseret Test Center, Semi-Annual Status Report, Current Activities to 15 July 1968	45	SECRET
Developmental Test of Hyfed Phosphorous Detector Data Report, January 1973	38	UNCLAS

Dissemination and Evaluation of a Tracer Material Release (NIGHT TRAIN) Volume II Data Supplement 30 June 1964	298	UNCLAS
Dissemination and Evaluation of a Tracer Material Release COPPER HEAD April 1966	68	CONF
DPG Test 73-30 Effect of Ambient Solar Radiation on Captive Aerosols (Microfilament Technique) and Free-Floating Aerosols Final Report, October 1973	136	UNCLAS
DPG Test 74-010 Phase 1 Operational Evaluation of Massive Chemical Attack Final Report	130	SECRET
DPG Test 74-010 Phase I Operational Evaluation of Massive Chemical Attack (U)	84	SECRET
DPG Test 74-010 Phase II Vulnerability of Marine Wing Weapons Unit (U)	78	SECRET
DPG Test 74-010 Phase II Vulnerability of Marine Wing Weapons Unit (U)	123	SECRET
DPG-Test 70-74 Phase 3, Comparison of biological Aerosol Decay Microfilament Technique versus free-floating Aerosols Test Plan by John H. Morris, Aug 73	15	UNCLAS
DTC Outline Plans for FY 73, March 1971	80	SECRET
DTC Program for FY 72, March 1971	73	SECRET
DTC Special Study R-12 (U) Preliminary Investigation of Chemical Agent Challenges to US Navy Ships at Sea	103	SECRET
DTC Study 71-152M Phase II: Canopy Penetration of Aerially Disseminated Chemical Materials, Final Report, January 1973	74	UNCLAS
DTC Test 65-11 Final Report March 1968	108	CONF
DTC Test 66-1 DEVIL HOLE Phase II Final Report May 1968	183	CONF
DTC Test 66-13 Final Report March 1968	253	SECRET
DTC Test 66-2 (Phase I) Final Report June 1968	81	CONF
DTC Test 66-3 SWAMP OAK Final Report March 1968	132	CONF
DTC Test 66-4 GREEN MIST Final Report Volume I June 1969	37	CONF
DTC Test 66-4 GREEN MIST Final Report Volume II August 1970	165	CONF
DTC Test 66-8 Phase II Final Report May 1968	227	CONF
DTC Test 67-2 Final Report July 1968	137	CONF

DTC Test 67-7 Final Report May 1968	182	SECRET
DTC Test 67-8 Final Report December 1968	185	SECRET
DTC Test 68-10 Test Plan February 1968	31	CONF
DTC Test 68-12 Test Plan February 1968	25	CONF
DTC Test 68-13, Phases I, II, III and DTC Test 69-12 Final Report Volume I February 1972	73	SECRET
DTC Test 68-13, Phases I, II, III and DTC Test 69-12 Final Report Volume II. Extent and Duration of Downwind Hazard for Chemical Agents GA and GD August 1972	53	SECRET
DTC Test 68-50 Final Report Volume I March 1969	36	SECRET
DTC Test 68-50 Final Report Volume II April 1969	194	SECRET
DTC Test 68-52 CLIFF ROSE Test Plan 7 October 1968	50	CONF
DTC Test 68-53 Phase I Final Report Volume II February 1971	241	UNCLAS
DTC Test 68-53 Phase I Final Volume I Report March 1971	152	UNCLAS
DTC Test 68-71 Final Report	115	SECRET
DTC Test 69-10 Final Report Volume I Coordination Draft October 1969	37	SECRET
DTC Test 69-10 Final Report Volume II April 1971	192	CONF
DTC Test 69-10 Test Plan April 1969	46	CONF
DTC Test 69-12 Phase I Test Plan May 1968	4	CONF
DTC Test 69-13 Test Plan April 1968	12	SECRET
DTC Test 69-14, Simulant Phase I, Test of MC-1 Bomb, Final Report, Volume I October 1972	67	UNCLAS
DTC Test 69-31 Final Report Volume I 29 May 1969	23	SECRET
DTC Test 69-31 Final Report Volume II 29 May 1969	69	CONF
DTC Test 69-31 Test Plan March 1968	33	SECRET
DTC Test 69-32 Final Report Volume I May 1970	38	SECRET
DTC Test 69-32 Final Report Volume II September 1970	167	SECRET
DTC Test 69-71 Test Plan, April 1968	33	CONF
DTC Test 69-71 Test Plan, April 1968	33	CONF
DTC Test 69-75 Final Report Volume I June 1969	39	SECRET
DTC Test 69-75 Final Report Volume II June 1969	198	SECRET
DTC Test 70-10 Phase I Test Plan, June 1971	30	UNCLAS

