

~~CONFIDENTIAL~~

Item 2854

DISPOSITION FORM

FILE NO. G-3 385 SUBJECT: DOD Directive TS-3145.1, "Chemical (Toxic) and Biological Warfare Readiness," dated 5 March 1954.

TO: CGm10 FROM: ACofS, G-3 DATE: 11 Jun 1954 COMMENT NO. 1
Maj L.J.Stefani/71684/jk

1. Reference is made to the subject Department of Defense directive which was transmitted to your office by DF from this office file G-3 385 TS, subject as above, dated 31 March 1954. 4847-T

2. In order to facilitate the dissemination of certain information contained in the reference DOD directive to theaters of operation and major commands within the military services, the Office of the Secretary of Defense has downgraded the following portions of the directive to SECRET:

- a. Paragraphs A, B, and C of Section II.
- b. Paragraph C (subparagraphs 1 thru 5) of Section III.

3. All other portions of the directive will remain in a TOP SECRET classification. The authority for declassification as noted in paragraph 2 above is contained in Department of Defense Directive Transmittal No. 54-C58 dated 26 May 1954.

JAMES M. GAVIN, Major General, GS
Assistant Chief of Staff, G-3

JOHN B. EGAN
Lt Colonel, GS
Executive Officer
Plans Div, OACofS, G3

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5 March 1954
Number TS-3145.1

Department of Defense Directive

SUBJECT: Chemical (Toxic) and Biological Warfare Readiness

* * * * *

II. Responsibilities

- A. Responsibility for coordination of research and development in chemical (toxic) and biological warfare is a function of the Assistant Secretary of Defense (Research and Development) within the provisions of DOD Directive 5128.7, 12 November 1953.
- B. Consistent with paragraph A above and in accordance with the objectives set forth herein, the Department of the Army will have responsibility for coordinating, in detail, all military research, development, testing, production, procurement, distribution and storage (storage within the United States) programs on chemical (toxic) and biological warfare munitions, defensive materiel and techniques, and for establishing its requirements for these items.
- C. The Departments of the Navy and the Air Force will be responsible for establishing requirements peculiar to their individual needs and capabilities in chemical and biological warfare, for implementing their respective portions of the programs which may be assigned under coordination agreements, and for providing support to the Department of the Army to most expeditiously attain the objectives set forth herein.

III. Specific Guidance

* * * * *

C. Chemical and Biological Warfare

- 1. The fact that chemical warfare weapons and munitions have not been used previously by this country, except in retaliation, must not deter achievement of realistic preparedness in chemical or biological warfare.
- 2. The military departments shall continue to maintain and improve chemical and anti-personnel biological warfare defensive readiness of the United States forces as appropriate, based upon the best estimates of potential enemy capabilities.

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3. The military departments shall place increased emphasis on collection, evaluation and dissemination of intelligence data regarding the capabilities of potential enemy nations to employ and defend against chemical and biological warfare.
4. The military departments shall continue to develop doctrine, tactics and techniques for chemical and biological warfare as new offensive munitions and items of defensive equipment become available.
5. The military departments will insure that training in offensive and defensive CW-BW keeps pace with the development of doctrine, procedures, tactics and techniques.

/s/ C. E. WILSON
Secretary of Defense

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Ref: Item 2840

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(4215-S)

Item 2855

Copy No. _____
(2 Pages)

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF CHEMICAL OFFICER
WASHINGTON 25, D. C.

CMLWR-N

8 June 1954

SUBJECT: Dosimeters

TO: Commanding Officer
Chemical Corps Research and Engineering Command
Army Chemical Center, Maryland

1. The inclosed copy of a letter from Assistant Chief of Staff, G-3, to Chief, Army Field Forces, dated 20 May 1954, subject as above, file: G3 400 (12 May 54), is forwarded for your information and guidance.

2. It is requested that the above referenced letter be forwarded to Secretary, Chemical Corps Technical Committee, for appropriate "Read for Record" action.

BY COMMAND OF MAJOR GENERAL CREASY:

/s/ Richard O. Gordon
Lt. Col, Cml C
for DONALD H. HALE
Colonel, Cml C
Chief, Res and Dev Div

1 Incl
Referral Slip fm
G-4, 1 Jun 54, w/
cc ltr fm ACoS,
G-3, 20 May 54,
subj as abv

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DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON 25, D. C.

G3 400 (12 May 54)

20 May 1954

SUBJECT: Dosimeters

TO: Chief of Army Field Forces
Fort Monroe
Virginia

1. Reference is made to Department of the Army telegram, DA 96118, 7 May 1954, concerning tactical dosimeters.

2. Subsequent to the dispatch of the above telegram, the Signal Corps Engineering Laboratories found existing stocks of polaroid film badges, DT-65, to be generally unreliable. The decision was then made by the Chief of Staff to satisfy the immediate requirement for tactical dosimeters in FECOM and USAREUR by the following action:

a. "Crash" procurement of polaroid film badges, DT-65, for immediate distribution to FECOM and USAREUR.

b. "Crash" procurement of chemical dosimeters, ELR3, to replace film badge dosimeters as soon as possible.

c. Expedited development and service test of both the ELR3 and IM-93 tactical dosimeters.

3. G4 has advised the appropriate technical services of this decision, and G3 has requested an initial basis of distribution for tactical dosimeters from USAREUR and a review of the current basis of issue from FECOM. G3 now requests that OCAFF expedite service tests of dosimeters, ELR3 and IM-93, with the proposed objective of selecting one item for standardization by 1 July 1955.

BY DIRECTION OF THE CHIEF OF STAFF:

JAMES M. GAVIN
Major General, GS
Assistant Chief of Staff, G-3

Copy furnished:
Ch, R&D, OCS
OCO
OCSigO

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(2 Pages)

Item 2856

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF CHEMICAL OFFICER
Chemical Corps Technical Committee
Army Chemical Center, Maryland

25 June 1954

CMLWH

MEMORANDUM FOR RECORD:

SUBJECT: Reports Concerning Testing of Chemical Corps Materiel for the Period March-June 1954.

The following reports referring to testing of Chemical Corps Materiel have been accessioned by the Technical Library or otherwise made available during the period 12 March 1954 to 11 June 1954.

