

~~SECRET~~

Copy No. 12

Minutes of the Meeting of the  
Chemical Corps Technical Committee  
29 July 1954

Meeting No. 2, 1954

~~SECRET~~ ~~CONFIDENTIAL~~

GROUP 3  
DOWNGRADED AT 12 YEAR INTERVALS;  
NOT AUTOMATICALLY DECLASSIFIED  
DOD DIR 5200.10

Items

2837, 2840, 2853, 2854, 2855, 2856, 2859,  
2860, 2861, 2868, 2873, 2876, 2882

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READ FOR RECORD ITEMS RECORDED PRIOR TO THE MEETING

Item 2833

Page 5

Chemical Corps Sections of D/A R&D Program for FY 1955 (Secret)

Memo, CMLWH, 7 June 1954, w/Inclosure, which recorded CmlC sections of the subject program.

Item 2837

Page 14

Security Classification of Cml C Project 4-16-16-013. Incendiary Warhead for MX-771 Missile (Secret)

Letter, CMLRE-RWD-4, 20 April 1954, which outlined detailed security classification of subject missile.

Item 2840

Page 17

Procurement of the ELR3 Dosimeter (Secret)

D/F, CMLWR, 21 May 1954, which inclosed Staff correspondence authorizing emergency procurement of ELR3 Tactical Dosimeter.

Item 2853

Page 24

Research and Development Work to be Conducted by the Chemical Corps (Secret)

D/F, G4/F3, 27 November 1953, which directed certain R&D work to be done under project 4-04-15-009.

Item 2854

Page 25

DOD Directive TS-3145.1. "Chemical (Toxic) and Biological Warfare Readiness." dated 5 March 1954 (Secret)

Memo, CMLWH, 23 June 1954, which reproduced Secret sections of DOD Directives TS-3145.1 (Item 2828).

Item 2855

Page 29

Dosimeters (Secret)

Letter, CMLWR-N, 8 June 1954, which outlined further details of ELR3 Dosimeter procurement.

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Item 2856

Page 31

Reports Concerning Testing of Chemical Corps Materiel for the Period March-June 1954 (Secret)

Memo, CMLWH, 25 June 1954, which recorded availability of subject reports.

Item 2859

Page 38

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

Memo, CMLWH, 13 July 1954, inclosing data sheet for the subject project.

Item 2860

Page 48

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

Memo, CMLWH, 13 July 1954, inclosing data sheet for the subject project.

Item 2861

Page 55

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

Memo, CMLWH, 13 July 1954, inclosing data sheet for subject project.

SUBCOMMITTEE REPORTS FOR DISCUSSION AND APPROVAL

Item 2868

Page 62

Establishment of Four (4) Secret Projects in the Cml C FY 55 Program and Termination of Three (3) Consolidated Projects (Secret)

This item, identified as Report "G", was presented by the Chairman after which Mr. Ludden, OrdC, submitted correspondence which requested certain changes in paragraph 20, 21.a(3), 21.b(1) & 21.b(4) of the sheet for 4-04-15-027. The Secretary advised that these were the result of previous coordination with Chemical Corps personnel concerned and the Chairman indicated that the paper would be revised accordingly. Mr. Hedman, SigC,

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requested that development of any meteorological equipment concerned with project 4-98-05-026 be coordinated with his Corps. This was so agreed and the Secretary advised that paragraph 11 of the project data sheet would be appropriately revised. With these comments and changes, Item 2868 was accepted and approved by the Committee. UK comment submitted to the Secretary, indicated interest in project 4-08-06-025 with detailed remarks in preparation. Canada noted interest in projects 4-04-15-026, 4-08-06-025 and 4-36-07-001.

Item 2873

Page 79

Military Characteristics for Air Force BW and CW Detection Systems (Secret)

This item, identified as Report "M", was presented by the Chairman and accepted and approved without comment.

Item 2876

Chemical Corps BW Program for FY 55 (Secret)

Page 93

This item, identified as Report "R", was presented by the Chairman after which Col Cather, OCAFF, requested that Army Field Forces be indicated as one of the requesting agencies for project 4-04-14-021. This was so agreed. The Secretary noted that Canadian comments indicated interest in all phases of the BW program with particular emphasis on the projects concerning the detection of and protection against BW agents. With these comments the Chairman indicated that the subject item was accepted and approved as revised.



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Cml C, pointed out that this consolidation was considered by the Army R&D Boards where the Army Field Forces was represented and that the proposed action had been approved at that level. Col Cather, OCAFF, indicated that although this was true, his Headquarters desired to revise its prior concurrence given to the Review Boards. Dr. Berger, CmlC, noted that in this case consolidation does not meet with approval of the using agency, whereas in Item 2866 proposed Staff consolidation was contrary to suggestions of the developing agency (Chemical Corps). Col Cather stated further that Army Field Forces objected to consolidation into general projects since in many cases the projects consolidated are of major importance to AFF and that inclusion in over-all combinations of effort tends to obscure reporting and coordination from the users viewpoint. After these comments the Chairman advised that the paper was accepted by the Committee and would be forwarded to Staff for resolution.

ADDITIONAL READ FOR RECORD ITEM

Item 2882

Page 139

ARDC Project No. 6042, Detection of CW Agents, Ground (U) (Secret)

Memo, CMLWH, 13 July 1954, inclosing data sheet for the subject project.