DTC Test 70-11, Phase I Evaluation of Delivery and Assessment Techniques for Simulant Aircraft Spray Systems Revised Test Plan, June 1972	40	UNCLAS
DTC Test 70-73 Secondary Aerosol Study Final Report Volume I April 1972	23	UNCLAS
DTC Test 70-73 Test Plan July 1969	17	SECRET
DTC Test 70-74 - Phase II Viability Decay Study of Microfilament Impacted Organisms in a Controlled Environmental Mobile Facility Final Report, June 1973	92	UNCLAS
DTC Test 70-C (Phase I) Test Plan, March 1970	20	UNCLAS
DTC Test 70-C Characterization of the Naturally Occurring Particulates in the Marine Atmosphere Test Plan, May 1972	17	UNCLAS
DTC Test 70-C Characterization of the Naturally Occurring Particulates in the Marine Atmosphere Trial One Data Summary, January 1973	31	UNCLAS
DTC Test 70-C Trial Two Characterization of the Naturally Occurring Particulates in the Marine Atmosphere Data Report, June 1973	97	UNCLAS
DTC Test Plan 69-36	28	CONF
DTCTP 64-6 (Revised) YELLOW LEAF Test Plan November 1964	64	CONF
EAGER BELLE Phase 2 Final Report March 1964	74	CONF
ELK HUNT Phase I Test 65-14 Test Plan 1964	56	UNCLAS
Employment of YAG 39 and YAG 40 in Support of Toxic Chemical Field Testing	52	UNCLAS
FY 86 through FY 91 Test/Study Programs for Joint Chemical/Biological Contact Point and test	98	SECRET
FY86 through FY91 Test/Study Programs for Joint Chemical/Biological (CB) contact Point and Test, July 1985	180	SECRET
George Eastman, Dictionary of American Naval Fighting Ships	2	UNCLAS
High Altitude Release Special Study in Support of DTC Test 70-D, August 1972	52	UNCLAS
History of the USS George Eastman (YAG-39)	3	UNCLAS
History of the USS Tioga County (LST-1158) December 26, 1998	3	UNCLAS
History of USS Granville Hall (YAG-40) During Operation Redwing (1956)	2	UNCLAS

Independent Review of the Possible Health Hazards of the Large-Scale Release of Bacteria During the Dorset Defence Trials	39	UNCLAS
Information Security Guidance for NIGHT TRAIN DTCTP 54-5 31 October 1963	31	CONF
Installation Assessment of Gerstle River Test Site Records Evaluation Report No. 105 Volume 1, December 1976	58	UNCLAS
Investigative Report by Alaska Community Action on Toxics for Delta Junction, Alaska, The Nuclear Reactor at Fort Greely, May 2000	53	UNCLAS
Joint Chemical/Biological (CB) Contact Point and Test Project D049 Program Plan, June 1988	145	CONF
Joint Meeting of the Agents Committee and the Engineering & Production Committee, Chemical Corps Advisory Council, 8-9 March 1962 at Army Chemical Center and Fort Detrick, Maryland, November 1962	87	SECRET
Logistical Support Plan Test Series 65-11 SUN DOWN Test Series 66-3 SWAMP OAK 20 August 1965	6	UNCLAS
Logistical Support Plan Test Series 66-1 DEVIL HOLE II 31 May 1966	9	UNCLAS
Logistical Support Plan Test Series 66-10 PIN POINT 14 April 1966	7	UNCLAS
Logistical Support Plan Test Series 66-13 HALF NOTE 21 June 1966	10	UNCLAS
Logistical Support Plan Test Series 66-5 PURPLE SAGE 9 August 1965	7	UNCLAS
Logistical Support Plan Test Series 66-8 WEST SIDE II 25 August 1965	7	UNCLAS
Logistical Support Plan Test Series 67-7 RED CLOUD 29 August 1966	11	UNCLAS
MAGIC SWORD Test 65-4 Test Plan December 1964	17	CONF
Meeting of the Dissemination & Field Testing Committee, Edgewood Arsenal CBR Advisory Council, 10-11 October 1963 at Edgewood Arsenal and Fort Detrick, Maryland, May 1964	105	SECRET

