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RESEARCH AND DEVELOPMENT DIVISION

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

HISTORICAL REPORT

1 JULY 1953
to
30 SEPTEMBER, 1953

[redacted] Restricted Data As Defined In Atomic Energy Act Of 1954 Disseminatio

Edna R. Summerfield
Historian

Reports Control Symbol CMLHO-194

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HISTORICAL REPORT

RESEARCH AND DEVELOPMENT DIVISION
OFFICE OF THE CHIEF CHEMICAL OFFICER

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HISTORICAL REPORT

RESEARCH AND DEVELOPMENT DIVISION

OFFICE OF THE CHIEF CHEMICAL OFFICER

LIST OF EXHIBITS

PART I

ADMINISTRATION

A. Changes in Mission and Responsibilities.

No changes.

B. Acquisition and/or Disposal of Physical Facilities.

No changes.

C. Major Organizational and Functional Revisions.

No changes.

D. Significant Development of Administrative Procedures.

PART II

FISCAL

A. Funds Allotted

1. The status of funds for research and development by the Chemical Corps for the first quarter of the FY 1954 is as follows:

Source	Total Funds Available	Total Cumulative Obligations	Unobligated Balance vs Funds Available.
Army Chemical Corps	$ 33,775,000	$ 6,383,829	$ 27,391,171
Air Force	4,380,070	496,000	3,884,070
Navy	142,850	113,850	29,000
TOTAL	38,297,920	6,993,679	31,304,241

2. Funds for the payment of personnel of the Research and Development Division are part of the total funds for the operation of the Office of the Chief Chemical Officer. (See Historical Report of the Comptroller, Office of the Chief Chemical Officer, for this fiscal information.)

B. Land and Other Leased Facilities.

None

C. Tabulation of the Expenditures by Type Operation.

1. Expenditures by type operation are summarized in paragraph A above.

2. Funds for payment of personnel of the Research and Development Division are part of the total funds for the operation of the Office of the Chief Chemical Officer. (See Historical Report of the Comptroller, Office of the Chief Chemical Officer, for this fiscal information.)

PART III

PERSONNEL.

A. Changes in Key Personnel

The assignment and transfer of key personnel in the Research and Development Division indicated below:

Effective date	Name and Station	Authority
31 August 1953	Mr. John L. Traub, Chemical Engineer, appointed Chief, Toxic Chemical Warfare Branch, Research & Development Division	R & D D Office Order No. 3.

B. Personnel Strength

The Research and Development Division is authorized five (5) officers and twenty-six (26) civilians. As of September 30, 1953, there were five (5) officers and twenty-five (25) civilians. A roster of military personnel by name and MOS number is attached as Exhibit A. Civilian personnel are listed on the organizational chart attached as Exhibit B.

PART IV

PLANS

A. Plans for Peace-Time Establishment

No change

B. Mobilization Plans

No change.

C. Current Planning

No change.

[redacted]

PART V

OPERATIONS.

The major staff actions of the Research and Development Division are indicated on Pages 5 to 23, inclusive.

[redacted]

1 July 1953

A letter was written to the Assistant Chief of Staff, G-4 stating that recently a high specific activity agent was required in order to experimentally verify the theoretical thermodynamic analysis of steady and unsteady temperature conditions in spherical RW munitions now under development by the Chemical Corps. Agent material was sent from Hanford 26 May 1953 and was reported to be slightly in excess of the desired specific gravity. The active material was sent to Dugway Proving Ground, assayed by them and was found to contain only about 25% of the desired activity. This information was immediately reported to Hanford through the Atomic Energy Commission, Washington, D.C. An explanation was given as to why Hanford probably missed the mark by 75%. The statement was made to G-4 that the findings tend to eliminate Ta (tantalum) from all further consideration as a potential candidate RW agent.

2 July 1953

On 2 July 1953 the Chief Chemical Corps forwarded the following excerpt to the General Staff from a letter received by Brigadier General William M.Creasy from Dr.Robert Van Tuyle, Chemical Director of the Emery Industries, Inc., for whatever action was deemed advisable by the Staff:

"During the last several years you have undoubtedly followed Project Cirrus, conducted by the Air Corps with General Electric. The ability to control weather patterns and to develop large areas of precipitation has unquestionably been proven, although many people still doubt the practical benefit of such efforts to control weather. At various times over a period of years I have studied weather development in Russia, and find that the movement of air masses from the Atlantic over the Baltic and German areas into the heartland of Russia in a fairly consistent pattern. It is my further opinion that by far the largest percentage of precipitation falling on the Ukraine comes from the Atlantic-Baltic Area. It appears easily practicable to "seed" these large weather breeding areas to develop extensive precipitation in the Polish-Latvian area, even to the point of probably creating and maintaining serious flood conditions. In addition, this would have the effect of denying such rainfall to the Ukraine, the "bread basket" of Russia. The continued economic effect on both the Polish Corridor area and the Russian economy is obvious. It would appear that seeding stations from France through Norway could easily accomplish such an objective!

3 July 1953

A memorandum for record was written on the flame demonstration for the Marine Corps at the Army Chemical Center. Lt.Col.Fletcher gave a fine introductory presentation on the development of flame warfare weapons and materiel of the Chemical Corps and the part the Marine Corps has played in furthering these developments. The following demonstrations were given: Firing of the 5-gallon Napalm rocket; assembling of rocket launcher; portable flame throwers; launching of two (2) E16 hand grenades and rifle smoke grenades.

