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# SUMMARY OF MAJOR EVENTS AND PROBLEMS

## United States Army Chemical Corps (U)

### Fiscal Year 1957

#### October 1957

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SUMMARY OF MAJOR EVENTS AND PROBLEMS  
(Reports Control Symbol CSHIS-6)

UNITED STATES ARMY CHEMICAL CORPS

Fiscal Year 1957

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## MANAGEMENT

(U) Army Regulations 10-5, 22 May 1957, defined the duties of the Chief Chemical Officer as follows:

The Chief Chemical Officer studies and investigates chemical, biological, and radiological warfare, and develops, provides, and services material and equipment pertaining to these types of warfare required by the Army and, as assigned, for the Navy and Air Force and for foreign aid programs.

(U) Assisting the Chief Chemical Officer in performing the above functions was the organization established in fiscal year 1956<sup>1</sup> as the result of a survey conducted by an Advisory Committee appointed by the Chief Chemical Officer. (See Charts 1 and 2.) While the organization suggested by the Advisory Committee crystallized during fiscal year 1957, not all of the recommendations of the Advisory Committee were implemented to the extent originally planned. The chief factor was lack of men and money to carry out certain projects. For example, the Assistant Chief Chemical Officer for Planning and Doctrine had originally planned to send about five officers as liaison to major Department of Defense headquarters, but at the close of the fiscal year only two officers had been appointed. One of these had been assigned to the Operations Research Office at Chevy Chase, Md., in the preceding fiscal year and the other was assigned to the U.S.

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1

Summary of Major Events and Problems, U.S. Army Chemical Corps, FY 56, pp. 6 - 26. Hereafter referred to as Summary of Major Events and Problems, with the appropriate fiscal year.

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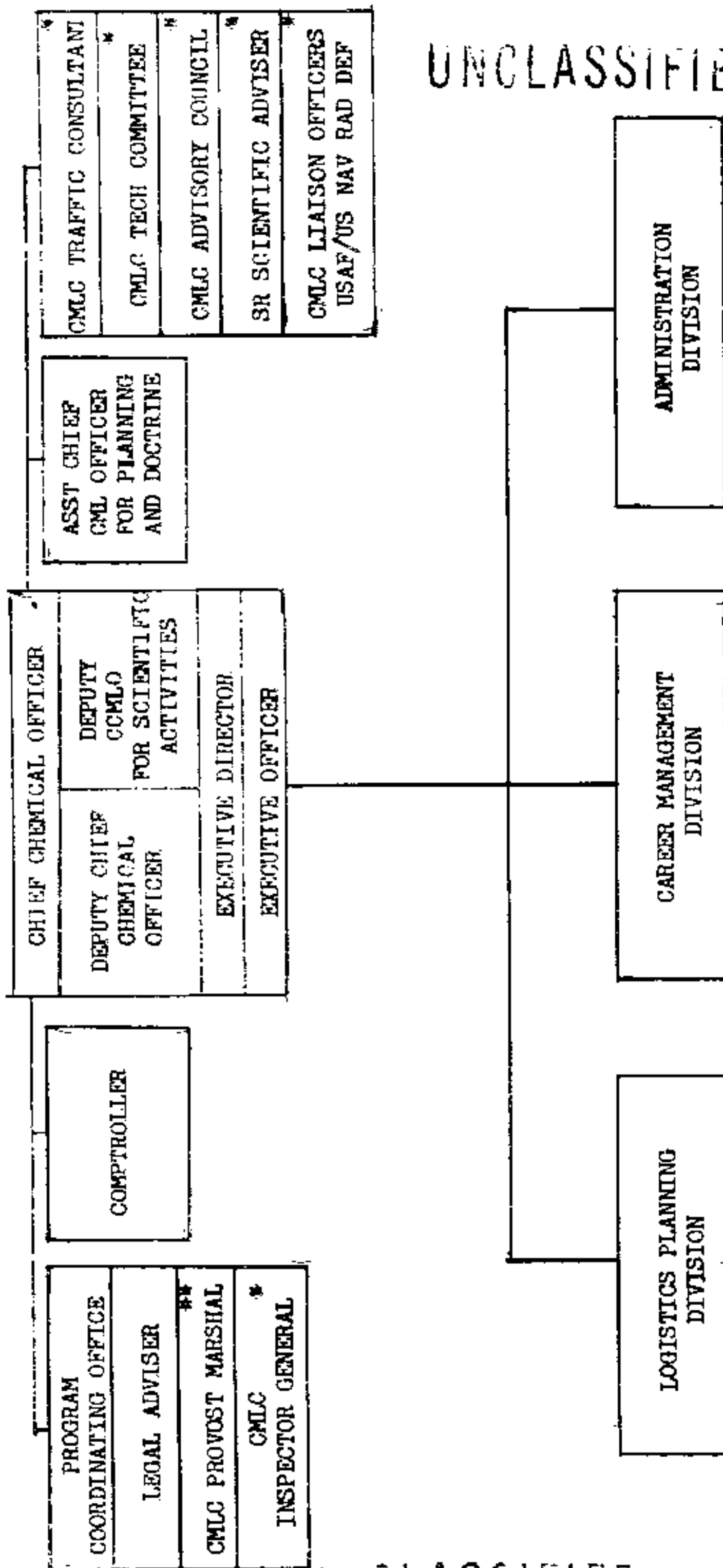
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Chart 2 . . DEPARTMENT OF THE ARMY

OFFICE OF THE CHIEF CHEMICAL OFFICER



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\* Located outside Departmental Area  
 \*\* Located in part outside Departmental Area

30 June 1957

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Army Combat Development Experimentation Center in the spring of 1957.<sup>2</sup>

Other instances of failure to implement the recommendations of the Advisory Committee to the extent originally planned will appear throughout this report.

(U) To fill a need for the Chief Chemical Officer's position on the various activities of the Corps, General Creasy issued a statement of policy in pamphlet form.<sup>3</sup> The Chief directed the Program Coordinating Office, OCCm10, to assist him in the preparation of this pamphlet. The pamphlet stressed the need for maximum coordination of effort and integration of Chemical Corps activities with all elements of the Military Establishment. The Program Coordinating Office also devoted much attention during the fiscal year to preparing mobilization program documents to supplement the standard program documents. Another project undertaken by this office was the realignment of the program structure so as to co-ordinate it with the budget. It initiated implementation of AR 11-1, 31 December 1956, by developing a draft program directive applicable to FY 1959 operations. Much of the work essential to preparation of this directive in final form was accomplished prior to the end of fiscal year 1957. Action taken will align both the program structure and the budget structure in a compatible manner; budgeting and programming actions will be conducted on the same structure

2

(1) Summary of Major Events and Problems, FY 56, p. 77. (2) Memo for Record, Lt Col B. R. Bierer, C CD Div, OACCm10 for P&D, 31 May 57, sub: Liaison Officers to U.S. Army Combat Development Center, Fort Ord, Calif.

3

Pamphlet "The Policy of the Chief Chemical Officer," 5 Apr 57.

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and basis for FY 1959. The current programming actions and responsibilities within the Chemical Corps, and the revised programming concepts established by AR 11-1, have been made compatible with the current Chemical Corps Command and Organizational structure.<sup>4</sup>

### Career Management

(U) The Career Management Division completed its first year as an organizational entity during FY 1957. Toward the end of the period the Career Plans and Policies Branch finally assumed the role originally intended for it, that of an agency working exclusively with long-range career planning.<sup>5</sup> The current operating functions of training and development were removed from its sphere of responsibility and a separate branch structure for training and development, under a chief reporting directly to the chief of the division was devised. Although formal authorization for the new organization was still pending at the close of the fiscal year, the proposed Training and Development Branch had become operational, and the Career Plans and Policies Branch, as reconstituted, was filling its

4

(1) Interv. Hist Off with Mr George C. Jones, Prog Coord Off, OCCm10, 5 Aug 57. (2) DF, C Prog Coord Off, OCCm10 to CG U.S. Army Chemical Center and Chemical Corps Materiel Command, et al., 12 Jul 57, sub: Chemical Corps Program Directive FY 1959. Hereafter Hqs, U.S. Army Chemical Center and Chemical Corps Materiel Command is cited as ACm1C and MATCOM when referring to administrative activities of the headquarters; when referring to the materiel activities of the headquarters the citation is MATCOM.

5

(1) Summary of Major Events and Problems, FY 56, pp. 28 - 29. (2) For a list of key personnel see App. A.

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original function as a full time planning unit.<sup>6</sup>

### Civilian Career Planning

(U) Early in FY 1957 the Career Plans and Policies Branch revised its previous civilian career planning schedule in order to participate in a related program sponsored by DCSLOG. A Civilian Career Management Committee, representing the entire DCSLOG organization, met regularly during the latter half of 1956. The committee agreed on a uniform civilian career management program based on ten primary elements:

1. Identification of Career Fields
2. Survey of Staffing Patterns and Manpower Resources
3. Development of Career Patterns
4. Establishment of Information and Publicity Programs
5. Establishment of Appraisal and Counseling Systems
6. Establishment of Career Plans
7. Training and Development Programs
8. Establishment of Recruitment Program
9. Establishment of Referral Systems
10. Establishment of a Program Evaluation System

Each of these basic elements was in turn subdivided into several stages. In some of these fields, such as training and development, the Technical Services had current operating experience, but in others new techniques

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6

Interv. Hist Off with Mr Leo Holland, Career Management Div, OCCalO, 8 Jul 57.

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and procedures had to be worked out.<sup>7</sup>

(U) In the spring of 1957 DCSLOG began the work of acting on its program by setting up five task forces, drawn from Technical Service personnel, to undertake prototype development of several of the program elements. Three career fields in the comptrollership area were utilized as subjects. For each of these the several task forces developed career plans, training programs, recruitment procedures, appraisal systems, and referral systems respectively. In these three career fields, therefore, the Chemical Corps, together with the other Technical Services, has at hand and ready for use plans for implementing some of the basic elements of the career management program.<sup>8</sup>

(U) In addition to its contribution to the DCSLOG task forces, some progress toward implementing the overall career program was made by the Chemical Corps independently. Of some forty logistics career fields recognized under the current DCSLOG program, the Corps identified nineteen as being represented within its mission.<sup>9</sup> The task of setting up military-civilian staffing patterns was given major emphasis by Chemical

7

(1) Interv, Hist Off with Mrs Frances Hart, Career Management Div, OCCm1C, 9 Jul 57. (2) DF, DCSLOG to Chs Tech Servs, 19 Feb 57, sub: Implementation of DCSLOG Civilian Career Management Program.

8

(1) Hart interv, 9 Jul 57. (2) DF, DCSLOG to Chs Tech Servs, 21 Mar 57, sub: Appointment of Logistics Career Field Task Groups for Comptrollership Area.

9

Interv, Hist Off with Mr D. H. Flint, Career Management Div, OCCm1O, 8 Jul 57.

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Corps career planners for the greater part of the fiscal year. Positions at all Corps installations were reviewed in the process. A firm staffing plan emerged, to be embodied in Chemical Corps Regulation 600-1 of 3 April 1957. This accomplishment goes far toward completing action on the second element of the general program. It makes available to career planners a definite allotment of civilian and military positions in the Corps, so that definite career structures can be outlined.<sup>10</sup>

(U) An essential tool for completing work on the second program element (the survey of staffing patterns and manpower resources) is a central inventory of civilian personnel throughout the Chemical Corps. It would make available to career management planners a summary of the available human resources in terms of education, experience, and special qualifications. No such central file had ever before been available. Preliminary work for establishing the inventory was begun in FY 1957 and by the close of the year inventory cards were being prepared for dispatch to civilian personnel.<sup>11</sup>

### Military Career Planning

(U) Unlike the civilian career program, which was still in the early stages of its evolution, military career management rested on a formal policy base of some years' standing. The main problems facing the Career

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Hart interv., 9 Jul 57.

11

(1) Ibid. (2) Hist Rpt, Career Management Div, OCCmlO, FY 57.

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Management Division in this area had been those arising from efforts to make the existing program more effective. As in the previous year, the key issue in FY 1957 was the planning of officer personnel assignments.<sup>12</sup> The goal of the planners had been a pattern of planned assignments which, while meeting the needs of the service, would also serve to develop the career potential of the individual officer. Substantial progress in this direction was made during the year.

(U) One milestone in this advance was the inauguration of the job equivalents system. In September 1956 a Career Management Conference, headed by the Chief, Career Management Division, and including seven other Chemical Corps colonels, met as a task force for the study of military career patterns. After grouping Chemical Corps military occupational specialities into nineteen career fields, the task force projected a system for matching jobs in the various fields on the basis of comparable prerequisites and responsibilities. The aim was to make it possible for successive assignments to form an integrated career pattern without regard to organizational boundary lines. The job equivalents program, as it has been called, was expected to counteract any trend toward overspecialization which might result from military career patterns based solely on organizational lines. It was also expected that it would qualify more officers for ultimate assignment to generalized command responsibilities. The Career Management Division began the work of implementing the program once it had

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<sup>12</sup>

Summary of Major Events and Problems, FY 56, pp. 34 - 35.