1. Directorate of Armament Development Report 8/53, Protector, Collective, Tank, 3-Man, E26 (USA), 31 Dec 53. (Confidential)
2. Suffield Trial Record 135, Assessment of U.S. Chemical Shell (TI73) 105 mm Charged GB, 16 Feb 54. (Secret)
3. Suffield Trial Record 136, Trials to Screen Candidate Chargings for Fire Bombs, 16 Feb 1954. (Secret)
4. Suffield Trial Record 137, Assessment Trials of Bombs, Fire, External, 750 Lbs. Charged with Thickened and Unthickened Gasoline, 16 Feb 54. (Secret)
5. Suffield Trial Record 138, Assessment of Modified US M-3 Smoke Generator as a Means of Disseminating GB, 12 Feb 1954. (Secret)
6. Suffield Trial Record 142, Trials to Investigate the Effect of Age of Charging on Fire Bomb Performance, 16 Feb 1954. (Secret)
7. Suffield Trial Record 143, The Performance of Certain Colloid Mill Octal Fuels When Fired from a Wasp Flamethrower at Low Temperatures, 16 Feb 1954. (Secret)
8. Suffield Trial Record 144, Assessment of U.S. 105 mm Chemical Shell TI73 Charged GB, 25 Feb 1954. (Secret)
9. Suffield Trial Record 145, Assessment of 105 mm Chemical Shell TI73 Charged GB, 25 Feb 1954. (Secret)
10. Suffield Trial Record 152, Assessment of Fuels Containing the U.S. Thickener E4R1 when Fired from the Iroquois Flamethrower, 16 Feb 1954. (Secret)
11. Suffield Trial Record 154, To Assess the Performance of Fuels Containing Various Percentages of Canadian Bath-Process Octal when Fired from the Iroquois Flamethrower, 16 Feb 1954. (Secret)
12. CRLR 286, Final Engineering Tests No. 37B-Rocket, Nonpersistent Gas, HD, 4.5-Inch, TI651 and No. 37C-Rocket, Persistent Gas, HD, 4.5-Inch, TI66E1, 11 Jan 1954. (Secret)
13. CRLR 304, Final Engineering Test 78, Gun, Portable Flame Thrower, E32, 16 Feb 1954. (Confidential)
14. Suffield Report 177, A Comparison of the U.S. Mechanical Smoke Generator E19R1 (Pulse-Jet) and the British Apparatus Oil Smoke No. 3 Mk.I, 20 Feb 1954. (Confidential)

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15. Suffield Trial Record 149, Assessment of the U.S. 10 LB. HE/Chem. Bomb (E54R6) Charged GB, 10 Mar 1954. (Secret)
16. CRLR 273, Final Engineering Test No. 49, Protector, Collective, CED, 5000 CFM, E31, 25 Nov 1953. (Confidential)
17. DPGR 144, Operational Suitability Test of the E101R3 Cluster, GB Filled, 9 Feb 1954. (Secret)
18. CRLR 334, Improved Aqueous Impregnation Process Study of Dispersing and Emulsifying Agents, 11 Mar 1954. (Confidential)
19. Suffield Trial Record 163, Range, Accuracy, and Functioning Trials of the U.S. 8-Inch E42 Incendiary Rocket at Low Temperatures, 10 Mar 1954. (Secret)
20. CRLR 220, Storage Stability and Physical Properties of GB&L Mixtures, 12 Mar 1954. (Secret)
21. CRLR 302, Final Engineering Test No. 38, Alarm, Carbon Monoxide, Automatic, E23, 18 Mar 1954. (Unclassified)
22. Suffield Trial Records 164 & 166, Assessment of Modified U.S. M-3 Smoke Generator as a Means of Disseminating GB, Apr 1954. (Secret)
23. CRLR 140, Tests of Clothing Aqueous Impregnating Plant (Z of I), 1949 Design, 30 Mar 1954. (Unclassified)
24. Suffield Trial Record 172, Assessment of U.S. 105 mm Chemical Shell TL73 Charged GB, 30 Apr 1954. (Secret)
25. Suffield Trial Records 167 & 177, Assessment of the U.S. 10 LB. HE/Chem Bomb (E54R6) Charged GB, 30 Apr 1954. (Secret)
26. DPGTR 115, Dynamic Single Munition Trials of the E54R6 10-Pound Gas Bomblet, GB Filled, 10 May 1954. (Secret)
27. DPGTR's 117, 120, & 121, Single Dynamic Munitions Trials of the TL73 105 mm Howitzer Shell Containing GB, 25 May 1954. (Secret)
28. DPGTR 118, Single Dynamic Munition Trials for Evaluation of the TL64, 4.5 Inch Rocket, GB Filled, 28 May 1954. (Secret)
29. CRLR 321, Evaluation of Two Models of the Navy ND MK V Gas Mask, 29 Mar 1954. (Confidential)
30. ORG, A Cml C, Md., Note No. 5, Masking Reactions of Troops: The Effect of Casualty Production and Munitions Expenditures, Apr 1954. (Secret)

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

T. S. Eckert

T. S. ECKERT
Secy, CCTC

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READ FOR RECORD

Copy No. _____
(10 Pages)

Item 2859

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF CHEMICAL OFFICER
Chemical Corps Technical Committee
Army Chemical Center, Maryland

CMLWH

13 July 1954

MEMORANDUM FOR RECORD

SUBJECT: ARDC Project No. 5139, Anti-Personnel BW Munitions (S)

The attached data sheet for the subject Air Force project is reproduced as information pertinent to certain portions of the Chemical Corps EW R&D program.

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

T. S. Eckert

T. S. ECKERT
Secy, CCTC

Incl
As noted

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Project Data Sheet
Rewritten Project