8 July 1953

A letter was sent to the Assistant Chief of Staff, G-4, for Research and development subject: Request for Toxic Support by

8 July 1953 (continued)

Suffield Experimental Station, which stated that it was improbable that CW toxic evaluation at Big Delta can be accomplished this winter due to the land withdrawal problem and limited availability of facilities at the Big Delta test site. [redacted]

13 July 1953

A memorandum was addressed to the Chief, Research and Development Division from the BW Branch, giving comments on Plant Operations. It was stated that the X-201 is not a pilot plant and that it was not designed for a pilot plant; that it is a production plant and all of its facilities are designed for production scale operation. It further stated that one of the safety features of the X-201 plant upon which great reliance is placed is the ventilation, temperature and pressure control system, which is very delicately balanced. It gives information as to the air flow and states that an upset or reversal of this delicate balance might well be disastrous. There were other features of the plant pointed out to show some of the difficulties that will arise from any attempts to operate a plant of this type for purposes other than the one for which it is designed. [redacted]

14 July 1953

A memorandum was prepared for the Deputy Chief Chemical Officer on fuel contaminants. The memorandum cited three references dealing with this subject. Reference "a" stated that in a memorandum to the President, Chemical Corps Board, from H.S.King, Agents Division, Chemical Corps Board, a proposal was made to deny fuel to an enemy by the addition of toxic chemicals, thereby making such fuel dangerous to handle. Reference "b" was a Memo Routing Slip from the Board to General Loucks setting forth recommendations on the above suggestion which included feasibility studies for handling such fuels and contaminating roads with them, and evaluation of principles and methods for this type of contamination. Reference "c" was a Memo Routing Slip from P. T. & I. Division to R & D Division 1 July 1953, containing comments on reference "a" and indicating that the addition of toxics to fuel has no particular virtues over currently considered contaminants and "toxic attacks against personnel could be carried out more efficiently by other means." The Research and Development Division concurs in the comments of the Plans, Training and Intelligence Division as set forth in reference "c" and further stated that contamination of fuel stocks with toxic chemical agents would present a hazard to friendly troops. [redacted]

15 July 1953

By letter the Commanding General, Chemical Corps Research and Engineering Command, was directed to proceed with the detailed planning for Operation "Long Shot" following the general plan previously forwarded. "The final scope of the tests is to be determined by you in coordination with the USAF and other organizations. This detailed plan should should be completely prepared and kept current with subsequent changes

[redacted]

15 July 1953 (continued) in guidance furnished by this office." Other detailed instructions were contained in the letter. [redacted]

15 July 1953 In a memorandum prepared for the Chief Chemical Officer it was stated that in anticipation of the final directive on the use of volunteers in both CW and BW, the Chemical Corps Research and Engineering Command is preparing a series of plans which they do not expect to be ready before 15 August owing to the fact that Dugway has to be read into the picture. Separate plans are being submitted for each of these two areas. [redacted]

16 July 1953 Comment No. 4 was furnished the Chief of Ordnance giving information on the collective protector for tanks. The correspondence was initiated by a letter from the Army Field Forces dated 5 May 1953 to the Assistant Chief of Staff, G-3, subject: Collective Protector for Tanks, which stated that the E26, after certain modifications, would be satisfactory as an interim item. However, they desired data on which to evaluate the practicability of a requirement for a pressurized collective protector. Three full pages contained much information on the subject; paragraph 7 recommended that the information contained in the correspondence be forwarded to the Army Field Forces; that the Army Field Forces be requested to reconsider their request for information on pressurized collective protector system for tanks; and Army Field Forces be requested to review existing military characteristics for collective protectors for tanks. [redacted]

17 July 1953 By letter the Commanding General, Chemical Corps Research and Engineering Command was advised that effective immediately, no experiments using human volunteers can be conducted by the Chemical Corps without prior approval from the Secretary of the Army. [redacted]

20 July 1953 The Commanding General, Chemical Corps Research and Engineering Command, was advised by letter that at a hearing of the Chemical Corps Research and Development Budget before the Army R&D Review Board several months ago, the question was raised as to whether the erection and operation of pilot plants was a proper charge against R&D Appropriations. The question has never been settled though several conferences with G-4 personnel have been held. It was stated that at a conference with G-4 on 14 July 1953, it appeared that a broad policy statement could not be made which would be applicable to all technical services and yet cover the special problems of this Corps in the development of biological and chemical agents. Since a suitable policy statement could not be arrived at, it was decided that the Chemical Corps would submit a statement of all of its problems in this area and that decisions would be made upon the merits of each case. [redacted]

Certain information was requested to be furnished on all new and revised pilot plant and/or process development problems which the Chemical Corps recommends funding in FY 1954 be prepared and forwarded in quadruplicate to this office. [redacted]

[redacted]

23 July 1953 — The Commanding General, Chemical Corps Research and Engineering Command was directed to proceed not later than 1 August 1953 in a rapid and orderly manner to close out all work in the anti-animal biological warfare field being funded by Army Research and Development appropriations. [redacted]