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been outlined. By the end of the fiscal year identification of job equivalents in the research and development field was substantially complete.<sup>13</sup>

(U) A major factor in career planning for military officers is the provision of reasonable opportunities for qualified personnel to be considered for appointment to the senior service schools. Advance planning of assignments is an essential factor in this area, since an officer's chance of nomination depends upon his availability. Present planning for school assignments provides for about three years ahead. During the fiscal year the Career Management Division established as its goal the planning of assignments for a period of five years in advance.<sup>14</sup>

(U) The Logistics Officer Program may also be considered as a factor in military career development because it is expected to increase the career opportunities available to officers of the Technical Services.<sup>15</sup> During FY 1957 the Chemical Corps adopted and put into operation a selector system developed for the purpose of picking the most promising Chemical Corps officers for nomination to the program.<sup>16</sup> The system employed

13

(1) Interv. Hist Off with Col Frank M. Arthur, C Career Management Div, OCCm10, 8 Jul 57. (2) Report on Career Management Conference, 26 - 27 Sep 56, incl to Hist Rpt, Career Management Div, OCCm10, FY 57.

14

Ibid.

15

AR 615-132, 21 Feb 56, provided for the Logistics Officer Program.

16

(1) Summary of Major Events and Problems, FY 56, pp. 35 - 36. (2) Report on Career Management Conference, 26 - 27 Sep 56, loc. cit.

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a scale of weighted points based on such factors as experience, Officer Efficiency Index, and educational background. The objective was the selection for nomination of those officers who will meet most closely the appointment criteria in use by DCSLOG. The first nominations made under the selector system were forwarded to DCSLOG on 15 November 1956, and several appointments from that list have already been made.<sup>17</sup> As of 1 July 1957 a total of 32 Chemical Corps officers were in the program, 18 as Logistics Officers (developmental phase) and 14 as Logisticians (fully qualified).<sup>18</sup>

### Military Personnel Administration

(U) As of 30 June 1957 the actual officer strength of the Chemical Corps, world wide, was 1,409. This represents a net loss of 202 during the fiscal year, a figure somewhat greater than that originally scheduled. The small input of new officers (206 against a scheduled input of 426) accounted for the deficiency. Enlisted strength of the Corps on 30 June 1957 was 4,324.<sup>19</sup>

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<sup>17</sup>

Interv. Hist Off with Maj J. O. Duncanson and Mr James W. Hepburn, Career Management Div, OCCmlC, 19 Jul 57.

<sup>18</sup>

Hist Rpt, Career Management Div, OCCmlO, FY 57.

<sup>19</sup>

(1) Hist Rpt, Career Management Div, OCCmlO, FY 57. (2) See Table 1 for CmlC ID strength.

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Table 1 - Chemical Corps TD Strength (Actual)

Date	Military		Civilians	
	Officer	Enlisted	Graded	Ungraded
30 Sep 56 . . . . .	846	2,315	6,050	5,243
31 Dec 56 . . . . .	833	2,437	6,063	5,187
31 Mar 57 . . . . .	789	2,637	5,956	4,971
30 Jun 57 . . . . .	718	2,699	5,940	4,743

Source: Quart Rev, Jul - Sep 56, p. 23; Oct - Dec 56, p. 112;  
 Jan - Mar 57, p. 100; Apr - Jun 57, p. 106.

(U) Current military personnel administration in FY 1957 was marked by the introduction of assignment levels to supplement the manning levels set by the Deputy Chief of Staff for Personnel. In the course of working on systems of planned assignments it was found that one of the greatest strains on such a system was the fact that the number of available officers was too far below existing TD and TOE requirements. Some commands had full TD assignments in a given grade while others fell far short of authorized levels. After a grade by grade analysis of the situation had been made and the number of officers actually available had been balanced against the formal requirements, a preliminary assignment level was issued for each command corresponding roughly to the overall availability ratio. Modifications of the basic percentage figure were made in special cases, but overstrength assignments were out of the question. The system went into operation in the fall of 1956, and final adjustments were made in April

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1957, early enough to anticipate the annual peak in reassignment orders.<sup>20</sup>

(U) Responsibility for administering the program for re-enlisting Technical Service enlisted personnel was transferred during FY 1957 from CONUS to the Chiefs of the Technical Services.<sup>21</sup> Accordingly, the Chief Chemical Officer instituted his own re-enlistment program, for which a regulation had been drafted by the end of the fiscal year. The program places on individual commanders within the Corps the principal operating responsibility — the appointment of re-enlistment officers, the provision of physical facilities, and the furnishing to OCCm10 monthly reports of separations and re-enlistments. One of the problems facing any Chemical Corps re-enlistment program is the extremely high percentage of Enlisted Scientific and Professional Personnel (ESPP) within the Corps. Experience has shown that almost none of the ESPP's plan an Army career, and overall Chemical Corps re-enlistment percentages suffer accordingly when compared to services with relatively larger numbers of Regular Army personnel. In order that a more useful criterion of the effect of the Chemical Corps program may be had, OCCm10 intends to authorize separate reporting of the re-enlistment rates of each of the various categories

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<sup>20</sup>

(1) Arthur interv, 8 Jul 57. (2) Interv, Hist Off with Lt Col Roger Kemp and Maj R. W. Ott, Career Management Div, OCCm10, 18 Jul 57.

<sup>21</sup>

AR 601-280, 5 Mar 57.

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of enlisted personnel.<sup>22</sup>

(U) Input of personnel into the ESPP program proceeded at a highly accelerated pace during FY 1957, the average for the latter part of the year exceeding 300 per month. On an overall basis the Chemical Corps had about 90 percent (1,044) of its authorized quota of 1,133 ESPP's assigned and serving. Within the Corps, however, there was a wide variance in ESPP distribution. Certain areas, such as the biological sciences, were well supplied, while the engineering field consistently failed to fill a substantial percentage of its spaces.<sup>23</sup>

### Civilian Personnel

(U) The long-standing problems attending recruitment of civilian personnel, especially in the professional fields, continued prominent in FY 1957. But there was some improvement in the situation during the year. The statistical picture in the field of scientific and professional personnel took on a less alarming aspect when the existing requirements were recomputed and substantially reduced.<sup>24</sup> As a part of the effort to improve the

22

Interv. Hist Off with Mr Forrest Hall, Career Management Div, OCCm10, 29 Jul and 5 Aug 57.

23

(1) Ibid. (2) Presentations on ESPP Program by Mr James W. Hepburn, Career Management Div, OCCm10, incl to Hist Rpt, Career Management Div, OCCm10, FY 57.

24

Quarterly Review of Chemical Corps Programs, Jan - Mar, FY 57, p. 35. Hereafter cited as Quart Rev.

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position of Chemical Corps recruitment in critical fields, a system of hiring at advanced pay levels within grades was set up for jobs in the physical sciences up to and including GS - 11. The system was not applicable to positions in the biological sciences as of the end of the fiscal year. It remained to be seen whether this area would develop special recruitment problems, but it was believed that these need not be anticipated. The Chemical Corps began circularizing its hard-to-fill scientific and professional positions -- i.e., those vacant for over thirty days and approved for circularizing by installation chiefs -- among its own installations.<sup>25</sup>

(U) From May to October 1956 the Department of the Army conducted a survey of its professional personnel in the research and development fields. One of the more unexpected results of this survey was the discovery that fully a third of such personnel hired since 1 January 1953 had been recruited through informal contact with other Government personnel, wholly apart from any organized recruitment effort. The survey indicated that a more highly organized college-level recruitment program was needed, especially in view of the unfavorable position in which the Government often finds itself when competing with private employers for professional personnel. Accordingly, each Technical Service was directed to place its college recruitment program in the hands of one of its installations in each geographic area. Teams from each designated installation will recruit

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Interv. Hist Off with Mr Duane Roepke, Career Management Div, OCCm20, 19 Jul 57.

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for all professional vacancies in the Service. The Chemical Corps was planning the task of implementing its share of the program as the fiscal year ended.<sup>26</sup>

(U) The problem of acquiring additional supergrades showed little sign of disappearing during the year. While the Chemical Corps desired forty-one spaces of Grade GS - 16 and above, there was no practical likelihood that even a substantial percentage of this total would be obtained. However, two additional supergrade spaces were assigned to the Corps in January 1957, increasing its supergrade strength from seven to nine, including five Public Law 313 positions.<sup>27</sup>

(U) The optimistic view taken last year of measures to improve civilian personnel administration at Army Chemical Center<sup>28</sup> appeared fully justified by the end of FY 1957. The Civilian Personnel Branch, Career Management Division, regarded the situation as satisfactory, though a final follow-up survey was yet to be made.<sup>29</sup>

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26

(1) Ibid. (2) DCSPER, Summary of Survey of Civilian Personnel Management: Engineers and Scientists in Research and Development Activities, May - Oct 56.

27

(1) Roepke interv., 19 Jul 57. (2) Hist Rpt, Career Management Div, OCCmlO, FY 57.

28

Summary of Major Events and Problems, FY 56, pp. 42 - 44.

29

(1) Roepke interv., 19 Jul 57. (2) Hist Rpt, Career Management Div, OCCmlO, FY 57.

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(U) A number of reductions in force occurred during FY 1957, principally involving employees in production and procurement activities. Fine Bluff Arsenal and Rocky Mountain Arsenal lost a total of 583 employees, largely as a result of the completion or reduction of production programs. Chemical Warfare Laboratories lost 200 spaces in the third quarter of the year, but all save about 75 of the employees affected were ultimately re-assigned to other activities at Army Chemical Center. The transfer of some procurement functions from the Chicago to the New York Procurement District cut the staff of the former by about 50 percent, affecting some 60 employees. Total RIF's for the Chemical Corps during the year is approximately 715.<sup>30</sup>

### Financial Management

#### Organization

(U) The year which followed reorganization of the Chemical Corps comptroller functions tended to strengthen the opinion of the Comptroller's Office, OCCm10, that the new alignment of functions was operating satisfactorily. Before the year was out, the Chief Chemical Officer took occasion to state for the record that the new organization met the needs of the Corps efficiently and economically.<sup>31</sup>

30

Eist Rpt, Career Management Div, OCCm10, FY 57.

31

(1) 1st Ind, OCCm10 to DCSLOG, 15 Apr 57, sub: Annual General Inspection, FY 57, Office of the Chief Chemical Officer to the DCSLOG IG Report of Inspection, OCCm10, 4 Feb - 8 Mar 57. (2) For a brief description of the reorganization see Summary of Major Events and Problems, FY 57, pp. 49 - 53.

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Table 2 -- Chemical Corps Obligations and Expenditures FY 1957  
(Thousands of Dollars)

Chemical Corps Program	FY 1957 Obligation Program (Estimated)	Scheduled Obligations	Actual Obligations	Scheduled Expenditures	Actual Expenditures
Total . . . . .	93,463	91,156	88,184	118,970	114,837
Management . . . . .	203	203	198	282	258
Training . . . . .	1,185	1,185	1,158	1,143	1,100
Procurement . . . . .	22,954	21,791	21,201	41,133	39,415
Industrial Mobilization, Supply, Distribution and Maintenance . . . . .	14,431	13,487	13,000	17,367	16,909
Services . . . . .	4,553	4,553	4,528	5,991	5,094
Construction . . . . .	9,787	9,787	9,744	9,343	8,607
National Guard . . . . .	71	71	70	59	46
Reserve & ROTC . . . . .	1	1	1	3	2
Intelligence . . . . .	2	2	1	1	1
Research & Development . . . . .	219	219	218	216	210
	40,057	39,857	38,065	43,432	43,195

Source: Quart Rev, Apr - Jun 57, pp. 102 - 03. Approximately \$64 million of unexpended funds will be carried over to FY 1958 as compared to \$93 million for FY 1957.



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(U) Under the existing set-up, each Chemical Corps installation has its own comptroller office, while the Chemical Corps commanders perform their own comptroller functions with the assistance of advisory financial management staffs. To this general rule the Training Command forms an exception. The special situation of this Command, all of whose activities are located on a single post, necessitated retention of a comptroller organization. In order to avoid confusion in the Command's dealings with activities outside the Chemical Corps it was found useful to designate the head of this organization as Command Comptroller, despite the lack of uniformity with other command organizations thus implied.<sup>32</sup>

### Funding

(U) The Chemical Corps obligation rate for FY 1957 was 94 percent of programmed funds and 97 percent of scheduled operations. Actual expenditures were 97 percent of the total FY 1957 expenditure plan. The obligation rate as a whole indicated an unusually high degree of efficiency in the Corps' utilization of its resources. Obligation performance in most areas exceeded that of FY 1956 which was itself considered a good year.<sup>33</sup>

### Army Financial Management Plan

(U) The Corps has been a pioneer in the implementation of several of the elements of the Army Financial Management Plan. By the end of FY 1957

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<sup>32</sup>

Interv, Hist Off with Col C. W. Nussbaum, Compt, OCCmlO, 18 Jul 57.