Complete and revised items are reproduced herewith:

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Item 2837  
HEADQUARTERS

Copy No. \_\_\_\_, 3 pages

CHEMICAL CORPS RESEARCH AND ENGINEERING COMMAND  
Office of the Commanding General  
Army Chemical Center, Maryland

CMLRE-RWD-4

20 April 1954

SUBJECT: Security Classification of Cml C Project 4-16-16-013,  
Incendiary Warhead for MX-771 Missile

TO: Secretary  
Cml C Technical Committee  
Army Chemical Center, Maryland

1. Reference is made to inclosed letter from Wright Air Development Center to Commanding Officer, Cml C Chemical and Radiological Laboratories, subject, (Uncl) Security Classification of B-61A Chemical Warhead and B-61A Chemical Warhead Test Program, dated 19 February 1954.

2. It is requested that this document be made a matter of record.

FOR THE COMMANDING GENERAL:

1 Incl  
a/s in par 1

/s/ ALEXANDER GRENDON  
Colonel, Cml C  
Asst for RW & Non-Toxic Mat'l

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WH5047

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Item 2837

WRIGHT AIR DEVELOPMENT CENTER  
Wright-Patterson Air Force Base, Ohio

WCLGW

19 February 1954

SUBJECT: (Uncl) Security Classification of B-61A Chemical Warhead and  
B-61A Chemical Warhead Test Program

TO: Commander  
Chemical and Radiological Laboratories  
ATTN: Mr. T. W. Tranberg  
Army Chemical Center  
Maryland

1. Wright Air Development Center has reviewed the security aspects of the B-61A Chemical Warheads and the B-61A Chemical Warhead Test Program and requests that the following security classification system be applied as indicated:

a. Any statement that the Chemical Agent GB is to be used with the B-61A or in the B-61A Chemical Warhead Test Program is classified Secret.

b. Any statement that an offensive capability with Biological Agents is required for the B-61A or is being evaluated in the B-61A Chemical Warhead Test Program is classified Secret.

c. The requirement for an incendiary warhead for the B-61A is Unclassified.

d. Data pertaining to specific missile performance such as guidance details, terminal trajectory and velocity, and expected CEP are classified Confidential.

e. Data obtained from the Chemical Warhead Test Program which gives information mentioned in d. above is classified Confidential.

f. Data obtained from the Chemical Warhead Test Program which gives specific information as to warhead burst altitude, aimability, ground dispersion pattern, or unit munition functioning which also indicates that the above is for the B-61A, the Matador, or MX-771 is classified Confidential.

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2



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Item 2837

Hq WADC(WCLGW) 19 Feb 1954, To Comdr, Chemical & Radiological Laboratories, Subject: "(Uncl) Security Classification of B-61A Chemical Warhead and B-61A Chemical Warhead Test Program"

2. The following terms are Unclassified:

- a. Chemical Warheads for B-61A, MX-771, Matador.
- b. Chemical Warhead Test Program for B-61A.
- c. Fin Stabilized Chemical Warhead for B-61A.

3. 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: "(Uncl) Classification Guide for Matters Concerning Biological Warfare and Chemical Warfare."

4. This document shall retain the security classification of Secret until such time as equipment developed under this project (task) has been used in wartime operations for a period of ninety (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.

FOR THE COMMANDER:

WILLIAM H. BAYNES  
Colonel, USAF  
Chief, Bombardment Missiles Branch  
Directorate of Air Weapon Systems

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Item 2840

ALCO-S  
READ FOR RECORD  
Copy No. \_\_\_\_\_  
(7 Pages)

DISPOSITION FORM

FILE NO. CMLWR

SUBJECT: Procurement of the ELR3 Dosimeter

TO: Secretary FROM: Chief, Res & Dev Div DATE 21 May 1954  
Chemical Corps Technical Committee ColHale/74398/cmb  
Army Chemical Center, Maryland COMMENT NO. 1

1. Reference is made to our conversation on 14 May 1954 concerning the subject item.

2. For your information and guidance, there are attached copies of the directive from G-4 and other pertinent correspondence.

1 Incl  
DF fm G-4 to CCMLO  
dtd 20 May 1954, Subj:  
Dosimeters, w/3 Incls

/s/ Donald H. Hale  
DONALD H. HALE, Colonel, Cml C  
Chief, Research and Development Div

CMLWH

COMMENT FOR RECORD  
25 May 1954

This correspondence will be recorded before the Chemical Corps Technical Committee for the information and guidance of all concerned and as a record of procurement authorization for the Dosimeter, Radiation, Tactical, ELR3.

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

*T. S. Eckert*

T. S. ECKERT  
Secy, CCTC

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Item 2840

DISPOSITION FORM

FILE NO. G4/F2 26480

SUBJECT: Dosimeters

TO: Chief Chemical Officer FROM: G-4 DATE: May 20, 1954

1. References:

- a. Memorandum, G-3 for CofS, subject, "CER Warfare", dated 20 April 1954.
- b. Memorandum, Chief of R&D, OCofS, for Dep CofS for Plans and Research, subject, "Dosimeters", dated 7 May 1954.
- c. Memorandum, Chief of R&D, OCofS, for ACofS, G-4, subject, "Dosimeters", dated 12 May 1954.

2. The following actions will be initiated as expeditiously as possible in order to implement the approved decisions of reference 1.b. above.