28 July 1953 — The Deputy Chief Chemical Officer was furnished with information which he had requested on the development of agents for use against soy beans and millet. The memorandum explained that exploratory work on biological agents for this purpose failed to reveal any organisms that gave promise of either quick or economical development. However, two chemical agents have been standardized which are effective against soy beans. A resume of the work being accomplished was given.(SECRET)

29 July 1953 — The Assistant Chief of Staff, G-4 was advised by Comment 3 to the effect that action has been initiated to close out all work in the anti-animal biological warfare field being funded by Army Research and Development funds. [redacted]

29 July 1953 — A memorandum for the Chief Chemical Officer stated that as a result of General Bullene's conference with Major General Nichols concerning additional FY 1954 funds for AW, the Research and Development Division submitted a request to G-4 for more funds. On 21 July 1953 General Uncles informed this office that additional Research and Development funds in the amount of$225,000 would be available to the Chemical Corps for the following purposes in order to properly close out the Chemical Corps Radiological Warfare Program:

a. Mothballing of facilities and test equipment
b. Equipment (Final Payment to Greer Hydraulics, Inc.)
c. Determine data on single round test.

The AW Program for FY 1954 will, therefore, be funded to the extent of $445,000 with this addition of $225,000 to the $200,000 already appropriated by the Senior Army Research and Development Review Board. The Chemical Corps Research and Engineering Command has been informed of this action. [redacted]

31 July 1953 — The Commanding General, Chemical Corps Research and Engineering Command was directed to

a. Extend the Delivery Order with the Department of Agriculture for Fort Terry Operations to 31 March 1954 or until such time as funds now obligated will be expended.

b. Phase out the anti-animal BW program at the Chemical Corps Biological Laboratories.

c. Amend Delivery Order with the Department of Agriculture for operations at Fort Terry in order to provide $28,000 of the [redacted]

amount available under the order for the purpose of closing out the work being conducted in Africa.

d. Phase out the anti-animal work at Fort Terry but maintain at Fort Terry a small group of military personnel until such time as the ultimate disposition of this installation has been determined. [redacted]

3 August 1953 — The Chief Chemical Officer was informed that General Uncles (G-4) has approved the following actions in connection with the Anti-Animal Biological Warfare Research and Development Program:

a. Completion of the rehabilitation program at Fort Terry.

b. Extension of the agreement with the Department of Agriculture for Fort Terry operations through 31 March 1954 or until such time as funds now obligated will be expended.

c. Expenditure of $120,000 of FY 1954 funds for closing out subject program at Fort Terry and Biological Laboratories.

d. Expenditure of $28,000 for closing out the work in Africa. This sum is to be obtained from the funds now available to the Department of Agriculture under the Fort Terry agreement.

G-4 requested that the Chemical Corps initiate action to implement the utilization of facilities at Fort Terry by the Department of Agriculture and to continue First Army support of water transportation as long as the agreement is in effect. The Chemical Corps Research and Engineering Command has been directed to arrange, with the least possible delay planning conferences with First Army and Department of Agriculture representatives. [redacted]

6 August 1953 — The Assistant Chief of Staff, G-4 was furnished a draft of a letter to The Secretary of Agriculture relative to the plan for phasing out the Army operations at Fort Terry and the transfer of Plum Island to that Department. [redacted]

7 August 1953 — A memorandum from the Chief, P. T. & I. Division dated 7 August 1953 stated that in a conference in General Bullene's office on 3 August 1953 he directed the Chemical Corps Chemical and Radiological Laboratories to investigate the following: [redacted]AL)

a. The maximum fog oil capacity that could be mounted in the M39 armored vehicle. General Bullene feels that it would be desirable to have sufficient capacity mounted on the vehicle for 10 to 12 hours operation of one or, if possible, two smoke generators also mounted thereon.

b. The rapid conversion to G of a sufficient number of fog oil tanks [redacted]

[redacted]

7 August 1953 — to provide for thirty minutes toxic operations.

c. The use of a C type generator or of Freon 113 instead of water in the M3 smoke generator for the production of a colorless G cloud (visibility of the cloud up to 200 yards downwind is acceptable.)

d. Use of a C type generator for large scale GB attacks.

e. The production of smoke by use of the M30 vehicle engine instead of the smoke generator.

10 August 1953 — The Chief of Ordnance was notified by the Commanding General, Chemical Corps Research and Engineering Command that the Ballistic Test Program has been cancelled and he was thanked for the fine spirit of cooperation of the Ordnance Corps in the conduct of this program. (UNCLASSIFIED)

10 August 1953 — A memorandum for the Chief Chemical Officer from the Chief, Research and Development Division referred to a memorandum of 3 August 1953 on the Anti-Animal Biological Warfare Research and Development Program, which reported the approval of G-4 of certain actions in connection with the subject program. Representatives of the Research and Development Division and of the Materiel Division conferred with G-4 (Colonel Weisberg and Colonel Feidt) in order to determine a course of action. At the request of Colonel Weisberg a draft of a proposed letter from the Secretary of the Army to the Secretary of Agriculture was prepared and attached to the memorandum of 10 August. Draft letter provides that the Army will surrender its facilities at Fort Terry but will retain the right to use the rehabilitated facilities should a future need arise. In the original proposal to G-4 it was intended that the Department of the Army would make the rehabilitated facilities available to the Department of Agriculture by means of a use permit. The position of G-4 (Colonel Weisberg) is that it is the policy of the Secretary of the Army that the army will not retain facilities for which it has no direct use. By retaining the right to use the rehabilitated facilities G-4 feels that we will have accomplished our purpose and at the same time be in line with the Secretary's policy.