<sup>33</sup>

See Table 2.

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actions had been taken to extend the application of modern funding and accounting systems throughout the Corps. An official Corps publication described the management goal as, "the integration of the various tools of management into a single system in which programming, budgeting, accounting, and performance analysis are combined to give each member of management the information necessary to effectively manage the work for which he is responsible."<sup>34</sup> Major developments in each of the several financial management systems during the fiscal year are described in the sections following.

Army Industrial Fund. (U) During the last quarter of FY 1957 preparations were completed for placing the Army Chemical Center under the Army Industrial Fund (AIF). Because of the diversity of activities located on the post, the extension of AIF in this case presented some special problems. A feasibility survey conducted in January - February 1955 by a DA - Chemical Corps team had produced a favorable recommendation, but subsequent action had been deferred.<sup>35</sup> At length, in October 1956, DCSLOG informed the Chief Chemical Officer that higher authority felt the time had come to prepare for the installation of AIF at least for those activities at Army Chemical Center which came under the command jurisdiction of the post commander. In November 1956, therefore, a working group of Army and Corps representatives undertook a management survey of the Center and issued a

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<sup>34</sup>

Chemical Corps Budget Digest, FY 58, p. 3.

<sup>35</sup>

AIF Feasibility Survey, ACmlC, 31 Jan - 11 Feb 56.

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comprehensive report, including a proposed AIF charter and accounting system, on 7 February 1957.<sup>36</sup> This report was forwarded to DCSLOG by the Chief Chemical Officer accompanied by his recommendation for early approval so that a proposed target date of 1 July 1957 could be met. Concurrently, he authorized the installation to initiate preparatory action at once.<sup>37</sup>

(U) The Commanding General, Army Chemical Center and Chemical Corps Materiel Command, established an ad hoc committee of seven full time and eight associate members to assist the installation comptroller in carrying out the task of implementing the management survey report. Working against time, the committee succeeded in readying the installation for AIF activation by the 1 July target date.<sup>38</sup> Meanwhile, higher authority was considering a final verdict on approval of the proposed charter. Of major importance

36

(1) DF, DCSLOG to OCmlO, LOG/PS61483, 8 Oct 56, sub: Army Industrial Fund, Army Chemical Center. (2) Ltr, OCmlO to CG ACmlC and MATCOM, 6 Nov 56, sub: AIF Management Survey, Army Chemical Center. (3) AIF Management Survey Report, Feb 57. The report was signed by Mr R. Donald Rogers (Off of Compt, OCCmlO), Mr J. James Westrup (Off of Compt of the Army), Mr J. Vincent Falvey (DCSLOG), and Mr Edward C. DeWitt (Off of Compt, ACmlC). Maj John Moran worked with the group as a representative of the Commanding General of the installation.

37

(1) DF, OCmlO to DCSLOG, 21 Feb 57, sub: Army Chemical Center AIF Management Survey Report. (2) DF, OCmlO to DCSLOG, 21 Feb 57, sub: Proposed Army Industrial Fund Charter - Army Chemical Center. (3) Ltr, OCmlO to CG ACmlC and MATCOM, 21 Feb 57, sub: Preparation for Installation of the Army Industrial Fund.

38

(1) ACmlC and MATCOM SO 71, 5 Apr 57. (2) Interv, Hist Off with Mr Edward C. DeWitt, Off of Compt, ACmlC, 21 Aug 57. Full time committee members in addition to Messrs Rogers and DeWitt included Maj Eugene J. Cronin Jr. Maj Max Etkin, Mr Edward K. Dyer, and Mr Marshall McCord, all of ACmlC, and Mr Richard H. Ruhland of Rocky Mountain Arsenal.

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were the decisions as to which Army Chemical Center-located activities were to be included as fully participating AIF agencies and which were to become, in effect, simply tenants of the installation. Some agencies, such as Edgewood Arsenal, had functions typical of AIF installations and lay within the full jurisdiction of the post commander, while others, in particular the Chemical Warfare Laboratories, were neither so obviously identified with industrial funding nor so conveniently situated in the chain of command. As finally approved, the AIF installation at Army Chemical Center was construed as capable of covering the Chemical Warfare Laboratories. The list of activities designated for full industrial funding included the following:

1. Headquarters, U.S. Army Chemical Center and Chemical Corps Materiel Command
2. U.S. Army Chemical Warfare Laboratories
3. U.S. Army Chemical Arsenal, Edgewood
4. U.S. Army Chemical Corps Quality Assurance Technical Agency
5. U.S. Army Chemical Depot, Eastern
6. U.S. Army Chemical Corps Technical Escort Unit
7. U.S. Army Chemical Corps Procurement Agency

The other activities housed at the installation were scheduled to be billed by an Army Chemical Center cost center against their appropriation for support services. The working capital assigned for AIF operation at Army Chemical Center was \$7,000,000, a sum which was expected to undergo turnover some six or seven times in the course of the next fiscal year. The charter received final Defense Department approval late in June, and AIF

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operations were set to begin on schedule as of 1 July 1957.<sup>39</sup>

(U) Sales forecasts made by Chemical Corps AIF installations required downward revision during the latter part of the year as a consequence of changes in consumer demand, including changes in the requirements of non-Army agencies. For the most part, however, AIF operations proceeded according to plan. One major improvement in AIF accounting at the arsenals was made possible by the separate financing of fixed costs for maintenance of facilities in standby status. Separate funding in the amount of \$1,900,000, received in November 1956, accomplished the change. It meant that the arsenals could henceforth adopt more realistic billing for their goods and services. The difficulty inherent in recovering fixed costs by billing during a period of major production cutback had been one of the most serious problems in AIF administration in previous years.<sup>40</sup> At the two industrially funded arsenals the year was marked by the accumulation of a cash excess substantially larger than any previously recorded — another product of the sharply declining current production level. Both Rocky Mountain and Pine Bluff Arsenals returned \$3,000,000 to the Fund as unneeded for present operations.<sup>41</sup>

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<sup>39</sup>

(1) DeWitt interv, 21 Aug 57. (2) Ltr, OCCm10 to CG ACm1C and MATCOM, 15 Jul 57, sub: Army Industrial Fund Approval for Army Chemical Center. (3) Interv, Hist Off with Mr Dennis Worley, Off of Compt, OCCm10, 25 Jun 57. (4) Quart Hist Rpt, Off of Compt, OCCm10, Apr - Jun 57.

<sup>40</sup>

(1) Nussbaum interv, 18 Jul 57. (2) Worley interv, 25 Jun 57. (3) Interv, Hist Off with Mr Raymond Ertel, Off of Compt, OCCm10, 9 Jul 57.

<sup>41</sup>

Worley interv, 25 Jun 57.

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Chemical Command Management System. (U) The Chemical Corps, in common with the other Technical Services, was directed by DCSLOG early in FY 1957 to plan for and begin to implement a command management system for those of its activities not financed under the Army Industrial Fund. The essence of command management is the centralizing of integrated fiscal, administrative, and programming responsibility in an installation commander. A system such as industrial funding tends to accomplish this purpose for installations to which it is applicable. Command management undertakes to provide non-industrially funded agencies with some of the management advantages to AIF installations, in particular the unified accounting structure, allotment system, and disbursement system, in order to make possible service-wide management systems. A pilot command management system following Department of the Army guide-lines was installed in the New York Chemical Procurement District effective 1 April 1957. On the basis of the experience gained thereby, plans were subsequently initiated for extending the system to the Chicago District. This action was scheduled to become effective 1 July 1957. The Atlanta and Dallas Districts were due to be satellited on Chicago thereafter for fund programming and fiscal services, and the San Francisco District was to receive accounting services from the adjacent offices of the San Francisco Ordnance District from that date. In addition, the Depot Command Management System gained complete Chemical Corps implementation, as far as applicable, when it was extended to the

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Eastern Chemical Depot as of 1 November 1956.<sup>42</sup>

Integrated Accounting: (U) As noted in the report for FY 1956,<sup>43</sup> the Chemical Corps was on the point of completing Corps-wide installation of integrated accounting in the summer of 1956. This goal was attained when the Army Chemical Center completed the integration of its obligation and expenditure accounting on 31 October 1956 and closed out its old accounting systems.<sup>44</sup> Department of the Army plans for further implementation of integrated accounting during FY 1957 provided that Chiefs of Technical Services would assume responsibility for summary expenditure accounting for their respective services. This responsibility had previously been vested in CONUS Army Commanders and exercised through their accounts offices. A Chemical Corps Accounts Office was accordingly set up at Army Chemical Center. Effective 1 April 1957 it began the task of preparing

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42

(1) Quart Hist Rpt, Off of Compt, OCCm10, Apr - Jun 57. (2) Nussbaum interv, 18 Jul 57. (3) Interv, Hist Off with Mr C. W. Lombard, Off of Compt, OCCm10, 9 Jul 57. (4) Worley interv, 25 Jun 57. (5) Interv, Hist Off with Lt Col W. J. Fabritius, Off of Compt, 9 Jul 57. (6) Logistics Directive 156-1, 18 Sep 56, sub: Installation of Army Command Management System. The Eastern Chemical Depot went under AIF after 30 June 57, as noted above.

43

Summary of Major Events and Problems, FY 56, pp. 65 - 66.

44

(1) Worley interv, 25 Jun 57. (2) Interv, Hist Off with Maj J. W. Goodwin, Off of Compt, OCCm10, 25 Jun 57.

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consolidated Corps financial reports through a machine records unit.<sup>45</sup>

Fixed Asset Accounting. (U) The long range planning of the Department of the Army looks toward the establishment of fixed asset accounting for financial control of capital property such as land, buildings, structures, utility systems, and fixed plant equipment. In anticipation of a future Army requirement, the Chemical Corps began in FY 1957, to develop procedures for the installation of a fixed asset accounting system. The pilot project for the Corps was undertaken by Fort Detrick on 1 March 1957. After the operation had accumulated two months of comparatively trouble-free experience, the Chemical Corps conducted a seminar at which all elements of the Corps had a chance to study the system as it had worked out in practice. They were directed to submit plans for implementing fixed asset accounting at their own activities to OCCm10 by 30 June 1957. By the end of the fiscal year, therefore, the Chemical Corps was prepared to institute a Corps-wide system of fixed asset accounting as soon as higher authority might direct.<sup>46</sup>

Army Stock Fund. (U) The dominant tendency in Army Stock Fund management during FY 1957 was one of centralization. Army policy called for

45

(1) Logistics Directive 197-37, 11 Jan 57, sub: Implementation of AR 10-216, "Assumption of Command Accounting Functions by Chiefs of Technical Services." (2) OCCm10 GO 9, 15 Mar 57. (3) Fabritius interv, 9 Jul 57.

46

(1) Nussbaum interv, 18 Jul 57. (2) Interv, Hist Off with Mr J. W. Strother, Off of Comp, OCCm10, 25 Jun 57. (3) Fabritius interv, 9 Jul 57.

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concentration of all supply and stock control functions by commodity grouping through a limited number of stock control points. Item accountability in the Chemical Corps Depot Supply System was therefore transferred from several depot sites to two National Inventory Control Points, one at Army Chemical Center to control supply of all Corps end items, and the other at the Chemical Section of Memphis General Depot, which had already been acting as a stock control center for repair parts. The CONUS depot branch offices of the Chemical Division, Army Stock Fund, at the old depot sites were then closed and financial accountability transferred to the new Control Points.<sup>47</sup>

(E) During FY 1957 a seventh overseas branch office of the Chemical Division of the Army Stock Fund was established at the Army General Depot, United States Army Southern European Task Force. With the six overseas branch offices previously existing, the two Control Point branches, and the six local branch offices set up before FY 1957 in the Third Army Area,<sup>48</sup> the Chemical Division had a total of fifteen branches at the end of the fiscal year.<sup>49</sup>

47

(1) Strother interv., 25 Jun 57. (2) Chemical Corps Budget Digest, FY 58, p. 4. (3) Logistics Directive 111-780, 13 Jun 56, sub: Organization for Supply Management Activities at Supply and Stock Control Points. (4) See below, pp. 122 - 24, 150.

48

Summary of Major Events and Problems, FY 56, pp. 59 - 61.

49

(1) Strother interv., 25 Jun 57. (2) Nussbaum interv., 18 Jul 57.