1. PROJECT TITLE: Anti-Personnel BW Munitions (Secret Title)
2. SECURITY CLASSIFICATION: Top Secret
3. PROJECT NUMBER: 5139
5. REPORT DATE: 21 May 1954
6. BASIC FIELD OR SUBJECT: Common Component Developments
7. SUB FIELD OR SUBJECT: 36 Chemical and Biological Weapons
- 7a. TECH OBJECTIVE: BW-5
8. COGNIZANT AGENCY: ARDC
9. DIRECTING AGENCY: Armament Laboratory, WADC
10. REQUESTING AGENCY: Hq ARDC
11. PARTICIPATION AND/OR COORDINATION: Department of Army, Chemical Corps (P); Department of Navy (I); AFAC (P); HADC (P); AMC (P)
12. CONTRACTOR AND/OR LABORATORY: See Individual Tasks in Item 21c.
13. RELATED PROJECTS: a. Essential - 100A, 101A, 310A b. Related - None.
14. DATE APPROVED: 6 September 1949
15. PRIORITY: 1-A
17. ESTIMATED COMPLETION DATES: Dev. Continuing Test Continuing
18. FY FISCAL ESTIMATES: 50-53 2,673M; 54 1,858M; 55 2,004M; 56 1,653M; 57 2,395M; 58 2,016M; 59-60 3,919M; A/R 602M
19. SUPERSEDED PROJECTS: This project supersedes projects No. R-555-731, R-555-732, R-555-809, R-555-811, R-555-816 and R-555-861, dated 6 Sep 49, 6 Sep 50, 29 Feb 52, 4 Dec 52, 31 Dec 52, 15 Apr 53 respectively.
20. REQUIREMENT AND/OR JUSTIFICATION: There exists a requirement for a capability to kill or incapacitate enemy personnel by biological agents in the event of war. At present the M-114 bomblet in the M-33 cluster provides this capability but possesses inherent deficiencies which cannot be corrected and development of new munitions is required in order to make maximum use of anti-personnel agents. These deficiencies are:
 - a. The M-33 cluster is of the 500-lb. series, designed for interim use. A 750-lb. new series cluster must be developed to meet USAF requirements.
 - b. The M-114, because of its size and weight, must be carried in small numbers lowering the area coverage efficiency.
 - c. The M-114 disseminates its agent fill by explosive means, lowering the percent of viable agent recovery.An improved bomb is required to correct these and other deficiencies. Reference Top Secret Document No. ADTS-832 (Hq WADC) subject: (Unclassified Title) "USAF Biological and Chemical Warfare Program" dated 20 August 1952, from Hq ARDC to WADC. As a second means of providing the required capability, spherical type munitions are being developed to provide greater area coverage and increased agent dissemination effectiveness.
21. BRIEF OF PROJECT AND OBJECTIVES:
 - a. Brief. The objective of this project is to develop munitions which can be used to kill or incapacitate enemy personnel in the event of war. Specifically, it will result in two types of munitions: (1) clusters operationally interchangeable with the 750-lb. GP new series bomb,

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and (2) Self-dispersing munitions that may be disseminated either from a dispenser or clustered in the 750-lb. new series cluster adapter. Both types of munitions will be capable of adequately dispensing anti-personnel BW agents. The operational and general physical characteristics are as outlined below: (SECRET)

AIRBORNE ANTI-PERSONNEL BIOLOGICAL AGENT CLUSTER (SECRET)

- (1) The cluster shall be one of the new 750-lb series and shall utilize the existing E53 cluster adapter. (UNCLASSIFIED)
- (2) The cluster shall be designed for internal and external carriage in USAF light, medium and heavy bombardment type aircraft, and suitable for employment from these aircraft as outlined below. (UNCLASSIFIED)
 - (a) Conditions of carriage to the target:
 1. Suspension on existing or future bomb stations or bomb racks provided for the new 750-lb. series bombs.
 2. Altitude: 0 to 60,000 feet.
 3. Speed: Mach 0.25 up to the limitation of the aircraft.
 4. Air Temperature: -65° to +100°F.
 5. Rate of Ascent, Rate of Descent and Load Factors: Equal to the limitations of the aircraft. (CONFIDENTIAL)
 - (b) Conditions of release over the target:
 1. Altitude: 500 to 60,000 feet.
 2. Speed: Mach 0.25 to 1.00.
 3. Air Temperature: -65° to +100°F (CONFIDENTIAL)
- (3) The cluster shall be suitable for suspension and carriage on aircraft in accordance with ASCC and NATO agreements. (CONFIDENTIAL)
- (4) The cluster and bomblets shall be capable of emergency release in an unarmed condition. (UNCLASSIFIED)
- (5) The cluster shall cause neither damage nor contamination of the carrying aircraft as a result of functioning under operating conditions stated in paragraph 21a(2)(b) above, nor as a result of emergency release under the conditions stated in paragraph 21a(4) above. (UNCLASSIFIED)
- (6) The circular probable error (CEP) of the cluster from the point of release to the point of functioning in space shall not exceed three (3) mils and the ballistic reproducibility of the center of impact of the pattern shall not exceed five (5) mils from the desired point of impact. (CONFIDENTIAL)
- (7) The ballistic characteristics of the cluster shall be such that it can be accurately delivered by means of existing and anticipated bombing systems. (UNCLASSIFIED)
- (8) Ten thousand (10,000) pounds of agent filled munitions shall be capable of infecting at least 50% of the unprotected susceptible personnel randomly scattered over a 15 square mile circular target area under suitable meteorological conditions. (CONFIDENTIAL)
- (9) The munitions shall disseminate the agent fill uniformly at surface level after release under conditions outlined in paragraph 21a(2) above. (CONFIDENTIAL)

- (10) The bomblet shall disseminate its agent fill as biological particulates with the maximum amount of viable agent within the effective size range for retention within the human respiratory system (1 to 5 microns). (SECRET)
- (11) The reduction in viability of the agent during the process of dissemination shall be held to an absolute minimum. (CONFIDENTIAL)
- (12) The cluster and bomblet shall have predictable performance under given atmospheric conditions (i.e. temperature, humidity, and wind velocity). (UNCLASSIFIED)
- (13) The bomblets shall be designed to disseminate as many different biological agents as practicable. (SECRET)
- (14) Both the bomblet and the cluster shall have a minimum functioning reliability of 95%. The component munition shall function 95% of the time when dropped on soft ground and concrete. (CONFIDENTIAL)
- (15) The cluster and bomblet shall have such safety features incorporated in their design as are required to preclude accidental functioning during handling, transportation, or when suspended on the aircraft. (UNCLASSIFIED)
- (16) The cluster shall be protected from extremes of temperature so that the viability of the agent fill will not be significantly reduced during handling, loading, carriage, and time of fall. The cluster shall contain insulation and/or provision for electrical heating such that the agent fill will be maintained at the optimum temperature for a period of 12 hours during exposure to a bomb bay air temperature of -65°F. Where aircraft electrical power is required to heat the cluster, the power required shall not, in any way, restrict the use of other electrical equipment essential to aircraft operation. (SECRET)
- (17) The bomblets shall be designed for the most efficient utilization of the space available within the cluster adapter. (UNCLASSIFIED)
- (18) The bomblet shall be designed for field assembly of the agent container and field clustering. Preferred assembly methods are assembly by screwing, crimping or pressing parts together. Assembly methods such as welding, soldering or brazing should be avoided. Assembly of cluster should be limited to methods which employ hand tools only. (CONFIDENTIAL)
- (19) The munition should be designed with an agent container which can readily be inserted into the bomblet during field clustering operations. The agent container shall be capable of being shipped, handled and stored independently of the bomblet. (CONFIDENTIAL)
- (20) The bomblet shall be suitable for use in guided missile warheads, if practicable. (CONFIDENTIAL)
- (21) The munition shall be so designed that production will be as economical as possible consistent with other requirements. (UNCLASSIFIED)
- (22) The munition shall be designed to facilitate visual inspection for gross leakage or simple tests to insure rejection of unserviceable items. (UNCLASSIFIED)
- (23) The unfilled cluster adapter shall be capable of being stored in the open for six months or under normal service storage conditions for an indefinite period of time and remain serviceable. (UNCLASSIFIED)

