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1. p. 19, C. Performance (amended)

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3. Over-all security classification of the subject Historical Report is changed from COMPINETTAL to SECRET, RESTRICTED DATA when above changes and additions are made, and the report should be marked accordingly.

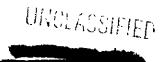
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CHEMICAL CORPS CHEMICAL AND RADIOLOGICAL LABORATORIES Army Chemical Center Haryland

QUARTERLY HISTORICAL REPORT PERIOD 1 JULY TO 30 SEPTEMBER 1954

November 1954

Reports Control Symbol CMLHO-194

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Prepared by:

Robert T. Brown

Submitted by:

Mellie M. Anson Historian Approved:

Recommending approval:

PRED J. DELMORE Colonel, Cml C Commanding

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Deputy for Technical Management

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I. ADMINISTRATION.

A. Changes in Mission and Responsibilities.

No changes in mission and responsibilities were made during the report period.

- B. Acquisition and/or Disposal of Physical Pacilities.
- 1. The following buildings were acquired during the report period:

Bldg. No.	Division	Use
T-2000	Radiological	Reconditioning equipment
T-2002	Radiological	Reconditioning equipment
T-2004	Radiological	Reconditioning equipment

2. The following buildings were released during the report period:

Bldg. No.	Division	Use
86 (vault) T-395E	Tech. Services Munitions	Vault for library storage Equipment Storage
T-1310	dunitions	Office space

C. Major Organizational Revisions (see appendix A),

On 1 July, Air Force Munitions Branch, Munitions Division, was redesignated Air Munitions Branch to reflect more exactly the function of the branch.

- D. Significant Developments in Administrative Procedure.
- l. Administrative inspections were continued during the report period with emphasis placed on correction of discrepancies noted in previous inspections.
- 2. A program leading to the consolidation of CRL memorandums has been established. This involves a review of all existing memorandums and the elimination of rerlapping directives. It is planned to republish all memorandums in a consolidated form by 31 December, and thereafter, to issue changes to memorandums in lieu of the policy file items now published.

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Edgewood Arsonal Historian's Office; Edgewood, MD Chem. Corps, Chem. and Radiological Laboratories, Quarterly Historical Report July 1 + Sept. 20 1954

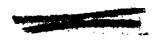
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- 3. On 23 July, a classified briefing room was established in bldg. 330 containing a permanent display of standard and experimental Chemical Corps items. This room will be used for crientation both of Call personnel and of visitors. Since many of the items displayed are classified, a custodian is stationed at the entrance, and a register is maintained during duty hours. During off-duty hours the room is securely locked, and is checked periodically by the building guard. The establishment of this room will greatly aid the research and development program, since these displays now will not have to be set up specifically for each occasion requiring their use.
- 4. On 18 August, the office of the In-Service Training Program was established in bldg. 350. This was made possible by the rearrangement of office space connected with the occupation of the new wing of bldg. 350.
- 5. Procedure for withdrawing classified material from the Technical Library was revised on 30 August so that each division secret material custodian can maintain control over classified library documents within the division (see CRL Memorandum 90-20, changes 1 and 2).
- 6. On 31 august, a Classified Documents Review Cosmittee was established in Technical Services Division. This cosmittee, headed by major Paul P. Rothert, has been assigned the task of reviewing the classification of all classified documents in the Technical Library. This project has been divided into four phases with corresponding priority:
 - a. Secret documents originated within CRL.
 - b. Secret documents originated by other agencies.
 - c. Confidential documents originated within CRL.
 - d. Confidential documents originated by other agencies.

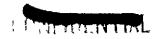
It is estimated that the entire program will require two years to complete due to the large volume of documents filed in the Technical Library.

7. On 10 September, a conference was held in bldg. 330 concerning personnel policy on employing students who are prospective permanent employees. The conference was attended by representatives of Civilian Personnel Division, these Laboratories, and other research and development activities. In this conference it was decided that students would be employed for a six-month period and then be released to attend school for another six-month period.