Meeting of the Dissemination & Field Testing Committee, Edgewood Arsenal CBR Advisory Council, 3-4 December 1964 at Edgewood Arsenal and Fort Detrick, Maryland, Volume II, April 1965	25	CONF
Memorandum, Command History (USS Granville S. Hall), 23 April 1968	1	UNCLAS
Memorandum, Command History Report Symbol OPNAV 5757-4; submission of. (USS Navarro), 6 January 1964	3	UNCLAS
Memorandum, History of Commissioned Ship USS George Eastman, 2 March 1965	2	UNCLAS
Memorandum, History of Commissioned Ship USS George Eastman; continuation of. 25 April 1967	4	UNCLAS
Memorandum, History of USS Granville S. Hall (YAG40); submission of, 28 January 1967	3	UNCLAS
Memorandum, Ship's History, 1965 (USS George Eastman), 4 January 1966	4	UNCLAS
Memorandum, Ship's History; forwarding of (USS Hoel) 22 January 1964	3	UNCLAS
Memorandum, USS Navarro (APA215) History, Forwarding of. 19 September 1945	9	UNCLAS
Memorandum, USS Navarro (APA-215); history of 1964. 24 May 1965	4	UNCLAS
Methodology Study for Arriving at Agent Decay Parameters as Cloud travels Downwind	47	CONF
Monthly Personnel Roster, Co A, 1st Bn, 8th Marines, 2d MARDIV, April 1969	89	UNCLAS
Monthly Personnel Roster, Co B, 1st Bn, 8th Marines, 2d MARDIV, April 1969	58	UNCLAS
Monthly Personnel Roster, Co C, 1st Bn, 8th Marines, 2d MARDIV, April 1969	21	UNCLAS
Monthly Personnel Roster, Co C, 1st Bn, 8th Marines, 2d MARDIV, August 1969	58	UNCLAS
Monthly Personnel Roster, Co C, 1st Bn, 8th Marines, 2d MARDIV, June 1969	45	UNCLAS
Monthly Personnel Roster, Co C, 1st Bn, 8th Marines, 2d MARDIV, March 1969	15	UNCLAS
Monthly Personnel Roster, Co C, 1st Bn, 8th Marines, 2d MARDIV, May 1969	32	UNCLAS
Monthly Personnel Roster, Headquarters & Service Co, 1st Bn, 8th Marines, 2d MARDIV, April 1969	69	UNCLAS

Monthly Personnel Roster, Headquarters & Service Co, 1st Bn, 8th Marines, 2d MARDIV, June 1969	11	UNCLAS
Monthly Personnel Roster, Headquarters & Service Co, 1st Bn, 8th Marines, 2d MARDIV, May 1969	73	UNCLAS
NAVSEA Shipboard Chemical and Biological Defense Bibliography and Assessment March 1997	76	UNCLAS
Navy BW/CW Information Requirements and Recommendations on Test Objectives Including Extraterritorial Test Requirements for FY 68/69, 11 March 1966	111	SECRET
NIGHT TRAIN Test 64-5 Final Report December 1964	175	CONF
NRL Memorandum Report 1520, Studies of Personnel Protection Systems Aboard YAG-39, March 1964	16	CONF
Operation Castle, Bikini Atoll, May 1954, History of USS Tawakoni ATF114 During Operation Castle 1954	2	UNCLAS
Operation Salty Dog, Army Dugway Proving Ground, Ut, 9Sep 53	9	UNCLAS
Operation Transit III, Description of Facilities, YAG 40 Control Vessel, December 5, 1955	25	UNCLAS
Preliminary Critiques of proposed DTC FY 70 biological Test Plans	38	CONF
Preliminary Critiques of Proposed DTIC FY 71 Biological Test Plans	38	CONF
Preliminary Field Study Comparison of Fluidizers and Fluorescent Materials in Support of DTC Test 70-D Final Report, May 1972	66	UNCLAS
Pre-Test Technology for DTC Joint Test 70-C Test Plan, May 1971	13	UNCLAS
Project "SHAD" Technical Staff Training Program, 24 August 1962	97	UNCLAS
Project BIG TOM Analysis of Weapon Effectiveness March 1966	284	CONF
Project BIG TOM UL and OU Casualty Estimates	35	CONF
Project Deseret. Annual Historical Summary, 1 July 1962 - 30 June 1963	155	CONF
Project Deseret. Annual Historical Summary, 1 July 1963 - 30 June 1964	22	CONF