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- (24) This cluster will be suitable for use against both strategic and tactical targets. (CONFIDENTIAL)
- (25) The cluster shall be capable of being handled with existing and anticipated bomb handling equipment provided for the 750-lb new series of bombs. (CONFIDENTIAL)
- (26) All safety features required for safe ground operation shall be incorporated in each bomblet and/or bomb cluster. (UNCLASSIFIED)

AIRBORNE SPHERICAL ANTI-PERSONNEL BIOLOGICAL AGENT MUNITION (SECRET)

- (1) The series of spherical anti-personnel munitions are being developed to increase dispersion over a large area and to increase viable agent recovery rate. (SECRET)
- (2) The sphere will be so designed as to be clusterable as described in paragraph 21a above. (CONFIDENTIAL)
- (3) The sphere will also be capable of being disseminated from high-speed, high-altitude aircraft by means of a dispenser. (CONFIDENTIAL)
- (4) When the sphere is used without the cluster, and is disseminated by a dispenser, it shall have such characteristics as stated in 21a(8) thru (15) and (21), (22), and (26) above. (CONFIDENTIAL)

b. Approach

(1) 750-lb multipurpose cluster adapters of the "new series" of bombs will be used with the E-61 and E-99 bomblets. (CONFIDENTIAL)

- (a) The E-61 bomblet will provide effective air contamination by explosive dissemination of liquid biological agent in particulates of 1 to 5 micron size with a high percentage of viable agent recovery. (SECRET)
- (b) Since the E-61 bomblet is smaller, more efficient, and weight less than the M-114, it will, when clustered in the E-53 type cluster adapter, provide an increased number of bomblets per cluster, increased dispersion and increased dissemination. (CONFIDENTIAL)
- (c) The E-99 bomblet will provide effective air contamination by the two-fluid atomization principle, of liquid slurries of biological agents. The two-fluid atomization principle results in higher viable agent recovery than with explosive dissemination. It also has the advantage of smaller size as stated in (b) above. (SECRET)

(2) In order to obtain increased dispersion of the bomblets clustered in the 750-lb series bombs, two tasks were set up to develop a means of dispersing the clusters prior to their functioning and releasing the bomblets. (CONFIDENTIAL)

- (a) The "Deveron" cluster was conceived to increase the cluster dispersion radius by affixing tail surfaces, of sufficient area to the existing cluster adapter to enable the cluster to glide for a considerable distance before reaching the opening altitude. The device is so designed that the clusters may be preset to glide to the right or left of the line of flight of the aircraft, and for the distance of lateral glide desired, and then rotate to obtain more uniform distribution. (CONFIDENTIAL)

(b) The Glide Cluster is in parallel development with the Deveron. If the existing cluster adapter cannot be modified for use with Deveron "tail surfaces" to obtain the required dispersion radius, the glide cluster, of an original design, will be developed as an end item. (CONFIDENTIAL)

(3) Another approach to the dispersion problem is the use of a spherical munition. The spherical munition is ribbed to produce rotation in flight and aid in the dispersion of the bomblets. Spheres when released from clusters have a greater tendency to stabilize themselves than when they are released from an aircraft hopper type dispenser and allowed to pass through the air flowing into and around the bomb bay. (CONFIDENTIAL)

(a) The E-96 spherical two-fluid FW aerosol generator is being developed to disseminate liquid biological agents in the slurry form by the two-fluid atomization principle.

(SECRET)

(b) The E-119 sub-cluster is spherical in configuration and contains six (6) E-93 bomblets. The E-119 will be barometrically fuzed to open at a preset altitude and eject the E-93 bomblet. The E-93 will disseminate dry, pre-sized BW agent in aerosol form, with an increased agent to munition weight ratio, a higher degree of air contamination and it will maintain a higher level of viability of the agent under extremes of temperature. (SECRET)

c. Tasks

The following tasks are assigned to this project:

Task 50462: (Secret Title) 750-lb Cluster of 1/2-lb BW Bombs.
(TOP SECRET TASK)

Contractor: Department of Army, Chemical Corps
MIPR's 50-033, 51-518, CSO&A 53-136, 54-20.
Principle Investigator: Mr. Micheal Chertoff.

Biological Labs, Chemical Corp

Objective and Nature of Task: This task is required to develop a cluster of BW anti-personnel munitions (E-133 cluster) and will result in the development of a 1/2-lb (nominal weight) particulate bomblet of the base ejection type (E-61 bomb). (SECRET)

Completion of Development - Jan 56, Completion of Tests - Mar 56

Coordination: AMC
Directorate of Supply and Services, MCSWB
AFAC, ACOPP
HADC, HDCR
Department of Army, Chemical Corps

Task 50463: (Secret Title) 750-lb Cluster of Two-Fluid Aerosol Generators. (TOP SECRET TASK)

Contractor: Department of Army, Chemical Corps
MIPR 50-033, 51-518, CSO&A 51-518, 52-3
Principle Investigator: Mr. Milton A. Tulis

Biological Labs, Chemical Corp

Objective and Nature of Task: This task will result in a 750-lb. cluster of bomblets (E-137 cluster) capable of dissemination, in aerosol form, of anti-personnel biological

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agents in slurry form with a high percent of agent recovery using the two-fluid atomization principle (E-99 bomb). (SECRET)

Completion of Development, Jan 56, Completion of tests, Jan 57.
Coordination: AMC