[redacted]

11 August 1953 — A letter was addressed to the Commanding General, Chemical Corps Research and Engineering Command, subject - Chemical Corps FY 1954 Research and Development Program, the first paragraph of which made reference to six pieces of correspondence between the two offices. It was stated in paragraph 2 that the referenced documents modified as indicated in the present letter will constitute guidance for the 1954 FY Research and Development Program. Paragraph 5 stated that within the funds available, namely, $31,235,000 Army Funds and such funds as the Air Force and Navy have and will make available this fiscal year, the Research and Development Program should follow the recommendations contained in sub-paragraphs a and b of para-

[redacted]

11 August 1953 (continued) graph 1, and requested the revised project program based on this guidance be submitted to this office not later than 1 September 1953. [redacted]

12 August 1953 A letter was sent to the Commanding General, Chemical Corps Research and Engineering Command(dated July 27 1953 but not signed until 12 August 1953), subject: Paralytic Shellfish Poison, which inclosed a copy of a Memorandum for the Chief, Research and Development Division, dated 14 July 1953, subject - Status of Work on Paralytic Shellfish Poison (Abstract). It was stated in paragraph 3 of the referenced letter, that in view of the importance of shellfish poison (Agent SS) as a candidate anti-personnel agent, it is desired that the Command implement recommendations 7a and b of the study attached to the memorandum of 14 July 1953. Funds requirement was stated - and the funds to be obtained by reprogramming within funds available to the Command. [redacted]

1[illegible] August 1953 By memorandum the Chief Chemical Officer was given comparisons of agent dissemination methods by the 155 howitzer, 4.5" rocket, balloon delivery and area rocket. Based on the data presented, it appears that the area rocket possibilities should be exploited to the fullest and other services should be informed of the Chemical Corps' work with the munition so that firm requirements could be stated by using services.[redacted]

13 August 1953 A memorandum was addressed to the Chief Chemical Officer relative to the unsatisfactory results obtained in the first seven of forty scheduled production cluster and component bombs being "operationally suitability tested" by the Air Force at Muroc, Edwards Air Base, California. The Chemical Corps is of the opinion that failures are due to production faults and not development faults; the reasons for this opinion are stated in the memorandum. [redacted]

14 August 1953 A memorandum to the Chief, Research and Development Division stated that a conference on incendiaries among selected representatives of the G-3 staff, their designated subordinates and personnel of the Research and Engineering Command was conducted at the Army Chemical Center 12 August 1953, for the purpose of acquainting Psychological Warfare personnel with munitions developed by the Chemical Corps and to discuss the devices which Psychological Warfare will request the Chemical Corps to develop. They presented a small pocket incendiary and thermite well which is being evaluated by the Psychological Warfare Board. It was stated the Psychological Warfare representatives will request development of certain devices, two of which (the fuel contaminants) are nearing completion and two others are being improved by the Chemical Warfare Board. Every effort is being made by the Chemical Corps Research and Engineering Command to expedite the completion of final engineering tests being conducted at Aberdeen Proving Ground, Maryland. [redacted]

17 August 1953 The Commanding General, Chemical Corps Research and Engineering [redacted]

17 August 1953 (continued) was directed to start development on a Halogen Fluoride Incendiary Device which had been requested by G-4. The following statement was included in the letter to the Commanding General:

"Research and Development funds, presently available to the Research and Engineering Command, should be utilized to initiate work requested in the attached Disposition Form. This office is taking the necessary action to request the Office, Chief of Finance, to effect a transfer of funds as outlined in Paragraph 3 of attached Disposition Form. These funds will be credited to the account "Working Funds, Army Chemical Corps and will be suballocated to your office promptly upon receipt, at which time necessary bookd adjustments should be made replenishing Research and Development funds." [redacted]

17 August 1953 By letter the Chief Chemical Officer informed the Commanding General, Chemical Corps Research and Engineering Command that at a meeting held on 29 April 1953, attended by

Dr. R.W.Cairns, Vice Chairman, Research & Development Board
Major General K.D.Nichols, Chief of Res & Dev, Dept. of the Army
Major General E.F.Bullene,Chief Chemical Officer, Dept. of the Army
Colonel R.B.Firehock,Office of Chief of Res & Dev, Dept. of the Army
Admiral C.M.Bolster,Chief of Naval Research, Dept. of the Navy
Captain C.B.Grimes,Asst.Chief of Naval Research,Dept. of the Navy
Major General D.N.Yates,USAF,Director of Res & Dev, Dept. of the Air Force
Colonel F.J.Siler, USAF, (AFOAT), Dept. of the Air Force

it was agreed that the Chemical Corps would effect the coordination between the services to arrive at a commonly accepted test program in Biological Warfare agent-munition combinations. General Bullene stated that he has been directed to implement this agreement particu- [redacted]

18 August 1953 A memorandum for the Chief, Research and Development Division stated that Contract DA-18-108-CML-5093 placed with the Universal Moulded Products for Project 4-04-16-006 to the amount of $66,520.00 is in order. The contract relates to the design, development and fabrication of 100 plastic fire bombs, including complete engineering drawings and specifications. [redacted]