Project Deseret. Annual Historical Summary, 1 July 1964 - 30 June 1965	30	CONF
Project Deseret. Annual Historical Summary, 1 July 1965 - 30 June 1966	38	CONF
Project Deseret. Annual Historical Summary, 1 July 1967 - 30 June 1968	30	SECRET
Project Deseret. Annual Historical Summary, 1 July 1968 - 30 June 1969	30	SECRET
Project Deseret. Annual Historical Summary, 1 July 1969 - 30 June 1970	62	CONF
Project NIGHT TRAIN Supplemental Analysis September 1965	153	CONF
Project SHAD DPG Detailed Test Plan for Operation Southern Breeze	123	UNCLAS
Project SHAD Technical Staff Enlisted and Officer Personnel Roster, 16 January 1965	14	UNCLAS
Project Shad: DPG Test 70-74 Phase, Comparison of Biological Aerosol Decay Microfilament Technique free-floating Aerosols Test Plan, Aug 73	19	UNCLAS
Project Shad: Final Report Penetration of Aerial Spray through a Coniferous Forest December 1978	55	UNCLAS
Project Shad: Monthly Progress Report, No 240 (R)-14, 31 Aug 66	25	UNCLAS
Project Shad: Quarterly Report, No 448-3 April-June 1960	51	UNCLAS
Project Shad: Shoreline Diffusion Program Oceanside, CA Vol III Data, June 1969	216	UNCLAS
Project Shad: Trial Report, Operation Salty Dog DPGTR 91	33	UNCLAS
Project Shad: U.S.S. Carbonero (SS337) Deck Log Book (Dated 0001 1 Aug 66 Through 2400 31 Aug 66)	11	UNCLAS
Project Shad: U.S.S. Carbonero (SS337) Deck Log Book (Dated 0001W, 1 Sep 68-2400I, 30 Sep 68) Part II	2	UNCLAS
Project Shad: U.S.S. Carbonero (SS337) Deck Log Book (Dated 010000 1 Sep 66 through 302400 30 Sep 66)	34	UNCLAS
Project Shad: Comparison of Calculated and Observed Dosage and Deposition for Subtest Series	55	UNCLAS