Directorate of Supply & Services, MCSWB
AFAC, ACOPP
HADC, HDOR
Department of Army, Chemical Corps

Task 50464: (Secret Title) BW Dry Agent Disseminator (TOP SECRET TASK)

Contractor: Department of the Army, Chemical Corps
CSO&A 53-139, 54-18
Principle Investigator: Mr. Frank Stecker

Biological Labs, Chemical Corps

Objective and Nature of Task: This task will result in the development of a spherical munition capable of disseminating dried BW agent in aerosol form (E-119 sub-cluster). The bomblets clustered in the spherical munition will contain the agent to be disseminated (E-93 bomb). The Spherical Munition will be capable of being released from high-speed, high-altitude aircraft by means of a dispenser. (SECRET)

Completion of Development, Jan 59, Completion of tests, July 59.
Coordination: AMC

Directorate of Supply & Services, MCSWB
AFAG, ACOPP
HADC, HDOR
Department of Army, Chemical Corps

Task 50465: (Secret Title) Spherical Two-Fluid BW Aerosol Generator (TOP SECRET TASK)

Contractor: Department of the Army, Chemical Corps
CSO&A 54-81
Principle Investigator: Mr. Ralph Cunningham

Biological Labs, Chemical Corps

Objective and Nature of Task: This task is required to develop a spherical anti-personnel BW munition utilizing the two-fluid atomization principle (E-96 bomb). The end munition will be droppable from a dispenser from high-speed, high-altitude bomber aircraft and will provide an infective aerosol of biological particulates over a large area from a slurry of such agents. (SECRET)

Completion of Development, Jan 57, Completion of tests, Jan 58
Coordination: AMC

Directorate of Supply & Services, MCSWB
AFAC, ACOPP
HADC, HDOR
Department of Army, Chemical Corps

Task 50466: (Unclassified Title) Glide Cluster (SECRET TASK)

Contractor: Department of the Army, Chemical Corps
CSO&A 53-145, 54-17
Principle Investigator: Mr. Frank Trentacosti

Biological Labs, Chemical Corps

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Objective and Nature of Task: This task will result in the development of methods and equipment for producing large area bombing patterns from single aircraft when used in conjunction with conventional cluster and the "Deveron cluster." (CONFIDENTIAL)

Completion of Development, Jan 58, Completion of tests, July 59

Coordination: AMC

Directorate of Supply & Services, MCSWB

AFAC, ACOPP

HADC, HDOR

Department of Army, Chemical Corps

Task 50467: (Confidential Title) Deveron Control Cluster (SECRET TASK)

Contractor: Summers Gyroscope Co., Department of the Army, Chemical Corps

Contract No. AF 33-600-22945

CSO&A 54-19

Principle Investigator: Mr. Frank Trentacosti

Biological Labs, Chemical Cor

Objective and Nature of Task: This task will provide a missile for delivery of BW munitions which can be deflected laterally up to five (5) miles (with wing) and then caused to rotate before opening to obtain a maximum dispersion pattern from a single aircraft. (SECRET)

Completion of Development, July 57, Completion of tests, Jan 58

Coordination: WADC

Aircraft Laboratory, WCLS

Equipment Laboratory, WCLC

Materials Laboratory, WCRT

Weapons Systems, WCS

AMC

Directorate of Supply & Services, MCSWB

AFAC, ACOPP

HADC, HDOR

Department of the Army, Chemical Corps

Task 50573: (Secret Title) Ultrasonic Generator (TOP SECRET TASK)

Contractor: None

Objective and Nature of Task: This task is required to develop a munition for aerosol dispersion of BW anti-personnel agents utilizing the ultrasonic or Hartman Whistle method. The munition will be capable of being release by high-speed, high-altitude aircraft by means of a dispenser or by clustering. Development is planned to start in FY 57 assuming satisfactory completion of investigations under Project 5135 during FY 56. (SECRET)

Completion of Development - Jan 59, Completion of Tests, July 59

Coordination: AMC

Directorate of Supply & Services, MCSWB

AFAC, ACOPP

HADC, HDOR

Department of Army, Chemical Corps

Task 50574: (Unclassified Title) Self Dispersing Explosive Type
Munition: (TOP SECRET TASK)

Contractor: None

Objective and Nature of Task: This task will result in the development of a spherical munition that is of the self dispersing explosive type (E-94) for the dissemination of BW anti-personnel agent aerosols. The end munition will be droppable from a dispenser or capable of being clustered and dropped from high-speed, high-altitude bomber aircraft. Development is planned to start FY 57, assuming satisfactory completion of investigations under Project 5135 during FY 56. (SECRET)

Completion of Development, Jan 60, Completion of Tests, Sept 60

Coordination: AMC

Directorate of Supply & Services, MCSWB
AFAC, ACOPP
HADC, HDOR
Department of Army, Chemical Corps

Task 50575: (Unclassified Title) Advance Design Munitions and Components. (TOP SECRET TASK)

Contractor: None

Objective and Nature of Task: This task will result in the development of methods and equipment for improved performance as well as increased dispersion and agent-munition ratio for producing large area bombing patterns of anti-personnel biological agents. The task will be more specifically defined as requirements for new designs are evolved during development and test stages of above tasks.

Completion of Development - Continuous, Completion of tests -Cont.

Coordination: AMC

Directorate of Supply & Services, MCSWB
AFAC, ACOPP
HADC, HDOR
Department of Army, Chemical Corps

d. Other Information

The Army Chemical Corps will furnish technical personnel, equipment and facilities to accomplish this project except for Task No. 720W-5139-50467. WADC will furnish guidance and funds to the Chemical Corps. Task No. 720W-5139-50467 will be accomplished by WADC with limited test support from the Chemical Corps. (UNCLASSIFIED)

In view of the fact that the Navy may carry these munitions on their aircraft, they are interested in the progress of this project. (UNCLASSIFIED)

AFAC and HADC will furnish facilities for these munitions for Phase I through Phase VI testing, as prescribed by AFR 80-14. AMC will furnish required funding for service test items procured for the testing phases. (UNCLASSIFIED)

e. Background History

The M-33 cluster was developed for use as an alternate load for the 500-lb GP bomb. With the USAF change in military characteristics, the M-33 no longer was adequate and the M-114 bomblet required modification

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and revision. Hence, the tasks established under this project were initiated to meet the requirements of a BW anti-personnel cluster to be used as an alternate load for the 750-lb GP bomb and to improve the dissemination of BW agents in component bomblets. Task 720W-5139-50462 will be the first completed under this plan.