18 August 1953 A letter from the Air Materiel Command to the Air Research and Development Command forwarded to this office by 1st indorsement, indicated that the Chemical Corps is conducting a program in connection with BW testing and production to determine the hazard to local populations and live stock with respect to the agents. The Air Materiel Command is concerned with the hazard due to leaking munitions with respect to transmittal of agent by wildlife and insects in storage sites overseas. 1st indorsement from ARDC to this office requested information. By 2d indorsement, 18 August 1953 to the Commanding General, Chemical Corps Research and Engineering Command, advice was given to furnish requested information to the Air Materiel Command direct. [redacted]

19 August 1953 The Assistant Chief of Staff, G-4 was given statistical figures on anti-animal and anti-crop funds for FY 1953 (obligated) and planned FY 1954 and 1955 in the offensive and defensive fields; figures on the premise that the R & D Program had been directed exclusively to the defensive aspects; and figures on the investment in the Fort Terry installation. [redacted]

20 August 1953 A letter was sent to the Chief of Staff, USAF, stating that curtailment in the FY 1954 funds for Chemical Corps Research and Development in the field of radiological warfare has necessitated cancellation of RW tests. All operating agencies of the Air Force which have supported the Chemical Corps program have been notified direct by the Chemical Corps Research and Engineering Command. [redacted]

20 August 1953 The Commanding General, Chemical Corps Research and Engineering Command was directed by letter to implement the recommendation stated in paragraph 4 of Letter Report on Chemical Corps Board Project No. 829, "Dissemination of CN by Smoke Generators," to the effect that the developing agency be requested to investigate the use of Kit, Smoke Generator, Agent Dispersion, E10 for dissemination of CN by means of the M3 Smoke Generator. [redacted]

2[illegible] gust 1953 A letter to the Chief of Ordnance on the standardization of Chemical Warfare munitions. Eleven references were cited and ten (10) inclosures, Tabs A thru J, were inclosed as informatory material. It was stated that the Chemical Corps is desirous of accomplishing a capability with the 105 mm. Shell, T-77, GB, and the 4.5-inch Chemical Rocket, GB, as expeditiously as possible. Based on tests to date, it is believed essential to accept for standardization the current design press fit closure technique advanced by the Chemical Corps and concurred in by Picatinny Arsenal so as to acquire an immediate capability

[redacted]

24 August 1953 (continued)

in the area of nerve gas warfare. It was further stated that the Chemical Corps has designed, investigated, studied and tested some thirty (30) designs of closures and none has been found to excel the current design of press fit closure; approximately seven thousand (7,000) press fit closures have been accomplished by the Chemical Corps in the past two years without detecting a single closure leak. Hesitancy to standardize these munitions and confusion relative to closures are due to fear of physical contact with agent GB. This agent is a more hazardous material than most; however, the Chemical Corps has developed adequate detection and protection devices as attested in TAB "J", which assurance the Ordnance Corps desired prior to concurrence for standardization. The Chemical Corps does not wish to indicate that the present closure technique is considered the optimum type closure. The advantage of a secondary type closure is recognized provided the secondary seal duplicates in result the primary seal. Based on cited facts in the letter, by virtue of the authority and responsibility vested in the Chemical Corps, the following recommendations are made:

a. An immediate standardization of currently released GB ground munitions utilizing press fit closures be executed.

b. Firm production schedules be established and Ordnance Corps requirements for GB munitions be furnished this Corps [redacted]

31 August 1953

Memorandum for the Chief Chemical Officer forwarded SES Trial Record #88 which is the official report of tests performed at Suffield for the Chemical Corps during the winter of FY 1953 with eutectic mixtures of HD-L. Data in this report confirm the unofficial preliminary data furnished this office for planning the test program for the winter of FY 1954. (UNCLASSIFIED).

Human volunteers in suitable service clothing could not be made available for crawling through areas contaminated with HD-L as if under fire and recording lesions produced after a certain wearing period. In lieu of this, men wearing rubber boots over which were worn two layers of cloth covering, the outer of battle-dress serge and the inner of white canvas duck, were used to provide an indication of the amount of agent likely to penetrate serge brought in contact with contamination as would occur with men crawling through it. [redacted]

In two trials, the contamination was laid down on a lightly crusted natural snow cover 3-5" deep. In one trial, an area scraped free of snow the previous day was used. Approximately 30 minutes after the contamination was laid down, the men walked for a distance of 100 yards through the contaminated area. [redacted]

[redacted]

1 September 1953

Comment No. 2 to G-4 on G-4's Comment No. 1 dated 20,August 1953 proposed certain actions in order to implement the actions authorized in paragraph 4 of Comment No. 1:

a. Fort Terry: A forceful program on defense against foot and mouth disease will be phased in as soon as the rehabilitated facilities are completed. Present plans contemplate employment of a force of approximately 170 people by 1 July 1954. Planned full complement of personnel was stated, funds necessary cited and requirements for water transportation given. (Secret)

b. Project 1001 (Kenya, Africa): Program on rinderpest to be continued but Army's participation to be phased out not later than 30 June 1954. Funds required stated. [redacted]

c. Camp Detrick: Program to be terminated as of 30 September 1953. Funds required stated. [redacted]

The position of the Department of Agriculture was stated as to their responsibility and funds and details as to proposed fund requirements for each field stated. [redacted]