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(U) The trend toward reduction of stocks continued unchecked during the fiscal year, as the Army approached its goal of bringing the wartime stockage levels of the early 1950's down to the needs of a peacetime force. Generally speaking, the Chemical Corps in FY 1957 issued about twice as much material as it procured. Some \$3,000,000 in overage was returned by the Corps to the Reserve of the ASF before the year was out, bringing the total of such returns over the last three years to \$11,000,000.<sup>50</sup>

### Administrative Services

#### Technical and Public Information

(U) The Chief Chemical Officer has favored an active program for keeping the public informed about the accomplishments of the Chemical Corps.<sup>51</sup> Under this policy the Technical Liaison Branch of the Administration Division, OCCm10, during the year emphasized programs for wider dissemination of information. A total of 781 items was processed for clearance to the public in FY 1957, representing an increase of 8 percent over the previous year and a cumulative increase of over 80 percent since FY 1954. More than three-quarters of the total number of items were scientific and technical manuscripts, indicating that the policy of encouraging professional publication from within the Corps met with a

<sup>50</sup>

(1) Strother interv, 25 Jun 57. (2) Quart Hist Rpt, Off of Compt, OCCm10, Apr - Jun 57.

<sup>51</sup>

Pamphlet, "The Policy of the Chief Chemical Officer," p. 11.

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substantial response. A total of nineteen press releases were issued, and a concerted effort was made to place releases with media as yet insufficiently exploited, including trade journals and television film clips. A Chemical Corps liaison officer was assigned to the Office of Technical Services, Department of Commerce, to expedite the release of available technical material to industry and individuals.<sup>52</sup>

(U) In the general area of public relations, the Chemical Corps Exhibit continued to play an important role, making about a dozen appearances and attracting over a quarter of a million spectators. A special event occurred in October 1956 when the community of Frederick, Maryland, under the leadership of its Chamber of Commerce, celebrated a Fort Detrick Appreciation Week, marking an example of good community relations work by a Corps installation.<sup>53</sup>

### Safety

(U) The statistics maintained by the Safety Branch of the Administration Division, OCCm10, show that the Chemical Corps maintained, during FY 1957, the general decline in accident frequency noted in the last report.<sup>54</sup>

52

(1) Interv, Hist Off with Mr F. B. Brinkley, Tech Liaison Br, Admin Div, OCCm10, 24 Jun 57. (2) Interv, Hist Off with Mr John Kley, Tech Liaison Br, Admin Div, OCCm10, 13 Jun 57. (3) Quart Rev, Apr - Jun 57, p. 34.

53

(1) Ibid. (2) Quart Hist Rpt, Ft. Detrick, Jul - Sep 56.

54

Summary of Major Events and Problems, FY 56, p. 45. It should be noted that in FY 57 the Safety Branch began maintaining its records by fiscal as well as calendar year.

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The motor vehicle accident rate of 0.5 per 100,000 miles of operation represented a substantial drop from the 0.9 rate of calendar 1955. The accident rate for military personnel, 2.2 per 100,000 man days, also marked a notable reduction from the previously recorded rate of 3.1. On the other hand, the civilian personnel accident rate, considered a problem area in the past, failed to register an improvement over the preceding year, the figure being 4.1 per 1,000,000 man hours, as against 4.0 in 1955. But the situation appeared to be improving as the fiscal year ended. All Chemical Corps accident frequency rates were below ceilings established by DA.<sup>55</sup>

(U) The Chemical Corps received major recognition when on 12 June 1957 the National Safety Council presented the Corps with its second consecutive Award of Honor. This was the 18th safety award received from the Council and other sources by the Corps or Corps elements since 1952.<sup>56</sup>

(U) During FY 1957 the Chemical Corps was assigned the responsibility for Defense Department implementation of interdepartmental agreements with the Departments of Agriculture, and Health, Education and Welfare relative to shipment of biological warfare materiel. The Safety Branch took an active interest in the safety aspects of this problem. It participated

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Quart Rev, Apr - Jun 57, p. 27.

56

Interv, Hist Off with Mr D. J. McConeghey, Safety Br, Admin Div, OCCm10, 13 Jun 57.

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also in negotiations on this subject with the Interstate Commerce Commission and the Civil Aeronautics Authority.<sup>57</sup>

(U) The Safety Branch was designated in the latter part of the year as the Chemical Corps representative for radiological safety matters. Before 1 July 1957 work had been started on plans for coping with radiological accident hazards. The plans constituted the Chemical Corps contribution to an overall Department of Army radiological safety project monitored by the Ordnance Corps.<sup>58</sup>

### Welfare and Morale

(U) Welfare and morale activities are administered for the Chief Chemical Officer by the Welfare and Morale Branch of his Administration Division. During FY 1957 the branch allocated grants from the Corps Welfare Fund to cover provision of a host of new or improved recreational facilities -- bowling alleys, swimming pools, tennis courts, craft shops, libraries, and the like -- at the several Corps installations. Utilization levels of installation libraries and craft shops showed substantial increases compared to those of the previous year, a condition attributed to improved facilities and programming. Active participation in sports registered a similar rise, in part resulting from an increased emphasis

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57

(1) Interv, Hist Off with Mr J. C. Feazell, Safety Br, Admin Div, OCCm10, 24 Jun 57. (2) Quart Rev, Apr - Jun 57, p. 27.

58

(1) Feazell interv, 24 Jun 57. (2) Quart Hist Rpt, Safety Br, Admin Div, OCCm10, Apr - Jun 57.

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on intramural rather than interpost sports. Restaurant facilities for civilians at Dugway Proving Ground, Fort Detrick, and Pine Bluff Arsenal were improved through grants and loans from the Army Civilian Welfare Fund. As of FY 1957, installations were required to submit expenditure programs for the dividends allotted them from the Army Central Fund. It was the policy of the Welfare and Morale Branch to urge that programming by installations cover a period of several years in advance.<sup>59</sup>

### Facilities

#### Programs

(U) Chemical Corps FY 1957 operations were satisfactory in the program areas concerned with the management of facilities. These programs, as redistributed in the Chemical Corps reorganization of 1956, were: Program 3 - Installations (Logistics Planning Division, OCCm10); Program 11 - Construction (Chemical Corps Engineering Command); Program 10C5 - Maintenance of Facilities, and Program 10C6 - Real Estate (Chemical Corps Materiel Command).<sup>60</sup> Minor problems of providing information and maintaining communications among the working elements remained, but these

<sup>59</sup>

(1) Interv, Hist Off with Mr R. E. Hegdahl, Welfare and Morale Br, Admin Div, OCCm10, 24 Jun 57. (2) Quart Rev, Apr - Jun 57, pp. 31 - 32. (3) Quart Hist Rpts, Welfare and Morale Br, Admin Div, OCCm10, FY 57.

<sup>60</sup>

See Summary of Major Events and Problems, FY 56, pp. 67 - 71.

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problems were solved as they arose by close co-ordination of effort.<sup>61</sup>

### Military Construction, Army (MCA)

(U) As projects initiated in previous fiscal years were completed or neared completion in FY 1957 construction activity under the MCA program gradually decreased. During the year twelve projects costing \$10.8 million were completed. Among these projects were an extensive fire protection sprinkler system in existing buildings at Army Chemical Center, the Biological Assessment Laboratory, also at Army Chemical Center, and a Chemical Test Center in Alaska. Eight projects, including the Micrometeorological Network at Dugway Proving Ground and laboratories at Fort Detrick, with current working estimates of \$7.7 million were under construction at the end of FY 1957. The Chemical Corps FY 1958 MCA program as submitted to Congress consisted of only three projects since the bulk of projects planned for FY 1958 were deferred for one or more years. The Chemical Corps requested approval of thirty-four projects at total cost of more than \$11 million in the FY 1959 MCA program.<sup>62</sup>

61

(1) Interv, Hist Off with Mr W. J. Ellenberger, Log Pl Div OCCmlO, 31 Jul 57. Mr Ellenberger became Chief, Installations Branch, Logistics Planning Division, after the death of Mr F. G. DeAngelis on 9 February 1957. (2) Interv, Hist Off with Maj W. G. Heslin, Facilities Div, MATCOM, 22 Jul 57.

62

(1) Ellenberger interv, 31 Jul 57. (2) Quart Rev, Apr - Jun 57, pp. 129 - 32.

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### Capehart Housing<sup>63</sup>

(U) Family housing had been in short supply at all Chemical Corps installations for several years. During FY 1957 designs for 217 Capehart Act family housing units were initiated. A contract for thirty-four units at Pine Bluff Arsenal was let and construction began in May 1957. At Fort Detrick sixty-three units were designed and construction was authorized. The Dugway Proving Ground project for 100 Capehart units had not been released by the Office of the Secretary of Defense for initiation of construction. Approval to construct these units would make mandatory the acquisition of the existing 400 Wherry housing units at the proving ground. Construction at Rocky Mountain Arsenal was postponed until the completion of a Department of Defense study on Capehart construction near large metropolitan centers.<sup>64</sup>

### Provision of Production Facilities Projects

(U) During the first half of FY 1957 \$1,440,094 worth of Provision of Production Facilities Funds (PPFF) projects were completed. The most

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(U) Public Law 345, 84th Congress (commonly called the Capehart Act) and Public Law 1020, 84th Congress, amended the National Housing Act to provide that the Army could provide public housing for military and civilian personnel. This housing was to be erected and financed by contractor under Federal Housing Administration guaranteed mortgage, but title to the property would remain with the Army, and operation and maintenance of the housing was to be an Army responsibility (DA Cir 210-7, 19 Sep 55; DA Cir 210-14, 1 Oct 56; DA Bull 13, 10 Sep 56).

64

Briefing Notes, Directorate for Facilities, U.S. Army Chemical Corps Engineering Command (ENCOM), 1 Apr - 30 Jun 57, dtd 26 Jul 57, p. 13.

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important of these projects were the facilities for conversion and disposal of production wastes at Rocky Mountain Arsenal and an extension to the bombing mat at Pine Bluff Arsenal. Sealing of the disposal lake at Rocky Mountain Arsenal was completed in January 1957, but repairs were subsequently needed because of storm damage. No projects were completed during the second half of the year.<sup>65</sup>

### Maintenance of Installation Facilities

(U) Maintenance funds available during FY 1957 were not sufficient to reduce appreciably the steadily increasing backlog of installation maintenance. In the last quarter of the year a vigorous effort was made to reprogram and obligate unobligated funds from other programs for deferred maintenance. In all \$974,000, including \$300,000 from sources outside the Chemical Corps was obligated for this purpose. Some of the most essential tasks, for example, renovation of badly deteriorated and much needed military housing, were accomplished, but at year's end a \$1,940,000 backlog remained.<sup>66</sup>

65

(1) Quart Hist Rpts, MATCOM, FY 57. (2) Briefing Notes, Directorate for Facilities, ENCOM, p. 15. (3) See Summary of Major Events and Problems, FY 56, pp. 70 - 71. (4) See below, p. 141.

66

(1) Heslin interv, 22 Jul 57. (2) Quart Hist Rpt, MATCOM, Apr - Jun 57.

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Table 3 -- Value of Real Property Under Jurisdiction of Respective  
Chemical Corps Commands 1 July 1957

	Orig Acqn Cost	Replacement Cost Index <sup>a</sup>	Replacement Cost
GRAND TOTAL . . . . .	\$489,253,709		\$840,992,276
<u>RESEARCH &amp; DEV COMMAND</u>			
Total . . . . .	\$117,904,974		\$207,705,420
Chemical Warfare Labs.	19,819,846	2.50	49,549,615
Dugway Proving Ground.	38,551,914	1.40	53,972,680
Fort Detrick . . . . .	59,533,214	1.75	104,183,125
<u>MATERIEL COMMAND</u>			
Total . . . . .	\$365,639,051		\$624,151,362
A Cml C (incl EA, ECD- less CML) . . . . .	64,433,897	2.50	161,084,743
Pine Bluff Arsenal (less FDL) . . . . .	53,611,173	2.00	107,222,346
Production Div. Labs .	83,705,534	1.15	96,261,364
Rocky Mountain Arsenal . . . . .	78,471,330	1.60	125,554,128
Chicago Chemical Procurement District			
Habus Plant . . . . .	728,560	2.25	1,639,260
Kansas City Plant .	765,725	2.25	1,722,881
Phosphate Dev. Works	51,415,085	1.15	59,127,348
St. Louis Plant . .	6,063,078	2.25	13,641,925
Vigo Plant. . . . .	9,757,184	2.25	21,953,664
New York Chemical Procurement District			
Marshall Plant. . .	6,412,553	2.00	12,825,106
New Cumberland. . .	663,597	2.25	1,493,093
Niagara Falls Plant	4,576,564	2.25	10,297,269
San Francisco Chemical Procurement District			
Owl Plant . . . . .	4,057,642	2.25	9,129,695
Seattle Plant . . .	977,129	2.25	2,198,540
<u>TRAINING COMMAND</u>			
Fort McClellan . . . . .	5,709,684	1.60	9,135,494
<u>ENGINEERING COMMAND*</u>			

\*CmlC ENCOM was not in control of any Chemical Corps real property.