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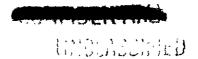
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- 8. On 15 September, a revised proposed Table of Allowances was submitted to higher echelon after having been reviewed and approved by other Technical Services.
- 9. On 15 September, a consolidated Electronic Supply Room was established in Technical Services Division in accordance with a recommendation resulting from the annual general inspection. This change is expected to result in an improvement in supply economy and conservation.
- 10. On 17 September, a correspondence suspense system was established (see CRL Policy File Item 20-18). This procedure is expected to assure prompt replies to correspondence requiring same.

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II. FISCAL

4. Funds Available and Committed (in units of thousand dollars).

Source	Available	Committed	Balance
Army R&D	9,218	3,013	6,205
Air Force	1.834	292	1,542
Navy	172	31	141
Ordnance	5	4	1
Marine Corps	3 0	24	6
CD	21	9	12
MATCOM	103	3	100
APSNP	189	117	72
Dugway P.G.	6	ø	6
0-4	16	6	10
Maint. & Oper.	3	1	2
TOTAL	11,597	3,500	8,097

8. Commitments by Type Operation (in units of thousand dollars).

Type Operation	Available	Committed	Balance
Atomic Warfare	398	126	272
Chemical Warfare	8,156	2,761	5,394
Land Combat	565	131	434
Supporting Research	100	24	76
TOTAL TOTAL	9,218	3,042	8,178

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III. PERSONNEL

A. Changes in Key Personnel.

1. oco.

Col. deorge R. Oglesby was assigned duty as Deputy Commander on 15 July, vice Lt. Col. Halter W. Kuehler.

lat Lt. Nicholas George was relieved from assignment and duty as Chief, Enlisted Personnel Section, Personnel Policies Branch, Administrative Office, and transferred to Ground Munitions Branch, Munitions Division on 22 July.

Capt. Frederic Cornell was assigned additional duty as Enlisted Personnel Assignment Officer on 22 July.

Major Gordon L. Jacks, Chief, Special Projects, was transferred to the Chemical Corps School, Fort McClellan, Alabama, on 1 September.

2. Munitions Division.

Mr. Theodore R. Paulson was appointed Chief, Special Projects, on 1 July.

Lt. Col. Paul R. Cerar was appointed Chief, Ground Munitions Branch on 25 August.

let Lt. Harold W. Shear was relieved from assignment and duty as Chief, Ground Munitions Branch and was assigned duty as Assistant Chief, Ground Munitions Branch on 25 August.

Mr. Richard W. Harris was appointed Assistant Chief, Ground Munitions branch on 25 August.

3. Radiological Division.

Capt. William S. Cranford, Chief, Service Branch, was transferred to the Chemical Corps School, Fort McClellan, Alabama, on 26 July.

Dr. Frits A. Hedman was appointed Chief, Service Branch, on 27 July.

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On 5 September, Mr. Charles M. Plumer, Administrative Assistant, transferred to Plants Division.

On 6 September, Mr. George W. Lewis was appointed Administrative Assistant.

4. Technical Services Division.

Mr. Milliam S. Evans, Chief, Safety Branch, transferred to Fort Monaouth, New Jersey, on 21 August.

Mr. Joseph F. Voeglein transferred from Munitions Division and was appointed Chief, Safety Branch on 5 September.

8. Personnel Strength.

1. Total Military Personnel.

The following three tables indicate the total military personnel assigned to Chemical and Radiological Laboratories:

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Officer Personnel Strunth, 50 September 1954

Total		v		4	6	7	Į,	vi.	G	٨	50									ffice
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	7422 0	_		-	1	-	+	1	-	-	7									Physicist Chemical Officer Organic Chemist Radiological Defense Engineer Chemical Munitions Developmen Safety Officer Intelligence and Security Off
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7.5	מס נפנע נת		000		Central Co.	MIDI C. 073	Plants	Prote	Rad to	Tech.	Total									1981 2025 2120 2120 2162 5580 7050 7310

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Enlisted Personnel Strength, 30 September 1954

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Division			1111	Military Occupation Specialty	Scupat	S FOT	ocialt.				Tota
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Chemical.			-	١	1	62	Į	•	1		1 62
Engineering	_	P	3	9	1	3	-	-	1	-	36
Munitions		21	5	11	4	02	-	7	-		į 62
Plants		13	•	56	4	3	1	•	•	,	<i>LL</i>)
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Radiological	-	•	-	3	-	25	•	-	•	,	28
Tech. Services	1	2	1	5	,	Þ	7		1	J	14
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Total	7-4	57	O)	13	11	155	2	7	1	5	345