- a. Development and service test of the Tactical Dosimeter ELR3 (Cnl C) will be expedited. (Proposed target date for standardization of an acceptable Tactical Dosimeter has been established as 1 July 1955.)
- b. Emergency procurement of 100,000 Tactical Dosimeters, ELR3, should be completed as rapidly as possible.
- c. Air shipment will be arranged to USAREUR and FECOM, as items are completed, in the ratio of 2 to 1 respectively until requirements are met. Total requirements for USAREUR and FECOM will be furnished by G-4 prior to 15 June 1954.

3. Coordinate your requirement for funds and contract negotiation authority, where necessary, with Requirements and Procurement Divisions, G-4, as appropriate.

4. No security classification for the Tactical Dosimeter ELR3, including purchase description, drawings, specifications and process information will be required for the above procurement.

/s/&t/

3 Incls.

1. Memo, G-3, CofS, subj: CER Warfare, dtd 20 April 1954.
2. Memo, CofR&D, OCofS for Dep CofS for P&R, subj: Dosimeters, dtd 7 May 1954.
3. Memo, CofR&D, OCofS, for ACofS, G-4, Same subject as above, dtd 12 May 1954

ANDREW P. O'MEARA  
Brigadier General, GS  
Asst. Deputy ACofS, G-4 for  
Research and Development

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Item 2840

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

20 April 1954

MEMORANDUM FOR: THE CHIEF OF STAFF, U. S. ARMY

SUBJECT: CBR Warfare

1. As per your verbal instructions, the following is a brief summary of the CBR training situation:

a. Chemical

(1) Masks - The new G-series mask has been issued to all overseas troops. In CONUS it is in the hands of Western Hemisphere defense forces and in storage for forces scheduled to leave at the outset of hostilities; 82d, 1st Armored and 44th Infantry.

(2) The Atropine Syrette - Completely issued overseas. Sufficient in use for adequate training in the U.S. (One per 50 individuals.)

(3) Training - There has been a considerable increase in emphasis on training in the light of Soviet G-gas capability during the past year.

b. Radiological

(1) Dosimeters - The individual dosimeter is still in development in two forms. The Chemical Dosimeter expects to be standardized in the 1st Qtr FY 58 and be available in quantity in the 4th Qtr FY 58. The Electronic Dosimeter will be ready at a later date. In my opinion, this is the single most critical aspect of our CBR situation. We should have Dosimeters in the hands of all units overseas now.

(2) Training - Considerable conference work on the hazards of Radiological Warfare is being done and the subject is playing an increasingly important part in field exercises, for example, FLASHBURN. Practical experience in the use of Dosimeters and working in radio-active areas is only being gained by those individuals in the laboratories and test areas, such as the Pacific area.

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Item 2840

c. Biological Warfare

Training on this subject is limited to conferences at our Service Schools and an occasional discussion of its potential in troop training programs.

2. Summary

The training seems to be well underway to give us a reasonable defensive-offensive capability in CBR except in one single factor; the Dosimeters. We should have means of detecting radio-activity, in the hands of units now. If our forces were attacked by atomic weapons, they would operate under a great handicap for some time.

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

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Item 2840

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

May 7 1954

MEMORANDUM FOR: DEPUTY CHIEF OF STAFF FOR PLANS AND RESEARCH

SUBJECT: Dosimeters

1. Reference is made to your query on 26 April regarding the availability and development of tactical dosimeter, attached.

2. Two new dosimeters have been developed for use by troop units. Specifically, these dosimeters are the ElR3 chemical dosimeter and the IM-93 electrostatic dosimeter. Both items have successfully completed engineering tests and would normally be available for service test by Army Field Forces within the next five months. No significant quantities of either item are presently available for issue. I plan to expedite the development and service test of tactical dosimeters, ElR3 and IM-93.

3. The ElR3 chemical dosimeter can be procured on a "crash" basis with the following production rates: 600-1000 per week immediately and 3000-4000 per week within three months, at an approximate unit cost of \$2.00. However, under normal R&D procedures, it is estimated that production would commence within one year after satisfactory completion of service tests. The IM-93 can be procured on a "crash" basis with the following production rates, 50 per week immediately, 250 per week within four months, 500-1000 per week within six months at a unit cost of \$15.00 to \$20.00.

4. Two types of film badge dosimeters are currently in FECOM and CONUS stocks, but will not adequately satisfy the military requirement for a tactical dosimeter. One of these film badges, the polaroid type DT-65, may be used as an interim dosimeter until a suitable item is available. The reliability of FECOM and CONUS stocks of the DT-65 is currently being evaluated. Sufficient DT-65 dosimeters can be procured on a "crash" basis to fill existing requirements within 80 days. It will require approximately six months to provide sufficient ElR3 dosimeters to meet existing requirements. The results of this evaluation will be available for resolution of recommendations 5a and 5b below o/a 7 May 1954.

5. General Gavin and General Palmer agree and I concur that:

- a. Sufficient film badges, DT-65, be shipped immediately from CONUS stock to fill USAREUR requirements, provided satisfactory reliability is assured.

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Item 2840

SUBJECT: Dosimeters

- b. "Crash" procurement of film badges, DT-65, be initiated to fill USAREUR and FECOM requirements if satisfactory reliability of existing stocks is not assured.
- c. "Crash" procurement of 100,000 dosimeters, ELR3, be initiated to replace the DT-65 as soon as possible.