f. References

- (1) Letter from Hq USAF AFDRD-AP/2 to CG, AMC dated 26 October 1950, subject: (Confidential Title) "Assumption of Responsibility for Air Force Ordnance, Chemical Warfare, and Biological Warfare Research and Development". (SECRET LETTER)
- (2) Statement of Military Characteristics dated 7 August 1950, subject: (Secret Title) "Generator, Aerosol, Medium/High Altitude, Anti-Personnel Biological Agent Airborne". (SECRET DOCUMENT)

REASON FOR SECURITY CLASSIFICATION

This document is classified Secret since it reveals intent to obtain offensive capability in biological warfare. This is in accordance with the policy expressed in letter from Hq USAF (AFOAT) to all major Commands, dated 16 December 1952, subject: (Unclassified Title) "Classification Guide for Matters Concerning Biological Warfare and Chemical Warfare".

DOWNGRADING OF SECURITY CLASSIFICATION

This document shall retain the security classification of Secret until such time as equipment developed under this project has been used in wartime operations for a period of 90 days at which time classification will be reduced to Confidential or until such time as policy expressed in the BW-CW Security Guide mentioned above has been revised.

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READ FOR RECORD

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DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF CHEMICAL OFFICER
Chemical Corps Technical Committee
Army Chemical Center, Maryland

CMLWH

13 July 1954

MEMORANDUM FOR RECORD

SUBJECT: ARDC Project No. 5141, BW Logistic Support Equipment (C)

The attached data sheet for the subject Air Force project is reproduced herewith as information pertinent to portions of the Chemical Corps BW-R&D program.

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

Incl
As noted

T. S. Eckert
T. S. ECKERT
Secy, CCTC

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Project Data Sheet
Rewritten Project

1. PROJECT TITLE: ~~Top Secret~~ Logistic Support Equipment (Confidential Title)
2. SECURITY CLASSIFICATION: Top Secret
3. PROJECT NUMBER: 5141
5. REPORT DATE: 20 May 1954
6. BASIC FIELD OR SUBJECT: Common Component Developments
7. SUBFIELD OR SUBJECT SUBGROUP: 36, Chemical and Biological Weapons
- 7a. TECHNICAL OBJECTIVE: EW-5
8. COGNIZANT AGENCY: ARDC
9. DIRECTING AGENCY: WADC, Armament Laboratory
Office Symbol: WCLGW. Telephone No. 27189
10. REQUESTING AGENCY: ARDC
11. PARTICIPATION, COORDINATION, INTEREST: Dept of the Army, Gml G (P); Na
Bu Aer (I); AFAC (P); AMC (P)
See Item 21d.
12. CONTRACTOR AND/OR LABORATORY: Contract/W.C.No
Brown Trailers Inc. AF 33(600)24443
East Coast Aeronautics Inc. AF 33(616)2053
Standard Container Corp AF 33(616)2106
Steelcraft Manufacturing Co. AF 33(616)2104
Baker Raulang Co. AF 33(616)2117
13. RELATED PROJECTS: Essential - 100A, 101A, 310A
14. DATE APPROVED: 8 December 1952
15. PRIORITY: 1-B
17. ESTIMATED COMPLETION DATES: Res -
Dev - Continuing
Test - Continuing
Op. Eval -
18. FY FISCAL ESTIMATE: 53 - 76M 56 - 137M
54 - 31M 57 - 119M
55 - 221M A/R - 108M
19. SUPERSEDED REPORTS: This project supersedes project No. R-552-658 dated
8 December 1952 in part. (Unclassified)
20. REQUIREMENT AND/OR JUSTIFICATION:
a. To properly store, assemble and deliver EW munitions to strike air-
craft, development of adequate storage and transport equipment is required.
To determine that the agents contained in EW munitions are in an effective
condition a field laboratory must be developed which will provide a means
of testing viability of agent samples. Equipment suitable for the above
purposes does not now exist. EW munitions require temperature controlled
conditions from the time of fill in the production plant until they are
delivered to strike aircraft. Because fresh supplies of munitions must be
maintained available for strike missions and because the agent in current
types of EW munitions constitutes as little as 1/10 the total weight of the
complete cluster, field clustering of new agent in prepositioned cluster
hardware provides major savings in air lift in time of emergency. To meet
these special conditions and to provide effective and efficient equipment
for EW logistic support, development of specially adapted delivery, field
clustering, and surveillance equipment is required. (Secret)

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b. The BW operational capability requirement has been delineated in ARDC Letter to WADC, dated 20 August 1952, Subject: (Confidential Title) USAF Biological and Chemical Warfare Program (ADTS 832)(Top Secret Letter).
21. BRIEF OF PROJECT AND OBJECTIVES:

a. Brief: This project will result in a temperature controlled shipping and storing container for BW clusters or agent containers in C-124 or similar aircraft, an insulated shipping container for BW bombs in C-97 or smaller cargo aircraft, a sealed can for BW bomblet shipment, a BW clustering facility (consisting of a clustering semi trailer, a prefabricated shelter, and a special handling boom for fork lifts) and a BW surveillance facility (Consisting of a laboratory semitrailer, mobile power source, shower and change provisions, and decontamination equipment). This project will further provide for adaptation of above equipment to new types of BW munitions not yet standardized. (SECRET)

b. Approach: It is anticipated that shipping and storage containers now used for M-33 clusters can be modified for use with E77, E86, E133 and E137 clusters and unclustered BW agent containers. An insulated container and a sealed can will be developed by commercial sources. For the surveillance laboratory, AMC is to buy air conditioned vans, and supply laboratory furniture, appliances, utensils, dishware and chemicals. WADC will arrange and install furnishings and supplies and make such modifications as are necessary. Shower and change facilities will be developed as a knock down type of assembly. Decontamination equipment will be adapted from equipment now available. (SECRET)

c. Tasks: Task No. 50471: (Uncl Title) Shipping Container for Bombs and Clusters (Top Secret Task)

Contractors: East Coast Aeronautics Inc. AF 33(616)2053
Standard Container Corp. AF 33(616)2106

Principal Investigator: R.C. Smith, F.J. Kendell

Objective and Nature of Task: To design and develop a temperature controlled shipping container for large aircraft (C-124) and for ship deck, flat car, or truck shipment and an alternate insulated shipping container for smaller aircraft; reefer ship, box car or trailer, with tie down, internal handling and sealing provisions so that BW agents and BW bomb clusters can be delivered from production plant to strike aircraft with interim storage as required. Development will consist of a hermetically sealed can for the agents, a 30 foot temperature controlled van, and an insulated box with a capacity of 216 M-114 bomblets.