1065 - Marbor Craft Supervisor
1591 - Civil-Mechanical Engineering Research Asst.
1592 - Mathematical-Statistical Research Asst.
1595 - Chemical Engineering Research Asst.
1595 - Chemical Engineering Research Asst.
1594 - Electro-Electronic Research Asst.
1595 - Physical Science Research Asst.
1599 - Information Supervisor
1751 - Smoke Generator Supervisor
1870 - Chemical Staff Specialist
4065 - Harbor Craft Cremmin

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2. Total Civilian Personnel.

The following three tables indicate the total civilian personnel employed at Chemical and Radiological Laboratories:

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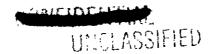
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2 Kg 52 Ware Roard Supervisor Hare Poard nitions Division Division

Per Diem Civilian Personnel Strength, 30 September 1954

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IV. PLANS.

A. Plans for Permanent Peacetime Establishment.

No change from previous report.

B. Mobilization Plan.

No change from previous report.

C. Current Planning.

No changes have been made in current planning during the report period.

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V. OPERATIONS.

bursts.

- A. Operations or Activities Accomplished.
 - 1. Chemical Division.

The final development test of E5 thickener was completed.

- 2. Munitions Division.
- a. The following tests were initiated during the report period:
- \sim (1) Tests on thermal attenuation by aerosol of hollow plastic spheres.
- /(2) Application of mars turbine as a dissemination device for thermal, radar, and visual screening.
 - (3) Field tests of ElOR2 attenuation agent.
 - (4) Evaluation of X200 incendiary land mine.
 - (5) Tests of artillery shell for colored smoke
- (6) Test of shell base-ejection principle for dissemination of percutaneous agent.
 - (7) Test of small unstabilised bomblets.
 - (8) Test of E8 kit for 3.5-in. rocket.
- $_{\checkmark}(9)$ Investigation of ballistic shapes for guided-missile warheads.
 - (10) Test of bomb closures.
 - (11) Test of spool shapes and discs.
- \checkmark (12) Aerial spray test of thickened and unthickened agents.
- /(13) Tests of modified E22 and E32 portable flame thrower.
- (14) Comparative tests to determine quantity of fuel required for portable flame throwers.

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- /(15) Preliminary test of irritant-gas dispenser.
- /(16) Preliminary test of new design heads for E42 rocket transsonic flight.
- /(17) Comparative tests of canister versus central burster in Navy smoke munitions.
- /(18) Test firing of E42 rocket with 2.75-in. FFAR motor.
- b. The following tests were continued during the report period:
- \nearrow (1) Tests on the thickol-designed fuel blocks for thermal generation.
 - /(2) Test of El5 colored smoke grenade.
 - \checkmark (3) Test of E34 80, candle.
 - \checkmark (4) Tests of incendiary burster.
- (5) Tests of intimate-mixture and two-compartment thermal generators for toxic agents (pot and bomb prototypes).
 - (6) Tests on R14 pouch destroyer incendiary.
 - (7) Tests on El4 and El5 contaminants.
- \sim (8) Laboratory tests of infrared attenuation by smokes.
- \sim (9) Tests on the application of infrared methods to unalyze toxic aerosols.
- (10) Preliminary tests with spray tank for dispersion of agent-filled capsules.
- \sim (11) Tests on attenuation of infrared with E32 smoke pot (curbon) and J-S1 turbojet (fog oil).
- \sim (12) Test of M5 smoke generator to produce carbon amoke.
 - /(13) Test of Ell projector.
- / (14) Test of pocket-size incendiary (halogen fluoride).