1 Incl.

Gen. Gavin's Memo,  
subj: CBR Warfare,  
dated 20 April 54 (not attached)

JOHN F. UNCLES  
Major General, GS  
Chief of Research and Development

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S. F. C. P. R. T.

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Item 2840

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

CS 385 (20 Apr 54)

12 May 1954

MEMORANDUM FOR: ASSISTANT CHIEF OF STAFF, G-4

SUBJECT: Dosimeters

Forwarded herewith for your information and necessary action is copy of Memorandum for Deputy Chief of Staff for Plans and Research, on which he has noted that the Chief of Staff has approved the recommendations contained in Paragraph 5 thereof.

1 Incl  
Cy of Memo for DCS  
for P&R dtd 7 May  
54. (not attached)

/s/John F. Uncles  
JOHN F. UNCLES  
Major General, CS  
Chief of Research and Development

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Incl 3

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~~SECRET~~ UNCLASSIFIED READ FOR RECORD  
(2186-S)

Item 2853

Copy No. \_\_\_\_\_

Ref: 4-04-15-009

DISPOSITION FORM

FILE NO. G4/F3 71062 SUBJECT: Research and Development Work to be  
Conducted by the Chemical Corps

TO: Chief Chemical Officer FROM: ACoS, G-4 DATE: 27 Nov 53 CMT NO. 1  
Lt. Colonel Lawrence/71771

1. It is requested that necessary action be taken to initiate development of a grenade in accordance with the characteristics on the Work Agenda inclosed herewith. Development will be conducted under Chemical Corps Project No. 4-04-15-009, Special Problems, Munitions, with a Security Classification of CONFIDENTIAL. The project should be established with sufficient priority to allow its completion by March 1954.

2. The plan for performing this work has been discussed with Mr. Milton Cutler, Applied Research Branch, Army Chemical Center, Edgewood, Maryland.

3. It has been estimated that \$5,000 will be required to finance this project. Reimbursement in that amount will be made. Request for funds should be made on Form 1080 and directed to Finance Accounts Office, U. S. Army, 117 South Washington Street, Alexandria, Virginia, Attention: Mr. G. S. Williams. For authority, quote Letter Order 54-3775.

BY DIRECTION OF THE ASSISTANT CHIEF OF STAFF, G-4:

1 Incl:  
Work Agenda

/s/ B. Furuholmen  
/t/B. FURUHOLMEN, Colonel, GS  
Chief, Development Branch, R&D Div

Copy furnished:  
Mr. C. S. Williams, FOA

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24

WH4693



Ref: Item 2828

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Item 2854

READ FOR RECORD

Copy No. \_\_\_\_\_  
(4 Pages)

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

CMLWH

23 June 1954

MEMORANDUM FOR RECORD

SUBJECT: DOD Directive TS-3145.1, "Chemical (Toxic) and Biological Warfare Readiness," dated 5 March 1954.

1. Reference is made to the following papers:

- a. D/F, G3 385 TS ACofS, G-3, 31 March 1954, same subject as above, to CCmLO, which inclosed three (3) copies of the subject DOD directive. This correspondence is recorded as CCTC Item 2828.
- b. D/F (C), G3 385, ACofS, G-3, same subject as a., 11 June 1954 to CCmLO, copy attached herewith as Inclosure 1, which indicates that the Office of the Secretary of Defense by DOD Transmittal No. 54-C58, 26 May 1954, has downgraded certain portions of DOD TS-3145.1 to Secret in order to facilitate dissemination to theaters of operations and major commands within the military services.

2. Paragraphs A., B., and C. of Section I., and Paragraph C., subparagraphs 1-5, of Section III of the basic directive, which were downgraded as noted above, are reproduced as Inclosure 2. herewith.

3. This memorandum will be recorded before the Chemical Corps Technical Committee for the information and guidance of all concerned.

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

*T. S. Eckert*

- 2 Incls  
1. D/F, G-3, 11 Jun 54  
2. Secret Sections of  
DOD TS-3145.1

T. S. ECKERT  
Secy, CCTC

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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

~~SECRET~~  
Item 2854

~~CONFIDENTIAL~~  
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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Item 2854

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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REC-54-S-2399

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Item 2855

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

REC-54-S-2399

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30 UNCLASSIFIED

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Copy No.

(2 Pages)

Item 2856

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

CMLWH

25 June 1954

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 (TL73) 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 TL73 Charged GB, 25 Feb 1954. (Secret)
9. Suffield Trial Record 145, Assessment of 105 mm Chemical Shell TL73 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, TL651 and No. 37C-Rocket, Persistent Gas, HD, 4.5-Inch, TL66E1, 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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Item 2856

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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, GED, 5000 CFM, E31, 25 Nov 1953. (Confidential)
17. DPCR 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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Item 2859

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READ FOR RECORD

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(10 Pages)

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 BW R&D program.

FOR THE CHAIRMAN, CHEMICAL CORPS TECHNICAL COMMITTEE:

*T. S. Eckert*

Incl  
As noted

T. S. ECKERT  
Secy, CCTC

Item 2859 ...