Source: Briefing Notes, 4th Quart Review, FY 57, Facilities Div,  
Cml C MATCOM, 20 Aug 57.

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(U) Table 3 shows the acquisition cost and replacement value of all Chemical Corps real property by controlling command at the end of fiscal year 1957.<sup>67</sup>

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67

Compare, Summary of Major Events and Problems, FY 56, Table 3.

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## PLANNING AND DOCTRINE

(U) Created in December 1955, the Office of the Assistant Chief Chemical Officer for Planning and Doctrine completed its first full fiscal year in June 1957. This office, commanded by Brig. Gen. W. R. Currie, was organized as a result of recommendations by the Ad Hoc Committee on the Chemical Corps Mission and Structure. Its mission included the areas of military training, doctrine, intelligence, and combat developments.<sup>68</sup>

(U) By the close of fiscal year 1957 enough time had elapsed for an appraisal of this planning and doctrine structure. In general, it had worked well, producing an overall improvement in Chemical Corps planning and doctrine. Increased emphasis was placed on developing an informed Army Staff through briefings and orientations by a special team organized for this purpose at the Chemical Corps Board. Responsibilities, accomplishments, and potentials of the Chemical Corps were highlighted.<sup>69</sup> Although the results of such efforts are difficult to evaluate, it was felt that in the long run this emphasis on Chemical Corps capability would prove profitable.<sup>70</sup>

<sup>68</sup>

Class II activities under the direction of General Currie were the U.S. Army Chemical Corps Training Command (TNGCOM), which included the U.S. Army Chemical Corps School; the U.S. Army Chemical Corps Field Requirements Agency (CCFRA); the U.S. Army Chemical Corps Board (CCB); and the U.S. Army Chemical Corps Intelligence Agency (CCIA). See Summary of Major Events and Problems, FY 56, for the complete story of the organization of the OACCMLO for P&D and the responsibilities of its Class II activities.

<sup>69</sup>

See below, pp. 76 - 77, for further information on the orientation team.

<sup>70</sup>

Interv, Hist Off with Brig Gen W. R. Currie, ACCMLO for P&D, 9 Jul 57.

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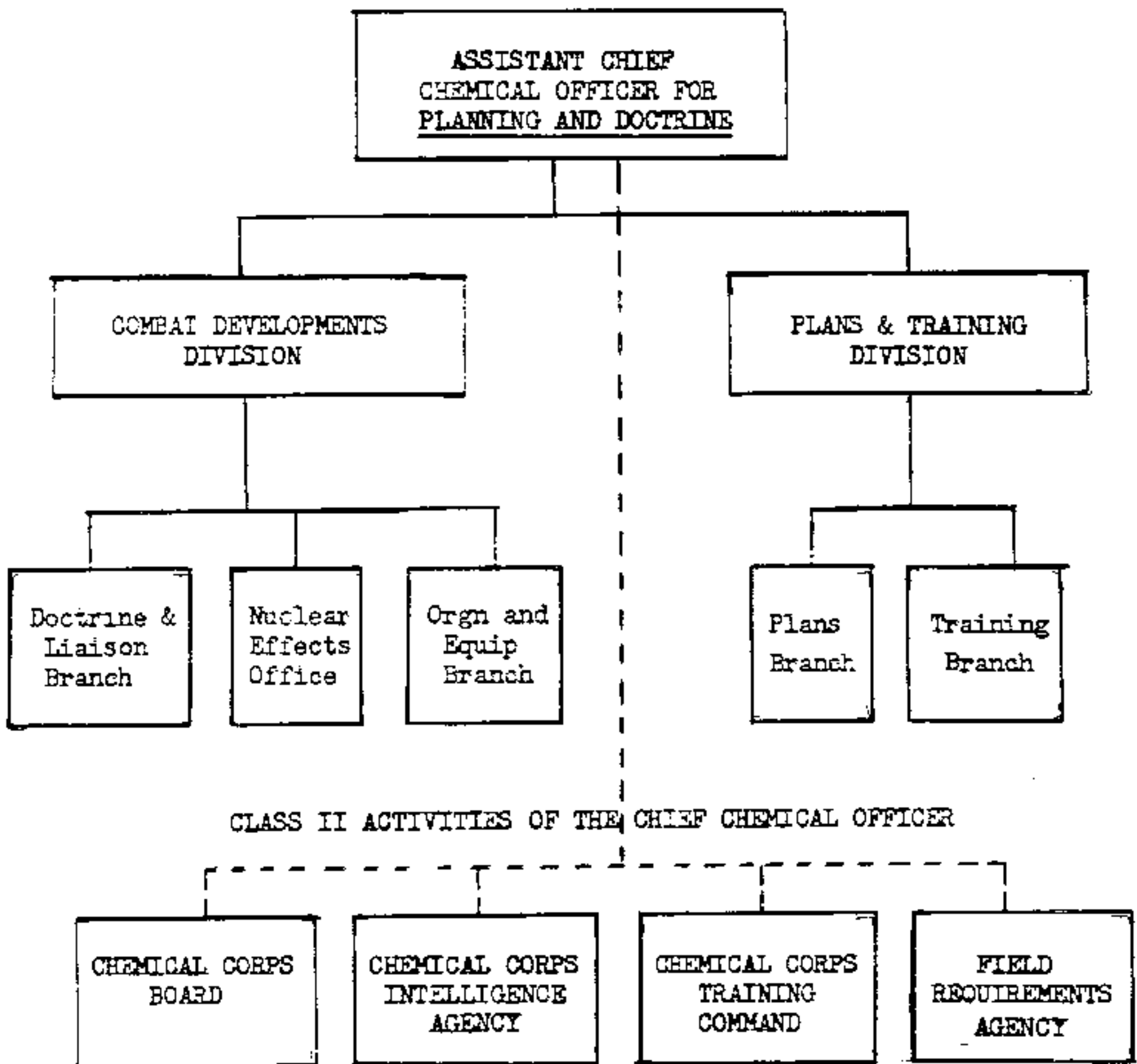
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Chart 3

OFFICE OF THE ASSISTANT CHIEF CHEMICAL OFFICER FOR PLANNING AND DOCTRINE



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(U) The major contribution in the field of doctrine and planning was the creation of facilities to determine, to provide, and to co-ordinate the doctrinal requirements of the Chemical Corps. A specific case in point, illustrating the co-ordination of interrelated doctrinal areas, involved certain combat development studies and their effect upon the training literature program.<sup>71</sup> The allocation of planning and doctrine development activities among General Currie's Class II organizations worked out favorably during the year. The Field Requirements Agency<sup>72</sup> carried on the mission of current and midrange planning, while the Chemical Corps Board was responsible for long range studies. The Board, because of its proximity to the Office of the Chief Chemical Officer and the research and development facilities at Army Chemical Center, also was given crash projects. Although the latter assignments resulted in a deviation from the long range mission, this overlap was not entirely undesirable for it resulted in a more versatile and better trained Board personnel.

### Combat Developments Activities

(U) The Combat Developments Program, intended "to provide guidance and direction to continuously increase the capabilities of the Army," was accomplished "by the development and analysis of concepts and proposed organization, by the determination of requirements for material, and by the testing

<sup>71</sup>

See below, pp. 45 - 46.

<sup>72</sup>

The Field Requirements Group became the Field Requirements Agency on 1 July 1956 per OCCmLO GO 14, 7 Jun 56.

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of concepts, organization and materiel.<sup>73</sup> The Assistant Chief Chemical Officer for Planning and Doctrine directed the program through his Combat Developments Division. The Class II activities which had the responsibility for the tests and studies in the combat developments area were the Chemical Corps Board and the Chemical Corps Field Requirements Agency.

(U) The Chemical Corps structure for combat developments had been in existence for a year and a half when FY 1957 came to a close. By the discovery of existing gaps in doctrine and by the development of systematic programs for eliminating these gaps, this combat development organization contributed much in filling a void which long had existed in the Chemical Corps.<sup>74</sup>

(U) An illustration of this contribution to a systematic doctrinal program can be seen in the relationship between the development of doctrine and its publication in manual form. For some time the Chemical Corps literature program had suffered because of the lack of material upon which to base the writing or revision of manuals. The matter was complicated still more by the lack of an organized program for the development of doctrine.

(U) As examples of this problem two projects of the Field Requirements Agency which were intimately related to two Chemical Corps publications scheduled for completion in 1958 can be cited. The first case involved

<sup>73</sup>

Chemical Corps Program No. 4I, Combat Developments, FY 1957.

<sup>74</sup>

The concept of combat developments is itself new; CONARC had instituted the program early in 1955. See Summary of Major Events and Problems, FY 55, p. 68 and FY 56, p. 74.

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CCFRA, 4-57, "Employment of Smoke," which would provide the basic doctrinal data for FM 3-50, "Chemical Smoke Generator Battalion and Chemical Smoke Generator Company." Fortunately, the final report of the FRA project was due in October 1957, and after review by the OCCm10 and CONARC would be available as approved source material in January 1958. FM 3-50 was scheduled for completion in August 1958; the seven months interval should provide sufficient time to use the study for the final draft of the manual. Because of the existence of interim reports on the smoke project, immediate co-ordination with FRA would prove valuable. The sequence of events in this case was quite fortuitous. Not so the matter of TC 3-7 and CCFRA 8-57, "Effectiveness of BW Agent - Munition Systems." The final project report would probably be approved in June 1958, two months after the final draft of the training circular was due for submission. In this case OCCm10 asked CONARC for a delay in the submission date for the training circular.

(U) These examples illustrate the relationship between doctrine development and literature publication. At what point during the conduct of an FRA study should a manual be started is difficult to determine and would more than likely depend upon the merits of each individual case. Once a sequence is set up and methods of co-ordination established, the matter would largely solve itself. Although difficulties remained to be overcome, the combat developments organization promised to provide the means and the direction for the needed well-meshed programs.<sup>75</sup>

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(1) Ltr, CCm10 to CO CmlC TNGCOM, 16 Jul 57, sub: Training Literature and Combat Developments. (2) Interv, Hist Off with Mr Seymour Waxman, OACCM10 for P&D, 14 Aug 57.

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(U) During the period 8 - 10 January 1957 a Combat Developments Program Planning Conference was held at the Army Chemical Center in order to develop a comprehensive Chemical Corps program for combat developments for each of the next three years. This was the first step in achieving a five-year program which would be in line with similar documents in research and development and procurement.<sup>76</sup> One of the specific purposes of the conference was the review of Chemical Corps projects for the Combat Developments Objectives Guide, 1957 (CDOG), the overall document prepared by CONARC. Based in large part on the conference findings OCCmLO later sent CONARC a list of proposed study projects for fiscal years 1958 and 1959 for inclusion in a revised version of CDOG-1957. The list consisted of five categories: (1) studies initiated previously and continuing into FY 1958; (2 & 3) studies to be started in FY 1958 and in FY 1959; (4) projects proposed for the consideration of combat developments agencies other than those of the Chemical Corps; and (5) recommendations for cancellation of established projects.

(S) A Field Requirements Agency Project (6-57) entitled "Knowledge Requirements for Development of Doctrine and Concepts" was established and completed during the fiscal year.<sup>77</sup> The objective of the study was the preparation of a list of knowledge requirements which identify gaps in existing

76

(1) Interv, Hist Off with Lt Col Samuel E. Baker and Mr F. F. Hilbers, OACCMLO for P&D, 13 Aug 57. (2) Interv, Hist Off with Lt Col Daniel Gaston, OACCMLO for P&D, 13 Aug 57. (3) Quart Hist Rpt, OACCMLO for P&D, Jan - Mar 57.

77

(1) Ltr, CCmLO to CG CCFRA, 4 Dec 56, sub: Project CCFRA 6-57, "Knowledge Requirements for Development of Doctrine and Concepts." (2) Final Report, Project CCFRA 6-57, 15 Mar 57, same subject. (3) Waxman interv, 14 Aug 57. (4) Quarterly Review of Chemical Corps Programs, Classified Supplement, Apr - Jun 57, p. 4. Hereafter cited as Quart Rev, Class Sup.