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- v (32) Tests of E30 one-shot flame thrower.
- (33) Final development test of remote-controlled smoke generator.
 - (34) Engineering test of 6"/47 Navy smoke rocket.
- (35) Proliminary engineering tests simulating VT fuzes for rockets.
- (36) Tests of closures for gas rockets press-fit ball, silver-solder press-fit bursters, riv nut, deforming plugs and tube expander, etc.
- c. The following tests were held in abeyance during the report period:
 - (1) Tests of 2109 incendiary bombs.
- $_{/}(2)$ Flight test of E60.750-lb. plastic cluster adapter modified for external stowage on F-842 aircraft at 450 m.p.h.
- /(3) Test firing of 10- and 50-gal. long-range rockets.
- d. The following tests were abandoned during the report period:
- /(1) Preliminary test of El7 field-filling unit for spray tanks. A preliminary model (designated El8), designed to overcome deficiencies, has been assembled for test.
 - (2) Engineering tests on E26Rl spray tank.
- e. The following tests were completed during the report period:
 - (1) Tests of improved CN-DM grenude.
 - (2) Tests on exploitation of AP-3.
- (3) Tests to determine penetration of toxic nerosols through gas mask canisters.
- (4) Tests on storage stability of ElOR2 attenuation agent.

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- (b) Tests of E40R3 colored smoke rocket.
- (6) Vibration and rough-handling tests of E50 plastic cluster adapter.
 - (7) Drop tests of Ell8 cluster.
- (8) Flight tests of El35 and El36 750-1b. clusters with inert El04 and El05 bombs.
- (9) Flight test of warhead for MATADOR at White Sands Frowing Ground.
 - (10) Critical loading test of warhead for RASCAL.
 - (11) Centrifuge tests on warheads.
- (12) Comparative evaluation of bomblets for 750-lb. nonpersistent cluster.
- (13) Preliminary tests of two T68 mechanised flame throwers.

3. Radiological Division

- a. Planning is continuing in connection with four projects to be conducted at Operation TEAFOT.
- b. Two types of tests were conducted at Dugway Proving Ground to determine the attenuation of thermal radiation by smoke. One test used thermal radiation; the other used radiation from aerial flash bombs dropped from an airplane at night. These tests are continuing at Dugway.
- c. Analysis to determine beta activity of radioactive samples from Operation CASTLE is continuing. Other CASTLE fall-out samples have also undergone chemical and radiochemical analyses for fission products and induced activities.

4. Test Division.

- a. The following nonagent-type items were tested during the report period:
- (1) E101, E115, and E117 bomb clusters to determine over-all functioning and dispersion.

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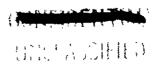
- (2) E63 and M6 cluster adapters to determine ground dispersion pattern.
- (3) E50, E54, E71, E90, E95, E110, and M50 bombs to determine individual functioning, ballistics, and static firing.
- b. The following agent-type items were tested during the report period:
 - (1) 3.5-in. Ob shaped-charge HEAT rocket.
 - (2) C42 filter.
- (3) Wind-tunnel tests on Elli bombs and capsule-type grenades.
 - (4) HCN-filled balloon.
 - (5) £33 rocket (toxic-filled).
 - (6) 4.5-in. rocket (toxic-filled).
- c. Final development tests were completed on E15 contaminant.
- d. Svaluations were made on tests of the following items:
 - (1) T164 4.5-in. gas rocket (one test-airburst).
 - (2) Elll 4-filled bomb (four tests).
- e. The following special studies were completed or in progress during the report period:
- (1) Evaluation of munition expenditure calculation system proposed by Training Command.
- (2) Evaluation of Suffield comments on GB munition performance.
- (3) Explanation for Air Force of methods of determining GB agent-to-burster ratios.
- (4) Evaluation of Dugway Proving Ground trials of E91 and E105 bomblets.
- (5) Evaluation of Dugway Proving Ground trials of E64 bomblet at various functioning angles.

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(6) Continuing evaluation of dosage-area trials from CRL, Dugway Proving Ground, Suffield, Porton, and Obanakoro to determine behavior characteristics.

(7) Evaluation of cold-weather liquid-contamination trial.

(8) Detailed analysis and evaluation of present and future meteorological equipment requirements.

B. Major Developments in Operating Technique.

A cooperative development by the Chemical Corps Engineering Agency and these Laboratories has resulted in the establishment of the position of alternate Project Engineer (see CRL Policy File Item 150-7). It is deemed that progress on research and development projects can, in this fashion, be expedited by closer coordination between the two organizations.

C. Ferformance.

Progress of all research and development undertaken by these Laboratories is reported in detail in the Chemical Corps Research and Development Project Report published annually and is highlighted at the end of the fiscal year in Significant Accomplishments. A copy of this latter report will be forwarded as all addendum when completed. A statistical summary of activities (Review and Analysis, F.Y. 54) is included as appendix B.