2 September 1953

Memorandum for the Chief Chemical Officer forwarded a copy of the Minutes of Meeting on Field Protective Mask held at Army Chemical Center, Maryland on 13 August 1953 among personnel of the Research and Engineering and Materiel Commands. [redacted]

Correspondence indicates that it will take not less than 51 months (after AFF decides as to type) to place a new mask in production if the item follows the standard development procedure. The time for production of a new mask can be reduced by a significant amount (approximately 30 months) only if experimental procurement and Field Forces tests are telescoped during the development procedure. This could be accomplished by having the Chemical and Radiological Laboratories procure sufficient masks to satisfy at least a phase that would normally be satisfied by experimental procurement and by conducting joint Field Forces user tests and Chemical Corps final engineering tests. This procedure would involve taking a calculated risk. [redacted]

Reference paragraph 3b (1) of the minutes of Meeting, the second sentence indicates that production of the M9A1 masks was discontinued, which is incorrect. A proposed contract with Firestone Company, extending production beyond February 1954, had been invalidated by Comptroller General of the United States; however, Firestone and General Tire and Rubber are currently producing M9A1 masks at a combined rate of approximately 50,000 per month. This production is expected to terminate in February 1954 unless additional contracts are placed, action on which is now [redacted]

2 Sept 1953 — in process. [redacted]

The Chemical Corps, in draft reply, expresses appreciation for the work accomplished and concurs, in general, with the recommendations made, with the following added comments:

"a. The report states that sufficient information can be made available by December 1953 to permit selection of the optimum process for expansion of production facilities. It is recommended that extension of this date to September 1954 is desirable as a more realistic breakpoint, based on scheduled receipt of all the necessary information.

"b. No further development of the APC Process is contemplated by the Army based on the adequacy of current information to support emergency expansion of this production process if mandatory and the unfavorable economics of this process when considered for long-term expansion. This is in conflict with the recommendation of the report that further research and development of this process is desirable." [redacted]

2 Sept 1953 — A memorandum for the Deputy Chief Chemical Officer furnished information concerning the status of Chemical Corps Board Project No. 888, "Smoke Generator (Large Area)" which was established to determine if a requirement exists for a heavy duty smoke generator for rear area large scale us[redacted]

Essentially it contained the information that the test plan had been prepared; data requested by Chemical Corps Board from the Navy; Navy's 200-gallon smoke generator to be used for part of test shipped to Dugway Proving Ground. [redacted]

Tests to start in October 1953 and test results will probably be available in November 1953. (UNCLASSIFIED)

2 Sept 1953 — Letter to Commanding General, Research and Engineering Command, subject "Chemical Corps Contracts in the Anti-Animal Field (Restricted") stated that, in view of the Department of Agriculture's non-interest in the support or continuation of existing contracts in the anti-animal BW field, it is desired that immediate action be taken to terminate such contracts as of 30 September 1953. Letter requested a report of the actions taken, including a statement of the effective date of termination.

8 Sept 1953 — A memorandum was prepared for the Chief Chemical Officer, on the comfort test on the E10 Protective Mask. Following is a brief of the correspondence:

a. The conditioning for the test was started with 33 U.S. soldiers, ages 20 to 33 years, approximately 80% of whom had recent combat experience.

b. These subjects were helmets for a two-week period prior to [redacted]

8 Sept 1953 (cont'd)

the beginning of a controlled conditioning period (of approximately 8 days), during which time helmets were worn when on duty and each of the masks, E10 and M9A1, were worn for 1/2 hour every duty day.

c. Twenty-five of the original 33 men (balance was eliminated due to attrition or non-cooperation) participated in the comfort test consisting of two duplicate phases outlined in six sub-paragraphs.

Comments of the subjects used in the test indicate a slight but consistent superiority in comfort of the E10 over the M9A1 and it was stated that a recommendation to consider the possibility of carrying the mask inside the helmet is believed to be unacceptable to the Army Field Forces because of the large size of helmet required. [redacted]

9 Sept 1953

A memorandum for record was prepared by the Resources Branch giving the results of a conference in the Office of the Assistant Chief of Staff, G-4, on 9 September 1953, which discussed ways and means of accomplishing the transfer of the Fort Terry Facilities. Attending this conference were

Colonel B.Weisberg, of ACofS G-4
Lt. Col. Vincent LaPiana, OCCmlO
Mr. Millard F. Peake, OCCmlO
Lt. Col. Don L. Mace, CmlC R&E Command

It was agreed that no action for facilities disposal should be initiated by the Department of the Army until final determination of Army responsibility in the field has been resolved. It was further agreed by all present that some simple means should be found to make the equipment and supplies available to the Department of Agriculture. [redacted]

10 Sept 1953

In response to an inquiry from G-4 to a possible realignment of specific responsibilities by the various technical services of the Department of the Army and the other services of the Department of Defense in the fields of defensive and offensive Radiological Warfare, a disposition form (Comment 1) was addressed to G-4 stating that a study has been made by Chemical Corps personnel of the advisability of initiating a new Department of the Army plan of implementation for radiological warfare. In view of studies currently being made by other interested agencies, it is not deemed advisable to recommend any changes to the existing assignment of responsibilities at this time. The Chemical Corps restated its opposition to the assignment of tri-service responsibility for radiological defense to one service or agency. [redacted]

11 Sept 1953

The Commanding General, Chemical Corps Researdh and Engineering Command, was directed by letter to continue development on an optimum schedule consistent with existing funding on the following warheads:

1. For HONEST JOHN: GB Cluster Warhead. (This warhead to be designed for maximum degree of interchangeability with CORPORAL

11 Sept 1953 (cont'd)

warheads.) (SECRET)

2. For CORPORAL: a. GB Cluster Warhead
b. BW Cluster Warhead

The warheads are to be designed for ease of mating to the missile and maximum interchangeability of handling and servicing equipment. Fuze developments are to be accomplished with the Ordnance Corps.