Project SHAD: Deseret Test Center: Technical Note, Candidate Bacterial Species for Research in Biological Defense, August 1971	44	UNCLAS
Project SHAD: DPG Addendum to Detailed Test Plan for Operation Southern Breeze	56	UNCLAS
Project Shad: DPG Test 70-11 Phase I Subtest 4, Evaluation of Delivery and Assessment Techniques for Aircraft Spray (Simulant) Systems, October 1976	59	UNCLAS
Project Shad: Safety Evaluation of TMU-28/B Spray Tank Final Report June 1978	190	UNCLAS
Project Shad: Technical report Assessment of Operational Capability of US Forces After Biological Agent Attack, Sept 1990	47	UNCLAS
Project Shad: Trial Report Operation Salty Dog DPGtr44	9	UNCLAS
Project Shad: trial Report, Operational Salty Dog DPGTR 58	5	UNCLAS
Project Shad: U.S.S. Carbonero Deck Log Book (SS337) Dated 0001, 1 Nov 68-2400I, 30 Nov 68	2	UNCLAS
Project Shad: U.S.S. Carbonero Deck Log Book (SS337) Dated 0001W, 1 Sep 68 through 2400i, 30 SEP 68 Part 1	2	UNCLAS
Project Shad: U.S.S. Carbonero Deck Log Book (SS337) Dated 010001 Oct 68 to 312400 Oct 68	2	UNCLAS
Proposed DTC FY-70 Test Plans, September 1968	181	SECRET
Quarterly Progress Report Phase III, B/DWS, Model DA-88, 31 July 1963	85	CONF
Quarterly Progress Report Phase III, B/DWS, Model DA-88, Covering Period May 1963 through July 1963, 31 July 1963	83	CONF
RED BEVA 1964	20	CONF
RED OAK I Data Analysis October 1967	91	CONF
Reference Decontamination and Removal of Staphylococcal Enterotoxin B From Swatches of Cotton Clothing Deseret Test Center Fort Douglas, UT, Aug 1968	7	UNCLAS
Report No. 402-1-R26, 65-L-40 Data Analysis FLOWER DRUM Phase 1B Final Report June 1965	236	CONF
Report No. 402-2-R4(7) Data Analysis - FEARLESS JOHNNY Final Report July 1967	109	CONF

Report No. SM-42842 B/DWS Progress Report No. 27 Model DA-88 May 1, 1963	6	UNCLAS
Report of Proof Tests, LT Tug 2081 (Crew Training, Challenge and Decon of Target Ship)	113	CONF
Report of the Annual DTC CINCS/Services CB Coordination Conference (9th) held at Dugway Proving Ground, Utah, on 22-24 June 1971	104	CONF
Report of the Annual DTC CINCS/Services CB Coordination Conference 10th, held at Fort Douglas, Utah on April 1972	80	SECRET
Report of the Deseret Test Center Medical Advisory Committee, 21 March 1964	23	CONF
Report Operations Research Incorporated, Information Retrieval System for Deseret Test Center 30 April, 1966	35	UNCLAS
Results of Contamination Studies, 70-11 Phase I August 1974	1	UNCLAS
Second Preliminary Report - Phase II (Use Analysis) Volume II, 1 Oct 64 - 16 Nov 64	43	CONF
Second Preliminary Report-Phase II (Use Analysis) Volume II, 1 Oct 1964 to 16 Nov 1964	42	CONF
Secret Report Bibliography	16	SECRET
Semiannual Status Report, February 1972	12	SECRET
Semiannual Status Report, January 1973	15	SECRET
Semiannual Status Report, July 1972	17	SECRET
SHAD-related Documents at Porton Down 14 February 2002	37	UNCLAS
Special Study Number 5, Penetration of Enclosures by Chemical and Biological Aerosol, Vapor, and Particulate Clouds, Final Report, October 1969	90	SECRET
"Strictly for the Birds": Science, the Military and the Smithsonian's Pacific Biological Survey Program, 1963-1970, extracted from the Journal of the History of Biology 34: 315-352, 2001.	37	UNCLAS
Studies of Personnel Protection Systems Aboard YAG-39, March 1964	18	CONF
Summary of Discussions and Agreements reached at the Fourth Annual Deseret Test Center Planning Conference, 21 October 1965	7	CONF
Summary Report of Fifth Annual Deseret Test Center Planning Conference, 23 September 1966	21	SECRET