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A. Unusual Activities.

1. Visits to Installation.

- of the University Chemical Laboratory, Cambridge, England, visited these Laboratories to discuss the chemistry of organic phosphorus compounds and the process for manufacturing GB. *
- b. On 7 July, 65 hir Force ROTC cadets visited the Chemical Corps ...useum for the purpose of orientation.
- o. On 13 July, Col. R. A. Owyn and Col. H. J. G. Weld, Infantry and Armour Representatives of the British Army Staff, respectively, visited these Laboratories for the purpose of general orientation on chemical warfare research and development.
- d. On 11 August, 160 reserve officers and enlisted men of the 310th Logistical Command visited this organization. This group was commanded by drig. den. John M. Andrews. Orientation lectures were delivered by Col. Delmore and Lt. Col. Talbot. Later, a smoke and flame demonstration was conducted in the field by hunitions Division, under the supervision of Lt. Col. Miller.
- e. On 9 and 10 september, Dr. Norman Shepherd, Department of Colloid Science, Cambridge University, England, visited these Laboratories to discuss infrared spectroscopy of incendiary gels. Differences in experimental results were resolved, and future work was planned.
- f. Col. T. F. hoffman, Assistant Commandant of the CIC School, Fort Holabird, Md., and Lt. Col. W. A. Strickland, Jr., of the school faculty, visited on 16 September for a general orientation on Jhemical Corps items and a detailed examination of items of special interest.
- g. On 30 September, a visit was made by a class in Graduate Air Ordnance of the U.S. Air Force Institute of Technology. This group consisted of two instructors and five student officers, who were given a general orientation on Chemical Corps research and development items with particular emphasis on air munitions.
- · Not previously reported.

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2. Seminars.

The following meetings were conducted in the physics seminar during the report period:

- 15 July Cpl. Louis S. Nidus, Muoleonics Branch, Radiological Division, CRL. Subject: "Liquid Helium Phenomena"
- 28 July Pvt. David Wilson, Analytical Branch,
 Chemical Division, CRL
 Subject: "The Collision Theory of Monomolecular
 Homogeneous Jas Reactions"
- 10 Aug.- Pvt. James Friend, Detection Branch,
 Protective Division, CRL
 Subject: "The Microwave Spectra of
 Asymmetric Rotors"
- 25 Aug. Pfc. Donald Fitzwater, Incendiary and Aerosol Branch, Chemical Division, CRL Subject: "The Interpretation of X-Ray Grystallographic Data"
- 14 Sep. Pfo. Herman Eldering, Applied Research Branch, Munitions Division, CRL Subject: "Infrared Phenomena and Infrared Spectroscopy"

3. Operations Other Than Normal Military Functions.

During the period 22 to 25 August, the Marine Section of Test Division conducted a search for a National Guard jet plane and its pilot, believed to have crashed in the Chesapeake Bay. After four days of dragging the bay, both the plane and pilot were located.

4. Special Events.

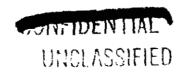
- a. A meeting was held at this organization on 30 and 31 August to discuss the present status of rheology as related to flame thrower fuels. Such prominent authorities as Drs. Debye, Mooney, Phillipoff, and Marvin were present.
- b. On 24 September, a smoke and flame demonstration was held at Aberdeen Proving Ground for the Industrial War College.

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c. A demonstration of visibility of the Ell5 colored smoke grenade was held on 24 September and was witnessed by personnel of the Army Field Forces.

B. Inspections.

The annual general inspection of this organization was conducted during the period 2 to 5 August by Lt. Col. Lucius F. Lincoln, Id; Major Joseph P. Ilardi, IG; Major Louis P. Stephens, IG; CWO william M. Cease, Jr., Office of the CmlC Inspector General; and Mr. John Caponiti, OC Cml O. Activities included in this inspection were: administration, supply, buildings and grounds, records, training, and all organizational elements. In addition, a follow-up inspection was made of the discrepancies in physical security noted in a previous inspection by the Provost Marshal General. The over-all conclusion reached was that this organization was performing its mission in a SUPERIOR manner.

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