It was directed that all work be terminated in the most expeditious and economical manner on all other warhead development for Army surface-to-surface guided missiles and the HONEST JOHN.

11 Sept 1953

A memorandum was sent to the Chief Chemical Officer outlining the report on the work on persistency of GB munitions which has been and will be done at Dugway Proving Ground.

A review of the information developed in tests run with GB-filled 10 lb. E54 bombs, 500-lb massive bombs and spray tanks shows that persistency of GB on the ground was such that under wind conditions of under three (3) miles per hour, birds were killed up to 3 to 4 hours and in many cases up to 24 hours. When the wind was about six (6) miles per hour and higher, there was practically no killing effect.

Dynamic tests to determine contamination of the 105 mm GB-filled shell resulted in:

a. Detonation at 3 feet high contaminated the ground to the extent that birds were made sick but did not die.

b. Detonation at 6 feet did not contaminate the ground sufficiently to affect the birds.

Tests will be made to determine the travel of nonpersistent GB cloud when the 105 mm shell is detonated at 6 feet. (The tests will be run with an impact fuse since a VT fuse for detonation at this height has not been developed.)

14 Sept 53

A memorandum for the Chief Chemical Officer in reply to his memorandum dated 8 July 1953 in connection with needed development in FY 1954 on artillery shell. Implementation has been effected as follows:

The Chemical Corps Research and Engineering Command was directed

[redacted]

15 Sept 1953 — The Chief, Research and Development Division was advised by memorandum from the Toxic Chemical Warfare Branch on the status of GB and CK-filled Munitions for the Air Force. Indications from the Air Force are to the effect that the Air Force is interested only in G-filled munitions. The standard M78 500-lb. and M79 1000-lb. bombs filled with CG and CK are not desired nor is the M70 H-filled bomb. [redacted]

It was stated that the Chemical Corps is currently developing under 1-A priority an interim type munition, the 1000-lb.E101 cluster, which is of two basic types - internal and external stowage. [redacted]

An additional development is the E-118 750-lb. GB bomb which is intended to replace the E101 1000-lb. interim bomb referred to above. This bomb is estimated to be available for production in approximately one year. [redacted]

15 Sept 1953 — The Assistant Chief of Staff, G-4, was furnished with a plan outlining the transfer of Fort Terry to the Department of Agriculture. It was stated that the finalized plan will encompass the transfer of the defensive anti-crop and anti-animal biological warfare responsibilities to the Department of Agriculture. [redacted]

16 Sept 1953 — In reply to Comments Nos. 1 and 2, from the Army Committee for Insect and Rodent Control and G-4, respectively, dated 1 Sept and 11 Sept 1953, Comment No. 3 was sent to G-4 to the effect that the Chemical Corps concurs with the views expressed by ACIRC in Comment No. 1 and recognizes the vital contributions arising from the entomological research conducted by its Medical Laboratories, not only to its own research and development program, but also to the Department of Defense, other federal and state agencies, and the public at large. The Chemical Corps further stated that it was felt the responsibilities should remain with the Chemical Corps as provided under paragraph 5 of AR 70-140. To meet these responsibilities properly a resume was given of funding for this program. [redacted]

16 Sept 1953 — A memorandum for the Chief Chemical Officer explained the situation regarding the cancellation of Pilot Plant, C-4, Camp Detrick, Md. On 1 July 1953, the North Atlantic Division, Corps of Engineers, was officially advised that the construction of subject pilot plant was cancelled by direction of the Secretary of Defense. It was further stated that the subject plant was designed to study and test methods and equipment for the production of agents for Rice Blast, (IR) and of Potato Blight (LO) and Brown Spot of Rice. There is at the present time no facility outside of the old pilot plant at Camp Detrick which is in a position to produce IR. In the event it were necessary to [redacted]

[redacted]

16 Sept 1953 (cont'd) use the old pilot plant, a period of two (2) to three (3) months at this facility with TX and LO would have to be transferred elsewhere. [redacted]

17 Sept 1953 The Chief Chemical Officer was furnished a memorandum on the use of volunteers in research. Reference was made to a memorandum from the Chief of Staff, through G-4 for the Chief Chemical Officer and The Surgeon General, dated 30 June 1953 on the above subject (4574-T) which prescribes policies and procedures governing the use of volunteers in research in defense against CBR warfare. The essential points of this document are summarized in a Memorandum for the Chief Chemical Officer dated 14 August 1953, paragraph 5 of which states that no research with CBR agents will be undertaken without written approval of the Secretary of the Army following review by The Surgeon General.