Summary Report of the Proceedings of the Eighth Annual Deseret Test Center Planning Conference, 3 July 1969	34	SECRET
SUN DOWN 1967	11	CONF
TALL TIMBER Test 64-8 Test Plan December 1963	110	CONF
Task RED BEVA Part I, Source Strength Requirements for Biological Agent Dissemination Tests, 30 April 1963	35	SECRET
Task RED BEVA Part II, Meteorological Data Requirements for Biological Agent Dissemination Tests, 30 April 1963	32	SECRET
Task RED BEVA Part III, Decay Data Requirements for Biological Agent Dissemination Tests, 31 July 1963	25	SECRET
Technical Note #8 Comments on Coordination Draft Test Plan of Test 66-6 SCARLET SAGE June 1965	14	UNCLAS
Technical Report Amphibious Operations in a Toxic Chemical Environment Phase I	86	SECRET
Technical Report Assessment of Operational Capability of US Forces After Biological Agent Attack September 1990	47	UNCLAS
Technical Report DTC Study 71-111, Phase III Amphibious Operations in a toxic Environment Penetrating Round effects	88	SECRET
Technical Report Sorption of G and V Agent Study	62	CONF
Technical Report Sorption of G and V Agent Study	134	CONF
Test 64-2 FLOWER DRUM Phase I Final Report - Revised December 1965	75	CONF
Test 64-2 FLOWER DRUM Phase II Final Report - October 1965	122	CONF
Test 64-4 Shady Grove Final Report	280	SECRET
Test 64-4 SHADY GROVE Final Report December 1965	362	SECRET
Test 64-4 SHADY GROVE Final Report June 1966	322	SECRET
Test 64-6 YELLOW LEAF Final Report October 1967	186	SECRET
Test 64-8 TALL TIMBER and Trial Groups A and B of Test 65-16 PINE RIDGE Final Report October 1967	143	CONF
Test 64-8 TALL TIMBER Test Plan - Revised December 1965	17	SECRET

Test 65-1 COPPER HEAD Final Report March 1966	95	CONF
Test 65-1 COPPER HEAD Test Plan December 1964	33	CONF
Test 65-12 DEVIL HOLE December 1966	165	CONF
Test 65-12 DEVIL HOLE Phase 1 Test Plan January 1965	29	SECRET
Test 65-13 HIGH LOW Final Report July 1966	200	CONF
Test 65-14 ELK HUNT Phase I Final Report November 1965	173	CONF
Test 65-14 ELK HUNT Phase I Final Report Supplement December 1965	104	UNCLAS
Test 65-14 ELK HUNT Phase II Final Report September 1966	134	CONF
Test 65-16 PINE RIDGE Final Report November 1967	97	CONF
Test 65-17 FEARLESS JOHNNY Final Report November 1966	117	CONF
Test 65-17 FEARLESS JOHNNY Test Plan Addendum August 1965	25	CONF
Test 65-3 WEST SIDE Phase I Final Report June 1966	220	CONF
Test 65-4 MAGIC SWORD Final Report May 1966	113	CONF
Test 65-5 IRON CLAD Test Plan January 1965	25	SECRET
Test 65-6 BIG TOM Final Report January 1967	253	SECRET
Test 65-6 BIG TOM Test Plan Addendum March 1964	9	SECRET
Test 65-6 BIG TOM Test Plan December 1964	92	SECRET
Test 66-1 DEVIL HOLE Phase II Test Plan February 1966	32	CONF
Test 66-10 PIN POINT Final Report December 1966	127	UNCLAS
Test 66-13 HALF NOTE Test Plan Addendum July 1966	6	SECRET
Test 66-13 HALF NOTE Test Plan Amendment September 1966	5	CONF
Test 66-13 HALF NOTE Test Plan June 1966	18	CONF
Test 66-2 RED OAK Phase I Test Plan August 1966	13	CONF
Test 66-3 SWAMP OAK Test Plan July 1965	14	CONF
Test 66-4 GREEN MIST Test Plan Addendum October 1966	5	CONF