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and proposed doctrine and concepts. One of the requirements concerned the problem of the early warning capability in the combat zone. Specific knowledge requirements in this area included: (1) How will the approximate yield, ground zero, and height of burst of a nuclear weapon be determined? (2) How will fallout be predicted? (3) Who is responsible for obtaining this type of information? (4) To whom should it be reported? (5) What does a commander do with the information received?<sup>78</sup>

(C) Several studies which had been begun previous to FY 1957 were completed with positive results. In July 1955 the Chemical Corps was given the responsibility for the conduct of a study which would determine the feasibility of rapid aerial surveys of large-scale radiological contamination using current Radiac instruments and standard Army aircraft.<sup>79</sup> The Chief Chemical Officer assigned the project to the commanding officer of the Chemical Corps Training Command who, in turn, assigned it to the Chemical Corps School. In October 1956 the Chemical Corps School submitted a final report (revised in February 1957) on the study which described the test methods employed during the survey and the results obtained. The Chief Chemical Officer forwarded the study through Commanding General, CONARC, to the Department of Army Chief of Research and Development (C R&D, DA) in March 1957.<sup>80</sup>

<sup>78</sup>

CCB, Progress Report, FY 57.

<sup>79</sup>

This section was based on Final Report, Aerial Survey Feasibility Study, U.S. Army Chemical Corps, Part I, revised February 1957.

<sup>80</sup>

Ltr, CCm10 to C R&D, DA thru CG CONARC, 6 Mar 57, sub: Aerial Survey Feasibility Study.

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(C) Project officers tested various instrument-aircraft combinations in a contaminated area, 1,500 yards long and 100 yards wide, in which 4,000 curies of Cobalt-60 had been placed in source wells. Several types of helicopters and fixed-wing aircraft were used in conjunction with seven varieties of military and commercial Radiac instruments. The effects of aircraft shielding and the ability of Radiac instruments to respond rapidly to changes in dose-rate as a result of aircraft speeds were carefully studied. The shielding problem was solved by the use of an instrument in which the detecting portion was separated from the indicating dial and mounted or suspended beneath the aircraft. As for the latter problem, it was found that error in measured dose-rates would not be excessive at speeds of 100 knots or less.

(C) The accuracy of an aerial survey depends upon the accuracy with which dose-rate readings can be obtained in the air and the exactness with which they can be correlated with true ground (three foot) dose-rates. In the case of a large contaminated area a mile or more wide such as would occur after a nuclear surface detonation, a relatively constant air-to-ground correlation could be determined for a given relatively low altitude. In small areas, such as were used during the study, it was much more difficult to obtain constant air-to-ground correlations. Furthermore, the ground readings in the test area were themselves influenced by the individual radiological point sources (source wells) in the area.

(C) The Final Report of the Aerial Survey Feasibility Study concluded that rapid aerial radiological surveys were feasible using standard fixed- or rotary-wing aircraft and current Radiac instruments, although all these instruments had certain limitations. Tests revealed that an area of 400

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square miles can be surveyed in two hours with a single aircraft at 70 to 80 knots cruising speed, and that altitudes of 500 feet or less and speeds under 150 knots be maintained in order to assure reasonable accuracy. The study concluded that no military instrument, either standard or under development, had all of the essential features of a practical radiological survey meter, but that commercial Radiac instruments existed which would, with some modification, be suitable as a general purpose military survey meter for aerial and ground surveys. The study recommended that a new instrument be developed for the Army or that a commercial meter be modified to meet the requirements, and that pilots, monitors, and aerial observers be given a minimum of forty hours' training in aerial radiological survey techniques to include Radiac instruments, survey procedures, and practical exercises over contaminated areas. Finally, the study urged that further tests be conducted over large contaminated areas (100 square miles or more) in order to verify the results of past studies and to determine the accuracy of air-to-ground correlations.

(C) Another study carried over from the previous year was Chemical Corps Board Project 4-55, entitled "Tactical Troop Test of Effectiveness of Rocket Battalion Firing GB-filled (4.5-inch) Rockets."<sup>81</sup> During FY 1957 the Board submitted an interim report which included data and conclusions regarding organizational, operational, training, logistical, and area coverage capability aspects of a rocket battalion employing GB-filled munitions. In general, the tests revealed that the 4.5-inch rocket provided a greater coverage

<sup>81</sup>

Summary of Major Events and Problems, FY 56, p. 86, provides the background for this project.

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capability than any other ground munition system. Although all 4.5-inch rocket battalions in the Army had been disbanded, the data from the tests would be readily translated to other munitions of the same kind,<sup>82</sup> and would prove particularly appropriate for guidance in CCFRA project 7-57, "Tactical Employment of the 115-mm. Area Toxic Rocket." This study project would determine concepts and tentative doctrine for the tactical employment of the 115-mm. Area Toxic Rocket, T-238.<sup>83</sup>

(S) Project CCFRA 3-56, "The Tactical and Strategical Evaluation of RW," also completed in FY 1957, was forwarded to CONARC with the recommendation that it be distributed to all combat developments organizations. The Field Requirements Agency concluded that most targets suited for radiological attack would be dealt with most efficiently by explosive RW munitions rather than non-explosive. The exception, and these would be limited, would be those cases requiring minimum physical destruction but maximum personnel casualties. The study also pointed out that the non-explosive RW system stood out over the other weapons of minimum destruction, BW and CW, in that it was less affected by meteorological conditions, produced longer periods of denial, and was less subject to personnel protective measures.<sup>84</sup>

82

(1) Interv, Hist Off with Mr Joseph Schaeffer, CCB, 16 Aug 57. (2) Quart Rev, Class Sup, Jan - Mar 57, p. 5.

83

(1) Schaeffer interv, 16 Aug 57. (2) Quart Rev, Class Sup, Apr - Jun 57, p. 4.

84

Quart Rev, Class Sup, Apr - Jun 57, p. 4.

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(C) One concept which had been under consideration for several years collapsed under its own logistical weight. The concept of TRAC — Thermal Radiation Attenuating Cloud — envisioned the use of blankets of generator smoke to protect an area from the thermal effects of atom bombs. Investigation into the theory had provided wide differences of opinion within the Chemical Corps, not as to the capability of the blanket to shield from radiation but because of the enormous quantities of fog oil, generators, and men which would be required in any strategic use of the system in protecting American cities from enemy attack.<sup>85</sup> Chemical Corps support of this original concept just about ended in FY 1957. Some thought was directed toward the tactical value of smoke in atomic warfare, and that aspect was receiving study.<sup>86</sup> The interim report of the previously mentioned FRA study, "The Employment of Smoke," recommended the use of smoke for thermal attenuation in tactical situations as well as the bonus effect of thermal attenuation of smoke employed in the conventional manner.<sup>87</sup>

(S) Among the important new studies undertaken by the Chemical Corps Board during FY 1957 were Project CCB 3-57, "Field Experiment of Effectiveness

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Summary of Major Events and Problems, FY 56, pp. 81 - 82, and FY 55, pp. 62 - 64.

86

Memo for Record, Lt Col J. V. Morey, Nuclear Effects Advisor, OACCMLO for P&D, 12 Jun 57, sub: ODM Committee on Stockpile Sites.

87

CCFRA Interim Study, "The Employment of Smoke," 17 May 57. This study also concluded that the efficiency of current generators be increased and that current doctrine of smoke employment in support of tactical operations be tested with the new organizational concepts and doctrines.

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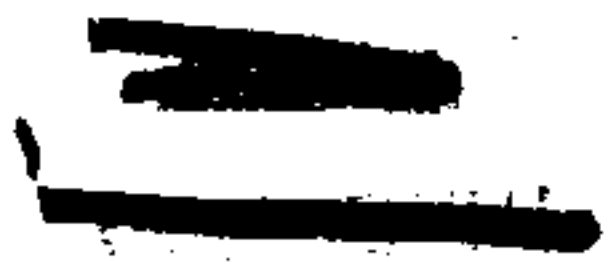
of CW Munitions Against Hard Targets," and Project CCB 1-57, "Tactical Troop Test of CBR Defensive Means (JACKPOT)." The former study aimed at discovering the operational feasibility of reducing "hard targets" with chemical warfare munitions, specifically those employing H and GB.<sup>88</sup> These hard targets, which have been determined in Corps of Engineer specifications, range from unimproved fox holes to re-enforced bunkers complete with air conditioning and protective collection systems. Application of chemical warfare to the reduction of mobile hard targets -- armored personnel carriers and tanks, for example -- was also to be considered. The study was divided into two phases: application of conventional weapons systems against the series of targets and, later, the use of developmental items against the same range of targets. The main goal of the project was the establishment of tentative doctrine for the use of chemical agents against hard targets, and the determination of existing gaps in the chemical weapons system for the reduction of hard targets.<sup>89</sup>

(C) The principal objective of JACKPOT was to determine the capability of troops to carry on their mission under CBR attack. How well can they perform under periods of enforced CBR protection?<sup>90</sup> Tests were to be based

<sup>88</sup>  
Ltr, CCm10 to Pres CCB, 28 Sep 56, sub: Project CCB 3-57, "Field Experiment of Effectiveness of CW Munitions Against Hard Targets."

<sup>89</sup>  
(1) Schaeffer interv, 16 Aug 57. (2) Quart Hist Rpt, OACCM10 for P&D, Jul - Sep 56.

<sup>90</sup>  
Ltr, CCm10 to Pres CCB, 24 Aug 56, sub: Project CCB 1-57, "Tactical Troop Test of CBR Defensive Means (JACKPOT)."



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on techniques and methods developed by the Human Resources Research Office at George Washington University in its evaluation of various troop reactions. The Chemical Corps Board envisioned two phases of testing, first, individuals and small sized units, and later, larger units. Both phases would employ various types and conditions of chemical warfare.<sup>91</sup>

(FOUO) Among other important studies established during the year were CCFRA 1-57, "Employment of GB to Obtain Casualties Through Percutaneous Effects,"<sup>92</sup> and CCB 5-57, "Retention of Mustard as an Authorized Agent." The purpose of the latter project was to determine the usefulness of mustard in modern warfare in view of the demand for chemical agents of greater toxicity.<sup>93</sup>

(U) A preliminary Tri-Service CBR Conference took place on 13 February 1957 in preparation for the Service Aspects Agenda of the 12th Toxicological Tripartite Conference to be held in England in the fall of 1957. Criteria for the selection of items suitable for the agenda were (1) guidance value to research and development, (2) sufficient information to permit the development of a worthwhile discussion paper, and (3) interest to the three countries involved. There was one departure from last year's procedure concerning

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<sup>91</sup>

(1) Schaeffer interv, 16 Aug 57. (2) Quart Hist Rpt, OACCM10 for P&D, Jul - Sep 56.

<sup>92</sup>

Ltr, CCm10 to CO CCFRA, 31 Aug 56, sub: Project CCFRA 1-57, "Employment of GB to Obtain Casualties Through Percutaneous Effects."

<sup>93</sup>

Ltr, CCm10 to Pres CCB, 10 Jan 57, sub: Project CCB 5-57, "Retention of Mustard as an Authorized Agent."

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the papers which supported agenda items. Previously, problem areas were defined and solutions presented. This year, specific solutions would not be proposed in the hope that fuller discussion of problems would result.<sup>94</sup>

(U) Actions during the year on the preparation and review of Tables of Allowances (TA) and Tables of Organization and Equipment (TOE) were in the main accomplished on schedule. The Office of Assistant Chief Chemical Officer for Planning and Doctrine reviewed 188 non-Chemical Corps TA's and TOE's and processed and completed 40 Chemical Corps Tables of Allowances in accordance with the 4-year revision cycle.<sup>95</sup>

(U) Among the significant TOE and TA activities of the year was the drastic change in the method of authorizing the Mask, Protective, Field, directed by DCSLOG and DCSOPS. In the past, masks had been organizational issue to each individual in a TOE unit. The new method provided that the mask would be included in a common type Table of Allowances and would be issued to TOE units at the discretion of the local post, camp, or station commander.<sup>96</sup> This change had been opposed by the Chief Chemical Officer who felt that it would complicate accounting procedures and tend to de-emphasize the importance of the mask as a primary means of protection against CBR warfare.<sup>97</sup>

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94

- (1) Interv, Hist Off with Col Rupert D. Chapman, CO CCFRA, 26 Jun 57.
- (2) Quart Hist Rpt, OACCMLO for P&D, Jan - Mar 57.

95

Quart Revs, Jul - Sep 56, p. 32, and Apr - Jun 57, p. 24.

96

Quart Rev, Apr - Jun 57, p. 24.

97

Quart Hist Rpt, OACCMLO for P&D, Oct - Dec 56.

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(U) During the 1st Quarter of FY 1957 the Planning and Doctrine office took action to obtain the opinion of Chemical Corps field agencies on a DCSLOG proposal to eliminate expendable supplies from all Tables of Allowances, with the exception of ammunition.<sup>98</sup> In October 1956 the Chemical Corps concurred with the proposal on the assumption that, in view of the necessity to maintain factors for use in planning CBR defensive operations, those items and bases of issue contained in TA 3-100 (one of the three Chemical Tables of Allowances to be affected by this action) would be published in another DA publication medium for use by logistical planners.<sup>99</sup>

(U) Last year, in a letter to DCSLOG, the Chemical Corps recommended that it end its activity in the technical service TOE Work Measurement Program. A DCSLOG representative informally notified the OCCm10 that this proposal not only was turned down but that the program was so well accepted that it would be defined in a forthcoming AR.<sup>100</sup> In the meantime, work measurement criteria for protective mask repair were completed by the Chemical Corps Training Command and forwarded by OCCm10 to TAG. It was expected that this action would lead to a substantial decrease in TOE personnel engaged in

98

(1) Ltr, CCm10 to CG ACm1C and MATCOM and CO ENCOM, 21 Sep 56, sub: Elimination of TA for Expendable Supplies. (2) Ltr, CCm10 to CO CmlC TNGCOM, 21 Sep 56, same subject. (3) Quart Hist Rpt, OACCM10 for P&D, Jul - Sep 56.