Seven proposals were listed as being those which will be forwarded for approval by the Secretary of the Army. [redacted]

17 Sept 1953 Comment No. 2 was forwarded to the Assistant Chief of Staff, G-4 in reply to his Comment No. 1 of 17 July 1953 which forwarded two memorandums from the Chief of Research and Development concerning actions which should be taken to improve the conduct and coordination of the BW-CW Research and Development Program. G-4 requested that the actions suggested be taken and that that office be kept informed of the progress thereon. A rather detailed report was made in Comment No. 2 in nine(9) paragraphs. [redacted]

17 Sept 1953 The Commanding General, Chemical Corps Research and Engineering Command was instructed to implement the recommendations contained in the report of the Ad Hoc Committee on BW Testing at Dugway Proving Ground. [redacted] (Re TS-4571)

24 Sept 1953 The BW Branch of the Research and Development Division wrote a memorandum to the Chief of the Division, subject: Army BW Programs Which should be Funded by USAF. The memorandum covered Technical Objectives BW-1A, BW-3A, BW-4A, BW-4B, BW-4C, BW-5, with the total recommended USAF Funding as $4,263,000. [redacted]

25 Sept 1953 The Assistant Chief of Staff, G-4, was advised that the USAF Test Proposal has been implemented, individual tests are being conducted and results coordinated. He was furnished a list of representatives of the test program group of the Army, USAF and the Navy. [redacted]

25 Sept 1953 [redacted] The Commanding General, Chemical Corps Research and Engineering Command, forwarded a report of the proceedings by the Chemical Corps Test Program Group held 21 September 1953. The following summarizes the agreements reached by this group and the actions to be taken as a result of this meeting: [redacted]

a. It was agreed that the mission of the group was to arrive at a mutually satisfactory test program of the E61 munition-agent combination and to monitor such a program to its conclusion. This was to include the philosophy of tests and assessment involved there-

[redacted]

25 Sept 1953 (cont'd)

with. Further, it was agreed to be the duty of the representative of each department to assure that the phases of the test program for which his department is responsible are performed by that department.

b. Although the count of the batches of agent being produced at present is approximately 6.5×10^{10}, it was agreed at this point that the test specification should not be changed and that any additional count achieved in the pooled lot would be regarded as a bonus.

c. In connection with fuze functioning, the Chairman proposed that the group consider a position that 85% functioning would be satisfactory for purposes of this program. However, if on 15 October the functioning of the fuze of the component bomb is less that 85%, the present program may be terminated and a subsequent meeting of this group would consider the following alternatives:

(1) Continuing of E61 in development of a new fuze.
(2) Switch the program to the M114 in lieu of the E61.

It is to be noted that this command is pursuing as vigorously as possible, short of actually interfering with the current E61 program, an alternate program of the M114. The Chairman, however, directed that no "N" work would be accomplished with the M114 bomb.

d. Agreement of the group was obtained on the scheduling of all tests as presented in the assessment program. The Chairman directed the Deputy for BW to expedite the 8-ball work in connection with the assessment program and that efforts be made to obtain the necessary funds for modification of the vertical grid at Camp Detrick. Meanwhile, CmlC Biological Laboratories would attempt to accomplish static trials by slanting the munitions.

e. The Chairman directed that a separate letter be prepared showing the detailed requirements for additional Air Force funds in connection with the St Jo program at Dugway Proving Ground.

f. It was agreed that the Test Program Group would reconvene on 19 October 1953. [redacted]

28 Sept 1953

The Commanding General, Chemical Corps Research and Engineering Command, was advised that expenditure of Chemical Corps funds for development of the Optimum Area Rocket, T-238, cease as of this date. Expenditure of Chemical Corps funds against this task will be limited to those necessary to close out this task in an orderly manner. It was further requested that a status report be prepared covering the work done to date, the results obtained therefrom, and conclusions as to the potential value of this item. [redacted]

[redacted]

[redacted]

30 Sept 1953 — A Disposition Form was sent to the Assistant Chief of Staff, G-4 with reference to a request for a project for the development of chemical mines. Reference was made to a Disposition Form from the Assistant Chief of Staff, G-3 to the Assistant Chief of Staff, G-4 dated 29 May 1953. The estimated cost of developing the three mines mentioned in the referenced disposition form was given. Inasmuch as the Army Field Forces desires that first priority be given to a mine for persistent agents, it was stated that such development should be given first priority. Approximately eighteen (18) months is the time estimated for the development and completion of final engineering tests of one mine or all three if work is to proceed concurrently. (RESTRICTED.)

[redacted]

EXHIBIT A

MILITARY PERSONNEL ROSTER

RESEARCH AND DEVELOPMENT DIVISION
OFFICE OF THE CHIEF CHEMICAL OFFICER.

30 SEPTEMBER 1953

MILITARY PERSONNEL ROSTER.

NAME	PRIMARY MOS	DUTY MOS
Colonel Marshall Stubbs	7314 - Chemical Officer	2025 - Chief, Major Departmental Unit
Lt.Colonel J.G.Appel	2016 - Plans and Policy Officer	2025 - Chief or Director,Major Departmenta Unit
Lt.Colonel V.F.LaPiana	2042 - Technical and Tactical Board Member	2167 - Research and Development Coordinat
Lt.Colonel R.O.Gordon	7314 - Chemical Officer	2167 - Research and Development Coordinat
Lt.Frank A.Butler	None	2167 - Research and Development Coordinat