Test 66-4 GREEN MIST Test Plan December 1965	27	CONF
Test 66-5 PURPLE SAGE Final Report January 1967	89	CONF
Test 66-6 SCARLET SAGE Final Report April 1967	110	SECRET
Test 66-8 WEST SIDE Phase II Test Plan August 1965	14	CONF
Test 67-12 SHARP NAIL Test Plan September 1966	11	SECRET
Test 67-2 DEW POINT Test Plan January 1967	9	CONF
Test 67-7 COINCIDENCE Test Plan July 1966	9	SECRET
Test 67-8 WATCH DOG Test Plan Addendum April 1967	6	SECRET
Test 67-8 WATCH DOG Test Plan February 1967	12	SECRET
Test 68-15 RED OAK Phase II Test Plan January 1967	47	CONF
Entomological Warfare Target Analysis	58	SECRET
US Army Activity in the US Biological Warfare Programs Volume I, 24 February 1977	39	UNCLAS
US Army Activity in the US Biological Warfare Programs Volume II, 25 February 1977	599	SECRET
US BW Agent Testing Using Human Subjects	22	UNCLAS
USS Berkeley (DDG-15) Muster Rolls, Enlisted, 1966	196	UNCLAS
USS Berkeley (DDG-15) Muster Rolls, Enlisted, 1965	237	UNCLAS
USS Berkeley (DDG-15) Muster Rolls, Officers, 1965	31	UNCLAS
USS Berkeley (DDG-15) Muster Rolls, Officers, 1966	36	UNCLAS
USS Carpenter (DD-825) Muster Rolls, Officer and Enlisted, 1963	61	UNCLAS
USS Carpenter (DD-825) The Ship and Her History	5	UNCLAS
USS Fechteler (DD-870) Muster Rolls, Enlisted, 1965	187	UNCLAS
USS Fechteler (DD-870) Muster Rolls, Enlisted, 1966	214	UNCLAS
USS Fechteler (DD-870) Muster Rolls, Officer, 1965	28	UNCLAS
USS Fechteler (DD-870) Muster Rolls, Officer, 1966	26	UNCLAS
USS Fort Snelling (LSD-30) Muster Rolls, Enlisted, 1969	184	UNCLAS

USS Fort Snelling (LSD-30) Muster Rolls, Officer, 1969	30	UNCLAS
USS George Eastman (YAG-39) Muster Rolls, Officer and Enlisted, 1963	120	UNCLAS
USS George Eastman (YAG-39) Muster Rolls, Officer and Enlisted, 1964	101	UNCLAS
USS George Eastman (YAG-39) Muster Rolls, Officer and Enlisted, 1965	103	UNCLAS
USS George Eastman (YAG-39) Muster Rolls, Officer and Enlisted, 1966	93	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Enlisted, 1967	61	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1963	115	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1964	104	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1965	104	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1966	94	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1968	104	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1969	33	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer and Enlisted, 1970	32	UNCLAS
USS Granville S. Hall (YAG-40) Muster Rolls, Officer, 1967	17	UNCLAS
USS Herbert J. Thomas (DD-833) Muster Rolls, Enlisted, July-August-September 1968	49	UNCLAS
USS Herbert J. Thomas (DD-833) Muster Rolls, Enlisted, May-June 1966	42	UNCLAS
USS Herbert J. Thomas (DD-833) Muster Rolls, Officer and Enlisted, January-February-March 1966	70	UNCLAS
USS Herbert J. Thomas (DD-833) Muster Rolls, Officer, 1968	16	UNCLAS
USS Herbert J. Thomas (DD-833)	2	UNCLAS
USS Hoel (DDG-13) Muster Rolls, Enlisted, 1963	65	UNCLAS
USS Hoel (DDG-13) Muster Rolls, Officer, 1963	15	UNCLAS
USS Hoel DDG-13 History	6	UNCLAS

USS Navarro (APA-215) Muster Rolls, Enlisted, 1963	68	UNCLAS
USS Navarro (APA-215) Muster Rolls, Officer, 1963	21	UNCLAS
USS Navarro (APA-215), Dictionary of American Naval Fighting Ships	2	UNCLAS
USS Okanogan (APA-220) Muster Rolls, Enlisted, 1965	142	UNCLAS
USS Okanogan (APA-220) Muster Rolls, Enlisted, 1966	37	UNCLAS
USS Okanogan (APA-220) Muster Rolls, Officer, 1965	31	UNCLAS
USS Okanogan (APA-220) Muster Rolls, Officer, 1966	8	UNCLAS
USS Power (DD-839) 1965	3	UNCLAS
USS Power (DD-839) History	2	UNCLAS
USS Power (DD-839) Muster Rolls, Officer and Enlisted, 1965	54	UNCLAS
USS Tioga County (LST-1158) Muster Rolls, Officer and Enlisted, January-June 1963	43	UNCLAS
USS Wexford County (LST-1168) Muster Rolls, Enlisted, 1965	97	UNCLAS
USS Wexford County (LST-1168) Muster Rolls, Enlisted, 1966	106	UNCLAS
USS Wexford County (LST-1168) Muster Rolls, Officer, 1965	19	UNCLAS
USS Wexford County (LST-1168) Muster Rolls, Officer, 1966	20	UNCLAS
WEST SIDE Test 65-3 Test Plan August 1964	16	CONF
WHISTLE DOWN Final Report November 1963	322	CONF
YELLOW LEAF Test Analysis January 1967	173	CONF
	28444	