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, (SECRET)



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Item 2859

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)

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- (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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~~SECRET~~  
Item 2859

- (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)

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- (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 Corps

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 Corps

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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Item 2859

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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CONFIDENTIAL  
Item 2859

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



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Item 2859

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 EW 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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Item 2859

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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Item 2860

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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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Item 2860

Project Data Sheet  
Rewritten Project

1. PROJECT TITLE: 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 SUPERGROUP: 36, Chemical and Biological Weapons
- 7a. TECHNICAL OBJECTIVE: BW-5
8. COGNIZANT AGENCY: ARDC
9. DIRECTING AGENCY: WADC, Armament Laboratory  
Office Symbol: WCLGW. Telephone No. 27139
10. REQUESTING AGENCY: ARDC
11. PARTICIPATION, COORDINATION, INTEREST: Dept of the Army, Cml C (P); Na-  
Bu Aer (I); AFAC (P); AMC (P)  
See Item 21d.
12. CONTRACTOR AND/OR LABORATORY: Contract/W.C.Nc  
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 BW munitions to strike air-  
craft, development of adequate storage and transport equipment is required.  
To determine that the agents contained in BW 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. BW 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 BW 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 BW logistic support, development of specially adapted delivery, field  
clustering, and surveillance equipment is required. (Secret)

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5141

Item 2860

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, WCLS

Equipment Laboratory, WGLE

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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Item 2860

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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5141

Item 2860

Objective and Nature of Task: To develop modified equipment for use in storage, transport, field assembly, and agent viability surveillance on new BW 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 BW 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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514

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Item 2860

REASON FOR SECURITY CLASSIFICATION

Since this document reveals intent to obtain offensive capability in BW Warfare, it is classified Secret in accordance with policy outlined in letter from Hq USAF (AFOAT) 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 BW-CW Security Guide mentioned above has been revised.

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Item 2861.

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READ FOR RECORD

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(7 Pages)

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 No. 5058

Item 2861

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

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bay temperatures for delivery of temperature sensitive munitions. For a long range approach, the aircraft electrical system will be adapted for supplying electrical power to individual munition electrical heaters. The feasibility of insulating individual munitions is also being studied. (CONFIDENTIAL)

For the delivery of spherical munitions to the target area, ballistic and dispersion data have been obtained from flight tests at Hill AFB using bucket type hoppers and clusters. A test dispenser developed by the Rheem Mfg. Co. for the Chemical Corps will be used for obtaining additional ballistic data. As a long range development, the Boeing Airplane Co. will be requested to develop equipment for release of spherical munitions from sub and supersonic bombardment type aircraft. (CONFIDENTIAL)

c. Tasks:

Task 50189 (Unclassified Title) Munition Temperature Control.  
(SECRET TASK)

Contractor: Not established.

Contract: None

Principal Investigator: Not established

Completion of Development: January 1956

Completion of Test: June 1956

Object: To provide the engineering and coordination necessary to assure compatibility between bomb heating provisions as incorporated in different temperature sensitive viable agent munitions and the electrical heating provisions required to be installed in applicable aircraft. (SECRET)

Nature of Task: To assure that bomb heating requirements are maintained within the limits of the aircraft electrical system capabilities and that adequate provisions are installed in applicable aircraft.

Coordination: WADC - Equipment Laboratory, WCLE  
Weapons Systems Directorate, WCOW  
AMC - Procurement Division, MCP  
Maintenance Division, MCM  
AFAC, ACOPP  
Dept. of Army, Chemical Corps Biological Labs (SECRET)

Task 50190 - (Uncl Title) Bomb Bay Dispenser (SECRET TASK)

Contractor: Not Established.

Contract: None

Principal Investigator: (Not Established)

Completion of Development: December 1956

Completion of Tests: July 1957

Object: To provide equipment for delivery of spherical munitions over the target area from subsonic and supersonic aircraft.

Nature of Task: Development of a bomb bay dispenser for suspension and release of spherical PW munitions from subsonic and supersonic bombardment type aircraft.



~~CONFIDENTIAL~~~~SECRET~~  
Item 2861

Coordination: WADC - Directorate of Support, WCU  
 Aircraft Laboratory, WCLS  
 Equipment Laboratory, WCLE  
 Materials Laboratory, WCRT  
 Weapons Systems Directorate, WCOV  
 AFAC, ACOP  
 Dept. of Army, Chemical Corps Biological Labs.  
 (SECRET)

d. Other Information:

(1) Reference Item 11, since the Navy may carry and disseminate these munitions, that agency will be interested in this project. The Army Chemical Corps, Biological Laboratories will participate in the development of the dissemination and temperature control equipment. AFAC will participate in the testing of prototype articles. (Uncl)

(2) The following support will be required from the Air Materiel Command:

(a) Furnish funds for modification of aircraft to provide prototype installation of munition temperature control equipment for service test. Expenditure of approximately \$15,000 in FY 1955 is anticipated.