99

(1) DF, DCSLOG to CCm10, 12 Sep 56, sub: Elimination of TA for Expendable Supplies and Cmt 2, CCm10, 11 Oct 56. (2) Quart Hist Rpt, OACCM10 for P&D, Oct - Dec 56.

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Quart Hist Rpt, OACCM10 for P&D, Oct - Dec 56.

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protective mask repair.<sup>101</sup>

(C) Last year the Chemical Corps reviewed the chemical staff sections of the tentative 1956 ATFA infantry and armored divisions. Since that time the ATFA concept was replaced by the Pentomic organization of the three types of divisions -- ROCID (Infantry), ROTAD (Airborne), and ROCAD (Armor). ROCID and ROCAD had separate chemical staff sections composed of two officers and four enlisted men; ROTAD had only one chemical officer who served as assistant division G - 3. The report of troop test JUMP LIGHT, which tested ROTAD's organization recommended that there be no staff Chemical Corps personnel within an airborne division. During the 3d Quarter, FY 1957, a Command and General Staff College study, "Prediction and Reporting of Radiological Fall-out," recommended that each echelon from division through field army have a chemical staff section and that this section be responsible for predicting, reporting, and monitoring all radiological fallout. Moreover, it suggested that the staff chemical officer or his substitute be located at the Fire Support Control Center or the Tactical Support Center. Consequently, a re-evaluation of the chemical staff structure within the field army was about to be undertaken by the Chemical Corps.<sup>102</sup>

101

(1) Ltr, CGM10 to TAG, 20 Nov 56, sub: Development of Work Measurement Criteria for Service Type Personnel Included in TOE. (2) Quart Rev, Oct - Dec 56, p. 23.

102

Quart Rev, Class Sup, Jan - Mar 57, p. 5.

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Planning Activities

(U) As had been the case for the past several years, the effective scheduling of planning activities for FY 1957 was hindered by a deficiency in Department of the Army planning guidance. This situation prevented the development of realistic schedules or the formulation of forecasts to be used as guidelines for planning activities in the OACCMLO as well as its field activities.<sup>103</sup>

War Planning

(S) War planning in the Chemical Corps, accomplished by review and preparation of strategical and tactical plans and studies, provided for the proper and full utilization of chemical troops and material during time of war. For the greater part of the year planning in this field was directed toward limited wars in the Middle and Far East -- limited wars involving CER operations. SWAGGERSTICK, a plan which provided for the deployment of part of the Strategic Army Forces in the Middle East, was completed, and those Chemical Corps troops under the Chief Chemical Officer envisioned in this planning had requisitioned all TOE shortages. Basic loads of accompanying spare parts and munitions for the operations had been calculated and set aside in various depots.<sup>104</sup>

103

(1) Quart Rev, Class Sup, Jul - Sep, p. 7; Oct - Dec 56, p. 3. (2) Interv, Hist Off with Mr Max Bost, OACCMLO for P&D, 10 Jul 57.

104

(1) Quart Rev, Class Sup, Jul - Sep 56, p. 3; Oct - Dec 56, p. 3; Jan - Mar 57, p. 7. (2) Quart Hist Rpt, OACCMLO for P&D, Jan - Mar 57.

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(U) The Deputy Chief of Staff for Personnel (DCSPER) informally concurred in the request of the Chief Chemical Officer to raise the number of Chemical Corps Reserve general officer mobilization designation positions from two to four. Allocation of the two additional positions cannot be approved until the number of Department of the Army positions is increased.<sup>105</sup> In fact, DCSPER forwarded the letter of justification to other agencies as a model for this type of action. The two additional Reserve spaces were dependent upon Congressional approval, an action which had not taken place as the year closed.<sup>106</sup>

### Mobilization Planning

(U) During FY 1957 the Chemical Corps prepared mobilization program documents at OCCmlC and command levels, where appropriate, for each of its primary program documents. Installation level mobilization programming was accomplished primarily on a mobilization plan basis utilizing appropriate higher level mobilization program guidance. The phased Chemical Corps Mobilization TD Troop Basis for FY 1957 was submitted to the Department of the Army on 22 March 1957. This Troop Basis reflected approximately 60 percent reduction between M+3 and M+9 with a corresponding increase between M+9 and M+12. Based upon the M+12 strength in the FY 1957 Troop Basis, revised mobilization M+12 TD's were completed for each Chemical Corps TD activity. The M+12

105

See Summary of Major Events and Problems, FY 56, pp. 89 - 90 for the background of this request.

106

(1) Quart Rev, Class Sup, Jul - Sep 56, p. 7. (2) Bost interv, 20 Jul 57.

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TD's were not published, however, pending approval of the Troop Basis.<sup>107</sup>

(U) The Chemical Corps submitted revised mobilization designation TD's for the OCCmlO and all other Chemical Corps TD activities during the latter half of FY 1957 on a crash basis. These revised TD's reflected approximately 15 percent reduction under published tables. Approval of these TD's for publication was expected in the 2d Quarter, FY 1958. As an interim measure, the Department of the Army imposed a Chemical Corps assignment ceiling of 586 positions which was very close to the present number of reserve officers assigned. The short deadline imposed for these revisions eliminated the opportunity for proper co-ordination with field elements.<sup>108</sup> This program revision was caused by a change in regulations<sup>109</sup> which required mobilization designation positions to be related to current tables of distribution rather than M+12 mobilization TD's. The Chemical Corps felt that this revision failed to recognize the need for changes in organizational structure for mobilization. This view was shared by most of the Technical Services and received the support of DCSLOG. It seemed likely that, with DCSLOG support, DCSPER would agree to some modification in the regulation for the current revision of Mobilization Designation TD's which should be ready for

<sup>107</sup>

(1) Quart Rev, Class Sup, Jan - Mar 57, p. 4. (2) Bost interv, 10 Jul 57.

<sup>108</sup>

Bost interv, 10 Jul 57.

<sup>109</sup>

AR 140-145, 20 Nov 56, Army Reserve Mobilization Designations.

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publication early in FY 1958.<sup>110</sup>

(S) During the year the Chemical Corps completed its portion of a DA study which surveyed the damage expected from enemy atomic attacks on CONUS military installations and metropolitan areas. Phase I of this study indicated the amount of damage sustained under such attacks and the effect on manpower; production; existing materiel assets, installations, and facilities; military personnel and organization; operations; and training. Results of the study showed serious loss to Chemical Corps commands (with the exception of the Training Command), procurement offices, plants, reserve component troop units, and the production base for protective items. Minor damage would be sustained by Strategic Reserve Troop units, storage facilities, and installations. Phase II considered the materiel, troop, and installation capabilities of the Chemical Corps to support MCB-R-ASOP-58 before and after atomic attack, and showed a total loss of the USAREUR depot complex and chemical laboratory and processing capabilities.<sup>111</sup>

(C) The Chemical Corps Alternate Headquarters Plan (CMLC-AHP) was completed and published on 1 June 1957. This plan provided for the establishment of an emergency relocation site for the OCCm10 and other Chemical Corps Washington agencies at Fort Lee, Virginia, where DCSLOG and the chiefs of the other technical services will also relocate their headquarters. Earlier

<sup>110</sup>

Quart Revs, Class Sups, Jan - Mar 57, p. 4; Apr - Jun 57, p. 10.

<sup>111</sup>

(1) Quart Rev, Class Sup, Jan - Mar 57, p. 4. (2) Quart Hist Rpt, OACCM10 for P&D, Apr - Jun 57.

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in the year the Chemical Corps furnished the Signal Corps with an estimate of the communications support requirements needed at its alternate headquarters. An inspection of the office, billeting space, and filing facilities at Fort Lee revealed that these accommodations were adequate for the first thirty days of an emergency requiring relocation.<sup>112</sup>

(U) Operation ALERT - 1956, a national civil defense exercise, took place during the period 20 - 25 July 1956. In this exercise the Chief's Office, by CPX in place, simulated operations from the relocation site at Fort Lee. Chemical Corps recommendations based upon its experience in the operation included: (1) the need for more advance Department of the Army guidance as to the extent of DA and technical service participation in the exercise; (2) the need for an effective and standard damage reporting procedure as a basis for logistic resource estimates; and (3) the need for more equipment and for trained personnel to monitor fallout.<sup>113</sup>

(S) Operation ALERT - 1957 was much more extensively played than was its 1956 counterpart. Unfortunately, the necessary guidance for the exercise again was provided fairly late, a factor which adversely affected a well planned participation in the operations. Operation ALERT was played in three phases. The first phase (4 June - 11 July 1957) took place in the Office of the Chief Chemical Officer during normal duty hours. The second and third

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<sup>112</sup>

(1) Bost interv, 10 Jul 57. (2) Quart Rev, Class Sup, Apr - Jun 57, p. 10. (3) Quart Hist Rpt, OACCmlO for P&D, Jan - Mar 57.

<sup>113</sup>

Quart Rev, Class Sup, Jul - Sep 56, p. 7.

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Table 4 - Chemical Units and Their Location as of 30 June 1957

Type	Designation	Station	Type	Designation	Station
Cml Bn (Smoke Generator) HHD	4th	Germany	Cml Co (Depot) (ComZ)	66th	Ft McClellan, Ala.
	5th	Ft Bragg, N.C.		501st	Ft McClellan, Ala.
	218th	Ft McClellan, Ala.			
Cml Bn (Weapons)	2d	DPG, Utah	Cml Co (Maintenance)	11th	Ft Bragg, N.C.
Cml Co (Smoke Generator)	4th	Germany		12th	Germany
	44th	Germany		13th	Ft George G. Meade, Md.
	51st	Ft McClellan, Ala.		34th	Ft McClellan, Ala.
	62d	Ft McClellan, Ala.		59th	Ft McClellan, Ala.
	68th	Germany		505th	Ft Bragg, N.C.
	69th	Germany	Cml Co (Processing)	55th	France
	74th	Ft McClellan, Ala.		111th	Ft McClellan, Ala.
	84th	Ft Bragg, N.C.		317th	Ft McClellan, Ala.
	85th	Ft Bragg, N.C.	Cml Co (Service)	216th	RMA, Colo.
	86th	Ft Bragg, N.C.			
	87th	Ft Benning, Ga.	Cml Flt (Service)	50th	Ft Ord, Calif.
Cml Group (Field Army) HHD	81st	Ft Bragg, N.C.	Cml Det (Laboratory) (Mbl)	43d	Japan
Cml Group (ComZ) HHD	100th	Ft McClellan, Ala.	Cml Det (Tech Intelligence)	17th	Ft Detrick, Md.
Cml Bn (Service) HHD	1st	Germany		18th	Ft McClellan, Ala.
	3d	Ft Bragg, N.C.		19th	Germany
	83d	Ft McClellan, Ala.		48th	Germany
	85th	Ft McClellan, Ala.		51st	A Cml C, Md.
				52d	A Cml C, Md.
				503d	Japan
Cml Co (Decontamination)	21st	Ft McClellan, Ala.	Cml Laboratory	42d	A Cml C, Md.
	24th	Ft Bragg, N.C.		53d	Germany
	30th	Ft McClellan, Ala.			
Cml Co (Depot)	7th	Germany			
	8th	Ft McClellan, Ala.			
	9th	Ft Bragg, N.C.			
	61st	Ft Bragg, N.C.			

Sources: The Troop Program of the Army, FY 1957, Appendix I, Section VII, as of 30 June 1957.

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phases were to be played in July at the relocation sites. Operation ALERT would not be played under Alternate Headquarters Plan concepts in which relocation would either take place after warning of imminence of attack or after the attack had taken place. Rather, it would be a test of the planning system for mobilization readiness and the relocations would take place at a period some time before the attack.<sup>114</sup>

#### Troops

(S) At the end of FY 1957 there was a total of fifty-one Chemical Corps troop units on duty in the United States and overseas.<sup>115</sup> Fourteen units were located outside continental United States and were included in the overseas theater troop basis and not in the Chemical Corps TOE Troop Program. Of the thirty-seven units in the United States all but one were a part of the Strategic Army Troop Basis.<sup>116</sup> Twenty-three of these were assigned to the Chief Chemical Officer and the rest to CONUS Armies. On 30 June 1957 the authorized strength of the Strategic Army Force units assigned to the Chief Chemical Officer was 1,839 while the actual strength was 1,790.<sup>117</sup>

114

(1) Best interv, 10 Jul 57. (2) Quart Hist Rpt, OACGALO for P&D, Apr - Jun 57. (3) Quart Rev, Class Sup, Jan - Mar 57, p. 4.