## **Each Test under Project 112 Identified**

### **Records and Information Passed to the VA**

The following chart shows all tests planned by the Deseret Test Center between FY63 and FY74 and whether it was conducted, cancelled or deferred. The Deseret Test Center planned 134 tests and completed 50. Eighty-four were cancelled or deferred. Those tests that were deferred or cancelled are marked accordingly on the chart.

In addition to summarizing dates, locations and substances used, the chart also indicates, for completed tests, when the fact sheet (FS) was released and whether a personnel roster (PR) has been completed and passed to the VA.

The three-ring binder accompanying this report contains a copy of the most current fact sheet for each test. The fact sheets contain the test number and name when one was found, the dates of the test, location when known, vessels and/or military units involved, test purpose or objective and the substances used. In several cases, tests were conducted in phases; fact sheets were prepared for each phase actually completed for a total of 56 published fact sheets for the 50 conducted tests.

### **Service Members Present at the Tests**

The following list contains the number of servicemembers who were present at each test. Many servicemembers were present during more than one test. The total number of military members identified as being present during one or more of these tests is 5,842.

**Deseret Test Center/Project 112/SHAD  
Fact Sheets and Cancellation Analysis Sheets  
Table of Contents**

Tab 1	63-1 Eager Belle, Phase I
Tab 2	Eager Belle, Phase II
Tab 3	63-2 Autumn Gold
Tab 4	63-3 Whistle Down
Tab 5	63-4 Big Jack, Phase A
Tab 6	Big Jack, Phase B
Tab 7	64-1 Errand Boy
Tab 8	64-2 Flower Drum, Phase I
Tab 9	Flower Drum, Phase II
Tab 10	64-4 [Red Beva] Shady Grove
Tab 11	64-5 Night Train
Tab 12	64-6 Yellow Leaf
Tab 13	64-8 Tall Timber
Tab 14	65-1 Copper Head [SHAD]
Tab 15	65-3 West Side, Phase I
Tab 16	65-4 Magic Sword [SHAD]
Tab 17	65-6 Big Tom
Tab 18	65-11 [Bear River] Sun Down
Tab 19	65-12 Devil Hole, Phase I
Tab 20	65-13 High Low
Tab 21	65-14 Elk Hunt, Phase I
Tab 22	Elk Hunt, Phase II
Tab 23	65-16 Pine Ridge
Tab 24	65-17 Fearless Johnny [SHAD]
Tab 25	66-1 Devil Hole, Phase II
Tab 26	66-2 Red Oak, Phase I
Tab 27	66-3 Swamp Oak
Tab 28	66-4 Green Mist

Tab 29	66-5 Purple Sage
Tab 30	66-6 Scarlet Sage
Tab 31	66-8 West Side, Phase II
Tab 32	66-10 Pin Point
Tab 33	66-13 Half Note
Tab 34	67-2 Dew Point
Tab 35	67-6 Blue Tango
Tab 36	67-7 Red Cloud
Tab 37	67-8 Watch Dog
Tab 38	68-13 [68-4] Rapid Tan I, II, III
Tab 39	68-50 [68-11] Speckled Start
Tab 40	68-52 Cliff Rose
Tab 41	68-53
Tab 42	68-71 [68-13] Folded Arrow
Tab 43	69-10
Tab 44	69-12
Tab 45	69-14
Tab 46	69-31
Tab 47	69-32
Tab 48	69-75
Tab 49	70-C
Tab 50	70-11 Phase I, Subtest 3
Tab 51	70-11 Phase I, Subtest 4
Tab 52	70-73
Tab 53	70-74
Tab 54	73-30
Tab 55	74-10, Phase I
Tab 56	74-10, Phase II
Tab 57	Test Cancellation Analyses