(b) Furnish funds for procurement of prototype bomb bay dispenser (1 ea.) for service test. Expenditure of approximately \$50,000 in FY 1957 is anticipated. (Uncl)

e. Background History: Development of bomb cluster adapters with internal heating and insulating equipment to reduce heat loss from certain temperature sensitive unit bombs which are clustered and carried in cluster adapters has been carried out under prior projects R555-731, R555-732, and R555-777. (Conf)

Certain BW munitions have a definite temperature range within which the viable agent remains effective. It is, therefore, necessary to control the munition temperature during flight if maximum effectiveness is to be realized. The Army Chemical Corps will provide internal electrical heaters in the individual cluster munitions for production items. Electrical heaters plus insulating material will be used to maintain the required temperature for a typical combat mission. As an interim, for present operational readiness, space heaters for B-29 and B-50 bomb bays are being developed. The long range task will be to provide an electrical system with power receptacles at each bomb station with sufficient capacity to supply the required cluster heating power. Cold chamber tests of the M-115, M-33, and E-133 BW munitions and flight tests of B-47 and B-50 aircraft have indicated that the temperatures of the munitions after a normal flight, without munition temperature control, would result in a large quantity of the viable agent being destroyed in some cases. A prototype bomb bay heater was tested in a B-50 airplane. The major difficulty encountered was operation at altitudes above 25,000 feet. At this altitude the rarified air would not support combustion. The proper design may overcome this difficulty. Data was obtained from these tests as to the required BTU output of the heaters at various altitudes up to 30,000 feet. (SECRET)

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With the inception of requirements to obtain a capability for delivery of BW weapons, investigations were made as to the effects of temperature and altitude on the viability of BW elements. In March 1951, the problem of temperature control was presented to WADC in a letter from Hq USAF, Subj: "(SECRET TITLE) Temperature Control for Airborne BW Munitions". (SECRET DOCUMENT) In October 1951, WADC presented a prepared report on the study, subj: "(SECRET Title) A Preliminary Study of Temperature Requirements for the Protection of BW Munitions During Airborne Delivery to Target Areas", (SECRET DOCUMENT). (Memorandum Report No. WCEG R-555-1350). During the period October 1951 to April 1952, bomb bay heaters were installed in a B-29 airplane for the purpose of determining the adequacy of heating bomb bays with gasoline heaters. Tests were made at varying altitudes from 10,000 to 40,000 feet. It was determined that presently available heaters, properly controlled would operate satisfactorily up to altitudes of 27,000 feet. Exhibit WCEEM-2-50 dated 20 May 1952, subj: "(Confidential Title) Bomb Bay Heating Kit for B-29 and B-50 Aircraft", (CONFIDENTIAL REPORT) covers the requirements for heaters for bomb bays for these aircraft. On the basis of the above a contract was let to the Hayes Aircraft Corp., Birmingham, Alabama, for the design and development of bomb bay heaters for service use in B-29 and B-50 aircraft. These heaters were functionally tested by the contractor and found to operate satisfactorily within the required design limitations. Development will be considered finished upon completion of final test report. (CONFIDENTIAL)

From a survey of aircraft electrical power availability for munition heating, it was determined that 150 watts per unit munition cluster could be made available. The Army Chemical Corps has been advised to design the unit munition cluster with heaters and insulation, such that under combat conditions on a typical combat mission the temperature of the unit bombs will not rise or fall beyond the allowable temperature range. (CONFIDENTIAL)

Other studies on temperatures of aircraft in flight have been made and reported in the following:

- (1) Memorandum Report No. WCSE-127 dated January 1952, (Uncl Title) "Study-Design Temperature Requirements for Operation of USAF Aircraft and Equipment Phase C Aircraft Compartment and Equipment Temperature (B-36 Aircraft)". (UNCLASSIFIED DOCUMENT)
- (2) Technical Report 206.03 WADC-TR53-119 dated May 1953, (Uncl Title) "Aircraft Temperature Requirements Research Division Project 206". (UNCLASSIFIED DOCUMENT)

Early in FY 1952 the Army Chemical Corps under MIPR 52-702-WADC Amendment I, conducted experimental tests with spherical munitions proposed for use with BW agents. Dispersion of spherical munitions was studied. Various diameters, surface contours, moments of inertia, and other factors entering into the dispersion of the sphere were investigated. Numerous drops of various test spheres were made to determine which shape gave the best dispersion pattern. (SECRET)

Under the Army Chemical Corps contract DA-18-064-CML-2028, the Rheem Mfg. Co. was given the task of evaluating the results of previous experimental tests. They were also given the task of developing a test



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Item 2861

dispenser for use in B-50 and B-47 aircraft for determining the effects of controlled orientation and forced ejection on the dispersion pattern of the sphere selected as having the optimum shape. The shape selected was approximately 4 3/4 inches in diameter with 9 raised, equally spaced ribs and weighing approximately 2.7 pounds. (Conf)

In order to marry the dispensing of spheres with the applicable aircraft, WADC prepared Exhibit WCLG-539 dated 19 November 1952, (Uncl Title) "Missiles, Spherical, Dispenser For" (Confidential Document) covering four (4) envisioned phases of the task. As the aircraft affected are Boeing designed and built, the Boeing Airplane Co. was recommended for sole source procurement. Due to freeze of R&D funds in late FY 1953, the purchase request was recalled and was resubmitted for procurement purposes in October 1953. (Uncl)

Ballistic drop tests were made during the fall of 1953 from a B-50 airplane using the Chemical Corps hoppers and the four inch ribbed spheres. Additional tests using the E-19 Dispenser (Rheem Dispenser) will be made during the summer of 1954. (UNCLASSIFIED)