Completion of Development: September 1956

Completion of Test: March 1957 (SECRET)

Coordination: WADC Development Operations Division, WCOES
Aircraft Laboratory, WCIS
Equipment Laboratory, WCLE

Department of the Army, Chemical Corps
AMC Directorate of Supply and Services, MCSWB

Task No. 50472: (UNCLASSIFIED TITLE) Mobile Field Surveillance Laboratory Facility (Top Secret Task)

Contractor: Brown Trailers Inc., AF 33(600)-24443 S.A. #1

Principal Investigator: Robert Flagan

Objective and Nature of Task: To develop methods and equipment which will provide a means of maintaining field surveillance on agents contained in

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BW Munitions. Methods will include viability count and investigation of other assessment procedures to obtain a system of proven reliability. Facility will consist of a 30 foot air-conditioned trailer, equipped with necessary laboratory equipment, electrical power supply in the form of a 30KW generator mounted on a suitable trailer, a shower and change facility for operating personnel, and decontamination equipment. The facility will be self sufficient, designed for remote location, and operative under -20° to -120°F temperatures. (SECRET)

Completion of Development: June 1954

Completion of Test: January 1955

Coordination: WADC

Development Operations Division, WCOES
Aero Medical Laboratory, WCRD
AMC
Directorate of Supply and Services, MCSWB
Air Surgeons Office, MCDI
Department of the Army, Chemical Corps
ARDC
USAF Field Office, Camp Detrick, Maryland,
AFAC ACOPP

Task No. 50473: (Unclassified Title) Mobile Field Clustering Facility
(TOP SECRET TASK)

Contractors: Steelcraft Mfg. Co. AF33(616)-2104
Baker Raulang Co. AF33(616)-2117

Principal Investigator: L. A. Prusiner, R. T. Tiebout

Objective and Nature of Task: To develop equipment required for bomblet assembly and field clustering of the BW bomb cluster. The equipment consists of a properly outfitted air-conditioned semi-trailer, a portable insulated building measuring 32 x 40 feet, and a special fork lift boom for handling the cluster. All equipment will be air transportable and quickly erected for field operation. (SECRET)

Completion of Development: July 1955

Completion of Test: July 1956

Coordination: WADC

Development Operations Division, WCLES
Equipment Laboratory, WCLE
Aero Medical Laboratory, WCRD
AMC
Directorate of Supply and Services, MCSWB
Air Surgeons Office, MCDI
Department of Army, Chemical Corps
AFAC, ACOPP

Task No. 50559: (Unclassified Title) Adaptation of Logistic Equipment for New Munitions.

Contractor: None

Principal Investigator: N/A

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Objective and Nature of Task: To develop modified equipment for use in storage, transport, field assembly, and agent viability surveillance on new EW agents and munitions. The equipment will consist of modified shipping and storing containers for 2-fluid types and dry agent types of spherical and cylindrical bombs, field filling, assembly and clustering equipment for these bombs, and surveillance equipment for determining viability and other characteristics of the agents used therein. (SECRET)

Completion of Development: Continuing

Completion of Test: Continuing

Coordination: WADC

Development Operations Division, WCOES

Equipment Laboratory, WCIE

Aero Medical Laboratory, WCRD

AMC

Directorate of Supply and Services, MCSWB

Air Surgeons Office, MCDI

Department of the Army, Chemical Corps

AFAC, ACOPP

d. Other Information: Design of the mobile field surveillance facility is being developed with the coordination of AMC (MCSWB), the Air Force Field Office at Camp Detrick, and the Chemical Corps. Selection of laboratory appliances and layout in the trailer are being determined with the assistance of these offices on the basis of results of tests conducted at APGC (see Item 21f below, reference No. 3). (Unclassified)

Shipping container development is being coordinated by the Chemical Corps to assure suitable cluster shipping rings are installed at the plant, and to insure proper loading and tie-down arrangement. (Unclassified)

Field clustering facility development will be coordinated by the Chemical Corps to insure compatibility of equipment with bombs and clusters being handled. (Unclassified)

Funds required by the Chemical Corps for participation in this development will be derived from the USAF weapons development funds.

AMC funds of \$190,000 will be required in FY 1954 to cover purchase of surveillance laboratory trailer, laboratory furnishings, shipping containers for support of tests, inert clusters and bombs for test fitting, live clusters for surveillance tests, portable electric power supply, shower and change provisions, decontamination equipment, and M-108 type hoist truck. Approximately 20 to 25 percent of these funds will cover expendable items. The main items listed here will not be expended, but, upon completion of tests, will be available for service use.

Also, \$30,000 of AMC funds will be required in FY 1955 for laboratory equipment, electric fork lift, portable electric power supply, and an air-conditioning unit for a prefabricated building. In FY 56, \$110,000 will be required for shipping containers, live agent clusters, and inert clusters. In FY 57 and beyond \$25,000 will be required annually for inert agents and materials for adaptation of containers and laboratory. AFAC and APGC will be called on to perform and support engineering tests. (SECRET)

e. Background History: The logistical support problem for EW was first presented to WADC in March 1952 in a request by HQ ARDC to prepare military characteristics covering necessary items of support equipment.