Work has been done by the Army Chemical Corps in the dissemination of dry agents. During March and April 1952, the Army Chemical Corps, using a Navy ship, in a series of five trials disseminated between 200 and 450 pounds of inert tracer powder along a 105-135 nautical mile line. The object was to test the possibility of achieving long range aerosol cloud travel and consequent coverage of large areas at ground level under meteorological conditions in which inversions of temperature were present at low levels of the atmosphere. Details of the test program are contained in the Army Chemical Corps Biological Laboratories FT&M Division Report dated 22 September 1952, Subj: (Conf Title) Long Range Aerosol Cloud Travel Phase II". (SECRET DOCUMENT) In October 1952, the WADC, at the request of the Army Chemical Corps, modified a B-26 airplane to install equipment for aerial dispensing of dry agent powder. This equipment has been used by the Army Chemical Corps with indications that the performance of the device is satisfactory. (SECRET)

f. References:

(1) Letter Hq ARDC to Hq WADC, ADTS-832, dated 20 August 1952, Subj: (Unclassified Title) USAF Biological and Chemical Warfare Program". (TOP SECRET LETTER)

(2) Contract, Hayes Aircraft Corp., AF 33(600)22098, FR388659.

(CONFIDENTIAL)

(3) Contract, Army Chemical Corps, MIPR 52-702-WADC (SECRET DOCUMENT) and Amendment I. (CONFIDENTIAL DOCUMENT)

(4) Letter Hq USAF to Hq WADC, dated March 1951, Subj: "(Secret Title) Temperature Control for Airborne BW Munitions". (SECRET LETTER)

(5) WADC Memorandum Report No. WCEG-R-555-1350, dated October 1951, Subj: "(Secret Title) A Preliminary Study of Temperature Requirements for the Protection of BW Munitions During Airborne Delivery to Target Areas". (SECRET REPORT)

(6) WADC Exhibit No. WCEEM-2-50, dated 20 May 1952, Subj: "(Conf Title) Bomb Bay Heating Kit for B-29 and B-50 Aircraft". (Conf Exhibit)

(7) WADC Memorandum Report No. WCSE-127, dated January 1952, Subj: (Uncl Title) "Study-Design Temperature Requirements for Operation of USAF Aircraft and Equipment Phase C Aircraft Compartment and Equipment Temperature (B-36B Aircraft)". (UNCLASSIFIED REPORT)

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(8) USAF Technical Report No. 206.03 WADC-TR53-119, dated May 1953, Subj: (Uncl Title) "Aircraft Temperature Requirements Research Division Project 206". (UNCLASSIFIED REPORT)

(9) Contract - Between Army Chemical Corps and Rheem Mfg. Co. - No. DA-18-064-CML-2028. (CONF DOCUMENT)

(10) WADC Exhibit No. WCLG-539, dated 19 November 1952, Subj: (Uncl Title) Dispenser for Spherical Missiles". (CONFIDENTIAL DOCUMENT)

(11) Report: Army Chemical Corps Biological Laboratories, FT&M Division, dated 22 September 1952, Subj: (Conf Title) Long Range Aerosol Cloud Travel, Phase II". (SECRET REPORT)

(12) WADC Exhibit No. WCLG-539A dated 11 March 1954 Subj: (Uncl Title) Release System for Spherical Bomblets". (CONFIDENTIAL DOCUMENT)

REASON FOR SECURITY CLASSIFICATION:

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

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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Item 2868

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

Revised  
Report "G"  
Copy No. \_\_\_\_\_  
(16 Pages)

CMIWH

TSE/5190/mm  
20 May 1954

SUBJECT: Establishment of Four (4) Secret Projects in the Cml C FY 55  
Program and Termination of Three (3) Consolidated Projects

TO: Chairman, Chemical Corps Technical Committee

1. References:

- a. CCTC Items 2703 and 2730 (S/RD), Chemical Corps R&D Program for FY 54, Approved 11 Sep 53.
- b. CCTC Item 2810 (S), Security Classification Review of Chemical Corps R&D Projects, 8 Apr 54.
- c. SR 705-5-1, Research and Development of Materiel, 10 Feb 54.
- d. Ltr (S), CMIRE-P-1 R&E Command, 14 May 54, Recommendations for Chemical Corps Technical Committee Action, to Chm, CCTC, w/2 Incls.

2. Discussion:

a. Reference a. identifies action of this Committee which reviewed the Chemical Corps research and development effort anticipated for FY 54 and indicated that this program consisted of 196 projects established and continued in force in accordance with applicable regulations and directives. This project listing has been revised during the fiscal year by additions and deletions by action of this Committee so that the program currently includes a total of 180 projects within the scope of the three major areas of Chemical Corps responsibility. The security classification of all of these projects was recently reviewed as recorded in reference b. to meet Staff requirements originating with the change in security procedures and abolition of the Restricted category authorized by DA Circular 127, 23 Dec 1953.

b. Reference c. identifies the basic regulation pertaining to the establishment of R&D projects in which paragraph 14 indicates that timely and periodical reviews of R&D programs should be conducted by the Technical Committees to assure conformity with the over-all Army R&D program and to eliminate any unproductive and duplicating activities. In consonance with this directive this Corps has annually reviewed its research and development effort in order to insure a completely integrated program fulfilling Chemical Corps responsibilities in the CBR area within the Department of Defense. As previously noted reference a. identifies the review conducted at the beginning of the current fiscal year.

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## 2. Discussion (continued):

c. Reference d. identifies correspondence which indicated that the program for FY 55 had been reviewed in accordance with all existing directives and, as a result, a total of four new projects in the CW area classified Secret were recommended for initiation at this time. Appropriate project data sheets for these projects are inclosed herewith and the tabulation below indicates the title, technical objective, and security classification for each. In connection with project 4-98-05-026, it is to be noted that this consolidates three currently approved projects, namely, 4-08-05-021, 4-98-05-022, and 4-36-07-001.

Project No. & Tech Obj.	Title & Classification	Security Class. of Project	Priority
4-04-15-027 CW-3	Gas Artillery Shell (U)	S	1-C
4-08-03-015 CW-1a	Agent SS (U)	S	1-
4-08-06-025 CW-4a	Area GB Alarm (U)	S	1-A
*4-98-05-026 CW-3	CW Field Testing & Technology, DPG (U)	S	1-B
* Supersedes the following projects:			
4-98-05-021 CW-3	CW Field Test Technology, DPG (U)	S	1-B
4-98-05-022 CW-3 CW-4b	CW Field Testing, DPG (U)	S	1-B
4-36-07-001 IC-14	Climatological and Meteorological Factors Affecting Field Test Operations. (U)	S	2

d. The foregoing discussion indicates that timely review of the current Chemical Corps project program has shown the desirability of establishing four new projects and deleting three related projects as a result of consolidation. Each of these new projects is described in the respective project data sheet attached herewith.

## 3. Recommendations:

It is recommended that:



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3. Recommendations (continued):

- a. The following projects be established in the Chemical Corps FY 55 project program:
  - (1) 4-04-15-027, Gas Artillery Shell
  - (2) 4-08-03-015, Agent CS
  - (3) 4-08-06-025, Area CB Alarm
  - (4) 4-98-05-026, CW Field Testing & Technology, DPG
- b. The military characteristics if applicable, objectives, approach, and scope of the subject projects as listed in paragraph 21 of the pertinent project data sheet attached herewith be approved.
- c. Each of the subject projects be assigned to the Technical Objective and be accorded the priority and classification indicated in the applicable project data sheet.
- d. The following currently approved projects be deleted from the FY 55 program as a result of consolidation into project 4-98-05-026:
  - (1) 4-96-05-021, CW Field Test Technology, DPG
  - (2) 4-98-05-022, CW Field Testing, DPG
  - (3) 4-36-07-001, Climatological and Meteorological Factors Affecting Field Test Operations.
- e. The Chemical Corps FY 55 project program and related documents be revised in accordance with this action.

4 Incls  
 Project Data Sheets for  
 4-04-15-027  
 4-08-03-015  
 4-08-06-025  
 4-98-05-026.

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PROJECT DATA SHEET

1. PROJECT TITLE: Gas Artillery Shell (U)
2. SECURITY CLASSIFICATION: Secret
3. PROJECT NUMBER: 4-04-15-027
5. REPORT DATE: 14 May 1954
6. BASIC FIELD: Ammunition
7. SUB FIELD OR SUBJECT: Munitions, Chemical
- 7a. TECHNICAL OBJECTIVE: CW-3
8. COGNIZANT AGENCY: Cml C
9. DIRECTING AGENCY: Cml C R&E Comd, A Cml C, Md.
10. REQUESTING AGENCY: AFF
11. PARTICIPATION AND/OR COORDINATION: (AR) Army; Ordnance Corps
12. CONTRACTOR AND/OR LABORATORY: Cml C Cml & Rad Labs, A Cml C, Md.
13. RELATED PROJECTS:
14. DATE APPROVED: 29 July 54, CCTC Item 2868
15. DEPT OF ARMY PRIORITY: 1-C
17. ESTIMATED COMPLETION DATES: Res (Cont)  
Dev  
Test  
Op Eval
18. FISCAL YEARS ESTIMATES: FY 55 1COM  
FY 56
20. REQUIREMENT AND/OR JUSTIFICATION: Ordnance Corps is at present developing new toxic ammunition for the 110-mm and 156-mm Howitzers and 175-mm guns under projects TAL-1464, TAL-1756 and TAL-1770, D/A projects 504-03-063, 504-03-064, 504-03-065, respectively. The projects presently contemplate development of thin wall, high explosive shell, and efforts will be made to develop equivalent shell for non-persistent agent munitions. If this is found to be feasible, these shell will have greater capacity for toxic agent than the 105-mm and 155-mm non-persistent gas artillery shell which have been developed. Further studies are also required to provide greater assurance against leakage on non-persistent gas artillery shell. A requirement for a large caliber HD Artillery Shell has been stated by the Army Field Forces. To meet this requirement Ordnance is developing Shell, Chem. 8-inch, TL9 (series) under project TAL-1876, D/A 504-03-074 for HD gas filling.
21. BRIEF OF PROJECT AND OBJECTIVE:
  - a. Brief: The objectives of this project are:
    - (1) To review work previously undertaken under Cml C Projects 4-04-15-012, GB Artillery Shell, 155-mm and 4-04-15-020, GB Artillery Shell, 105-mm with a view towards improvement of the dissemination and leakage characteristics of these weapons.
    - (2) To conduct investigations relative to the application of new artillery shell developments by the Ordnance Corps as Chemical Munitions.
    - (3) To assist the Ordnance Corps to develop an 8-inch HD Artillery Shell based on the M106 Artillery Shell.
    - (4) Since this is a general project, appropriate projects will be established as investigations and/or requirements indicate a need for specific end items.