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WADC complied by forwarding, in June 1952, military characteristics covering equipment to provide transport of agent filled bomb cases and field assembly and clustering of munitions, and equipment to provide transport of bulk agent and field filling, assembly, and clustering of the munitions. The latter system was not recommended by WADC. The above military characteristics were later expanded in a WADC letter to Hq ARDC calling out specific items and production schedules, and also covering transport means for the complete BW cluster. Hq USAF directed adoption of transporting the assembled cluster, so far as the M33 cluster capability was concerned. No further guidance has been received from Hq ARDC. (SECRET)

f. References:

1. Document ADTS-1199 (TS-3517) dated 9 April 1953, from MCSWB to WCO, (Subject omitted because of Top Secret Classification).
2. (Secret Title) Minutes of Biological Warfare Logistics Conference at Hq ARDC on 14-15 May 1953, Document No. T-3-384 (ADTS-1472). (TOP SECRET CORRESPONDENCE)
3. APGC Report, Project No. APG/SAS/69/A-1 dated 19 March 1953 (APGC-TS-712-6) (ADTS-1382) Subj: (Secret Title) "Operational Suitability Test of the Agent Filled 500-lb Biological Cluster Bomb, M33". (TOP SECRET REPORT)
4. Letter from Hq USAF to Hq AMC dated 24 June 1953, Subj: (Uncl Title) "Procurement Directive No. 27-222-53 (Mobile Surveillance Trailers)". (UNCLASSIFIED CORRESPONDENCE)
5. Letter from Hq ARDC to WADC dated 20 August 1952, Subj: (Uncl Title) "USAF Biological and Chemical Warfare Program", (ADTS-832). (TOP SECRET CORRESPONDENCE)
6. Letter from Hq, USAF to Hq AMC dated 12 March 1953, Subj: (Uncl Title) "Procurement Directive No. 15-222-53 (Semi-trailer Assembly)" (UNCLASSIFIED CORRESPONDENCE)
7. DF from Hq AMC to WADC dated 19 March 1953, subj: (Unclassified Title) "Engineering Evaluation of BW Support Equipment". (SECRET CORRESPONDENCE)
8. AF Field Office, Camp Detrick, Md. letter to Hq ARDC dated 17 March 1952, Subj: (Secret Title) "Overseas Filling and clustering Facilities". (SECRET CORRESPONDENCE)
9. Letter from Hq USAF to Hq ARDC dated 17 March 1952, Subj: (Unclassified Title) BW Munitions Logistic System Projects, 1st Ind to WADC dated 25 March 1952, and 2d Ind to Hq ARDC dated 16 June 1952, Control No. 52WC-8637. (SECRET CORRESPONDENCE)
10. Letter from WADC to Hq ARDC dated 13 December 1952, Subj: (Unclassified Title) "BW-CW Support", Control No. 52WC-47560. (SECRET CORRESPONDENCE)
11. Message from Hq ARDC to WADC dated 24 July 1953, Cite No. RDDDR-6-7-65-E. (CONFIDENTIAL CORRESPONDENCE)
12. Message from WADC to Hq ARDC dated 30 July 1953, Cite No. WCLG-2098. (CONFIDENTIAL CORRESPONDENCE)
13. Letter from Cml Corps Biological Laboratories, Camp Detrick, Md., to WADC dated 11 August 1953, Subject: (Unclassified Title) "Recommended Changes for Mobile Surveillance Laboratories". (CONFIDENTIAL CORRESPONDENCE)

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REASON FOR SECURITY CLASSIFICATION

Since this document reveals intent to obtain offensive capability in EW Warfare, it is classified Secret in accordance with policy outlined in letter from Hq USAF (AFQAT) to all major Commands, dated 16 December 1952, Subject: "(Unclassified) Classification Guide for Matters Concerning Biological Warfare and Chemical Warfare".

DOWNGRADING OF SECURITY CLASSIFICATION

This document shall retain the security classification of Secret until such time as equipment developed under this project has been used in wartime operations for a period of 90 days at which time classification will be reduced to Confidential or until such time as policy expressed in the EW-CW Security Guide mentioned above has been revised.

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DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF CHEMICAL OFFICER
Chemical Corps Technical Committee
Army Chemical Center, Maryland

CMLWH

13 July 1954

MEMORANDUM FOR RECORD

SUBJECT: ARDC Project No. 5058, Special Aircraft Equipment for BW
Munitions (C)

The attached data sheet for the subject Air Force project is reproduced as information pertinent to certain portions of the Chemical Corps BW R&D program.

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

T. S. Eckert

Incl
As noted

T. S. ECKERT
Secy, CCTC

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Project Data Sheet
Rewritten Project

1. PROJECT TITLE: Special Aircraft Equipment for BW Munitions (Conf)
2. SECURITY CLASSIFICATION: Top Secret
3. PROJECT NUMBER: 5058
5. REPORT DATE: 21 May 1954
6. BASIC FIELD OR SUBJECT: Common Component Development 100A, 101A
7. SUB FIELD OR SUBJECT SUB GROUP: 36, Chemical & Biological Weapons
- 7a. TECHNICAL OBJECTIVE: BW-5
8. COGNIZANT AGENCY: ARDC
9. DIRECTING AGENCY: Armament Laboratory, WADC
WOLGW Tp 28252
10. REQUESTING AGENCY: Hq ARDC
11. PARTICIPATION, COORDINATION, INTEREST: Navy (I), Army Chemical Corps (P)
AFAC (P)
12. CONTRACTOR AND/OR LABORATORY: None
13. RELATED PROJECTS: Essential - 100A (B-47) and 101A (B-52)
Related - 307A(B-57B) and 308A(B-66B)
14. DATE APPROVED: 4 December 1952
15. PRIORITY: 1-B
17. ESTIMATED COMPLETION DATES: See Tasks, Item 21c.
18. FY FISCAL ESTIMATES:

51-53 - 222M	56 - 412M
54 - 356M	57 - 206M
55 - 109	T - 1305M
19. Supersedes projects R555-862 and R555-820.
20. REQUIREMENT AND/OR JUSTIFICATION: This project is required to develop an improved method and new equipment for the dissemination of temperature sensitive, spherical, BW munitions over enemy territory using sub and supersonic bombardment type aircraft. The authority for this project is contained in letter from Hq, ARDC to Hq WADC, ADTS-832, dated 20 Aug 52, Subj: "(Unclassified) USAF Biological and Chemical Warfare Program". (Top Secret Document)(SECRET)
21. a. Brief: This project will result in the development of a means for providing proper temperature environment for the delivery of certain temperature sensitive BW munitions to the target area. An interim method and a final production method will be developed. The interim method will consist of space heaters easily installed or removed from the bomb bays of B-29 and B-50 aircraft. The final method will utilize standard electrical equipment to supply electrical power for the internal heating of the munitions. (SECRET)
This project will also result in the development of a bomb bay dispenser suitable for the suspension and release of large quantities of small spherical BW bombs. Equipment will be developed to provide proper release for best dispersion of large quantities of these munitions. (SECRET)
It is the object of this project to design equipment for use in B-47 and later high speed bombardment type aircraft to effectively deliver these type munitions. (SECRET)
- b. Approach: Development models of bomb bay heaters were procured from the Hayes Aircraft Corp. as an interim method of providing proper bomb