115

See Table 4 for type and location of units.

116

The exception was the 505th Chemical Company (Maintenance) at Fort Bragg, N.C., which was part of the Continental Operating Force.

117

Quart Rev, Class Sup, Apr - Jun 57, p. 1.

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(S) Because of reduction in the troop ceiling for Chemical Corps units, six companies were reorganized from full to reduced TOE strength during FY 1957. Looking to FY 1958 and further reductions, two units, a maintenance company at Fort McClellan and a field depot company at Fort Bragg, have been scheduled for inactivation during the first quarter of the next fiscal year.<sup>118</sup>

(S) Early in the year the Chemical Corps was asked by DCSLOG to consider the desirability of including Type B TOE units in the Strategic Reserve. The Corps felt that these units having only a modified cadre strength were inappropriate for inclusion in this Strategic Reserve Troop Basis.<sup>119</sup>

(S) The Department of the Army and CONARC on 1 July 1956 adopted a revised procedure for evaluating the operational readiness of Strategic Reserve units. A formula was established to calculate the number of additional weeks of training a unit would need in order to attain minimum deployable status (operational readiness). This formula took into consideration such data as the existing level of individual and unit training and also the number of personnel actually assigned to each unit as compared to the authorized strength. The new evaluating procedure worked hand in hand with the priority system which placed Chemical Corps units into one of three classes according to the relative need for their services in time of mobilization. The three classes were: (1) Class 2A, where the objective is to attain and

<sup>118</sup>

(1) Ibid. (2) Interv, Hist Off with Mr Elgar H. Stabler, OACCMLO for for P&D, 9 Jul 57.

<sup>119</sup>

(1) DF, DCSLOG to CCmLO, 6 Aug 56, sub: Type B, TOE Units and Cmt 2, 6 Sep 56. (2) Quart Hist Rpt, OACCMLO for P&D, Jul - Sep 56.

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maintain for each of its units full operational readiness wherein additional training time will not be needed; (2) Class 2, where the goal is to attain and maintain a level of readiness wherein not more than eight weeks of additional training would be required to achieve full operational readiness; and (3) Class 3, whose objective is to prepare units at least to a point where they would attain minimum deployable status with eight to twenty-one weeks of additional training time.

(S) Three Chemical Corps units were designated to be in Class 2A, three others in Class 2, and seventeen in Class 3. Those in Class 2A received priority in personnel allocations, funds, materiel, and training effort. Much was done in FY 1957 toward achieving the readiness goals of most Chemical Corps units. At the end of the 1st Quarter only four units had attained minimum deployable status, but at the end of the 4th Quarter fourteen had reached this level of preparedness. This progress was made despite the fact that the burden of training for the 51st Chemical Company (Smoke Generator), the 59th Chemical Company (Maintenance), and the 85th Chemical Battalion (Service) HHD at Fort McClellan (as well as the 9th Chemical Company (Depot) at Fort Bragg) was increased during the 3d Quarter because of the receipt of additional personnel in preparation to GYROSCOPE to USAREUR early in FY 1958.<sup>120</sup> By 30 June 1957 the McClellan units had achieved operational readiness except the 85th Chemical Battalion (Service) HHD which still needed one

120

These units would replace in Europe the following outfits: 1st Cml Bn (Svc) HHD, 7th Cml Co (Depot), 12th Cml Co (Maint), and 69th Cml Co (SG). See ltr, TAG to DCSLOG et al., 26 Dec 56, sub: Letter of Instruction (Rotation Instructions No. 7).

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week of training.<sup>121</sup>

(S) Last year saw the inactivation of three smoke generator companies stationed in the British Isles and the planning for a further reduction of this type of unit in Great Britain.<sup>122</sup> During the early part of FY 1957 the 6th Chemical Battalion (Smoke Generator) HHD and the 45th, 46th, 81st, and 98th Chemical Companies (Smoke Generator) were inactivated.<sup>123</sup> This action was based upon an Air Force decision to eliminate requirements for smoke generator units in airfield protection, the chief reason for this being the presumed proficiency of USSR aircraft in bombing techniques which would make smoke over an airfield unnecessary.

#### Training

##### Chemical Corps Training Command

(U) The U.S. Army Chemical Corps Training Command, Fort McClellan, Ala., is a Class II activity of the Chief Chemical Officer and functions under the staff supervision and operational control of the ACCm10 for Planning and Doctrine. The mission of the Training Command was to direct, control, supervise, co-ordinate, and inspect all training of military individuals and units

121

Quart Revs, Class Sup, Jul - Sep 56, pp. 3, 8; Oct - Dec 56, pp. 5, 23; Jan - Mar 57, pp. 7, 39; Apr - Jun 57, pp. 5, 39.

122

Summary of Major Events and Problems, FY 56, p. 95.

123

Ltr, TAG to CCm10 et al., 13 Aug 56, sub: Inactivation of Certain Chemical Units.

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CHEMICAL CORPS  
HEADQUARTERS, UNITED STATES ARMY CHEMICAL CORPS TRAINING COMMAND

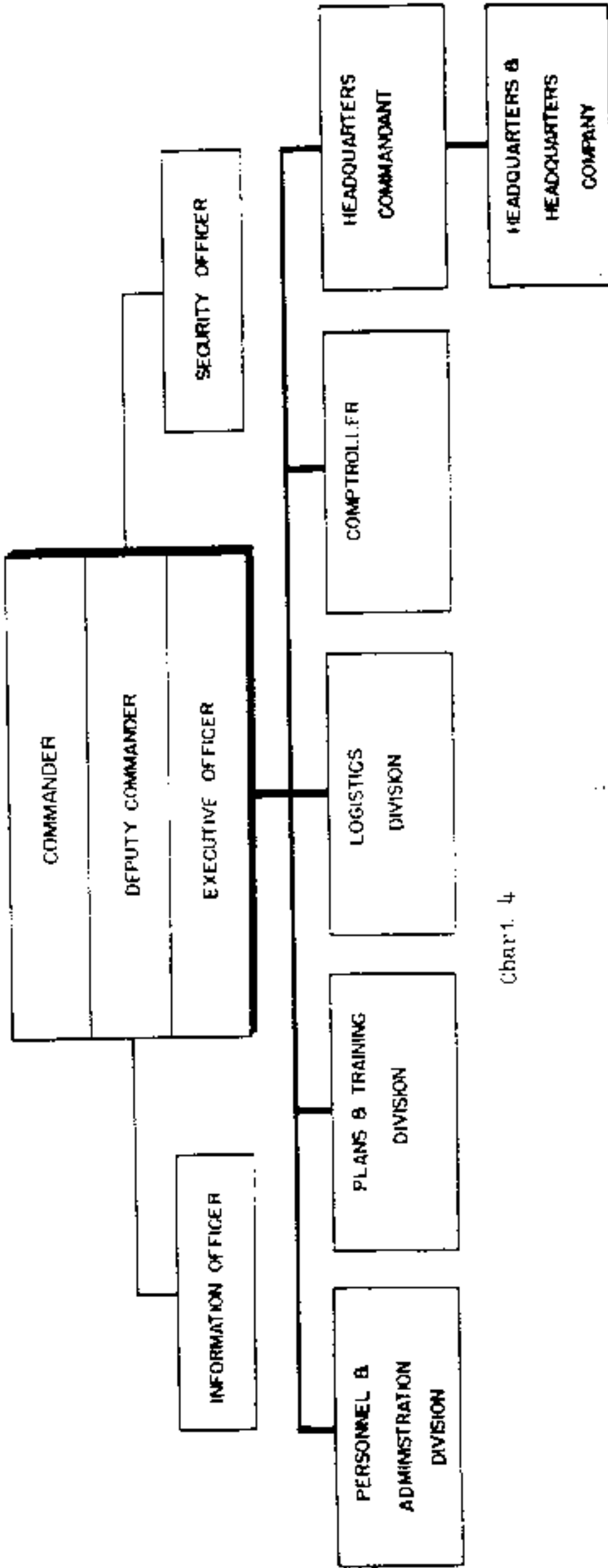




Chart 1. 4

SUBMITTED:  J.M. PALMER COLONEL, CHL C COMMANDING	APPROVED:  WILLIAM M. CREAM MAJOR GENERAL U.S.A. CHIEF CHEMICAL OFFICER
DATE: 1 MARCH 1957	PREPARED BY: COMPTROLLER

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assigned to the Chief Chemical Officer, except as specifically directed by the Chief Chemical Officer.

(U) There was little change in the structure of the Training Command headquarters during FY 1957 although the designations of most of its principal divisions were revised.<sup>124</sup> A major reorganization took place in the command's principal component, the Chemical Corps School, and that subject will be treated below.<sup>125</sup>

(U) A Department of Army policy change during the year affected the Training Command's funding procedures and promised to insure better support for the overall training mission. The Department of the Army ruled that the various tenants at multi-command installations would pay their proportion of the funds for operation and maintenance of facilities conducted in their support. Consequently, the Command was directed to provide its share of the expense for such post activities as post headquarters, special services, motor pools, communication, and troop information. The Chemical Corps Training Command reacted favorably to the new policy for it felt that better logistical support by Headquarters, Fort McClellan, would result. Formerly, requests for certain supplies, gasoline, and maintenance, may have been left unfulfilled because of short supply or higher priority.<sup>126</sup>

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<sup>124</sup>

See above, Chart 4.

<sup>125</sup>

See below, pp. 73 - 75.

<sup>126</sup>

(1) Interv, Hist Off with Col Marvin A. Middlebrooks, Deputy CO, TNGCOM, 25 Jun 57. (2) Interv, Hist Off with Mr White, Off of Compt, TNGCOM, 26 Jun 57. (3) Ltr, TAG to Chs of Tech Servs, et al., 17 Jan 57, sub: Administration of Operation and Maintenance of Facilities Services at Multi-Command Installations in CONUS, FY 1958.

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(U) Better relations between the Training Command and Headquarters, Fort McClellan, were achieved by several circumstances which aided in the development of a mutual understanding of one another's problems.<sup>127</sup> One was the support provided by the Training Command for the summer Army Reserve training conducted at Fort McClellan. During the summer of 1957 the 83d Chemical Battalion, Service, devoted its full time to the provision of administration and housekeeping support for this training mission, a responsibility not of the Training Command but of the post commander. Although formal training of 83d Battalion ceased during this support period, all efforts were made to assign individuals to jobs which would coincide with their regular positions. This was possible, of course, only for men involved in administrative and housekeeping duties such as supply, mess, transportation, and personnel administration.<sup>128</sup> Another factor was the appointment during the year of Chemical Corps personnel to the Post Planning Board. With the large area of Fort McClellan devoted to Chemical Corps activities, this was a very welcome step. Board activities ranged from naming streets to decisions as to the location and type of new construction. A third circumstance tending toward better relations was the appointment of Col. Charles A. Cain, a Chemical Corps officer who formerly commanded the 100th Group, as Deputy Commander, Fort McClellan.<sup>129</sup>

<sup>127</sup>

Middlebrooks interv, 25 Jun 57.

<sup>128</sup>

(1) Ibid. (2) Interv, Hist Off with Col Maurice A. Paerenboom, CO 100th Group, 26 Jun 57.

<sup>129</sup>

(1) Middlebrooks interv, 25 Jun 57. (2) White interv, 26 Jun 57.

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(U) At the request of the Continental Army Command the Chemical Corps Training Command prepared CBR proficiency tests to be given to individuals and units in the Continental Armies and the Military District of Washington. These tests, which had not been given since 1954, were to evaluate the "readiness of individuals and units to operate under conditions of CBR warfare." Changes made in testing procedure were based upon revisions in doctrine and corrections of certain administrative flaws determined in the testing program of FY 1954.

(U) The preparation of the tests as well as a conference and rehearsal for representatives of each Army area took place at Fort McClellan during the last part of FY 1956. The participants returned to their headquarters and trained the teams which actually administered the tests. Recordings played over a loud speaker presented situations the solution to which were either acted out or, in cases such as the identification of CBR markers, chosen from a series of cards. Unit tests usually took the form of map exercises. Results were returned to the Chemical Corps Training Command where they were analyzed by the Chemical Corps School. The number of individuals and units tested greatly increased over the sampling of 1954. Three years ago 21,750 were examined as compared to 56,922 in 1957. Unit tests were given to one-fifth of all General Reserve TOE companies, one-third of the battalions, two-thirds of the regiments, and all of the divisions.<sup>130</sup>

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<sup>130</sup>

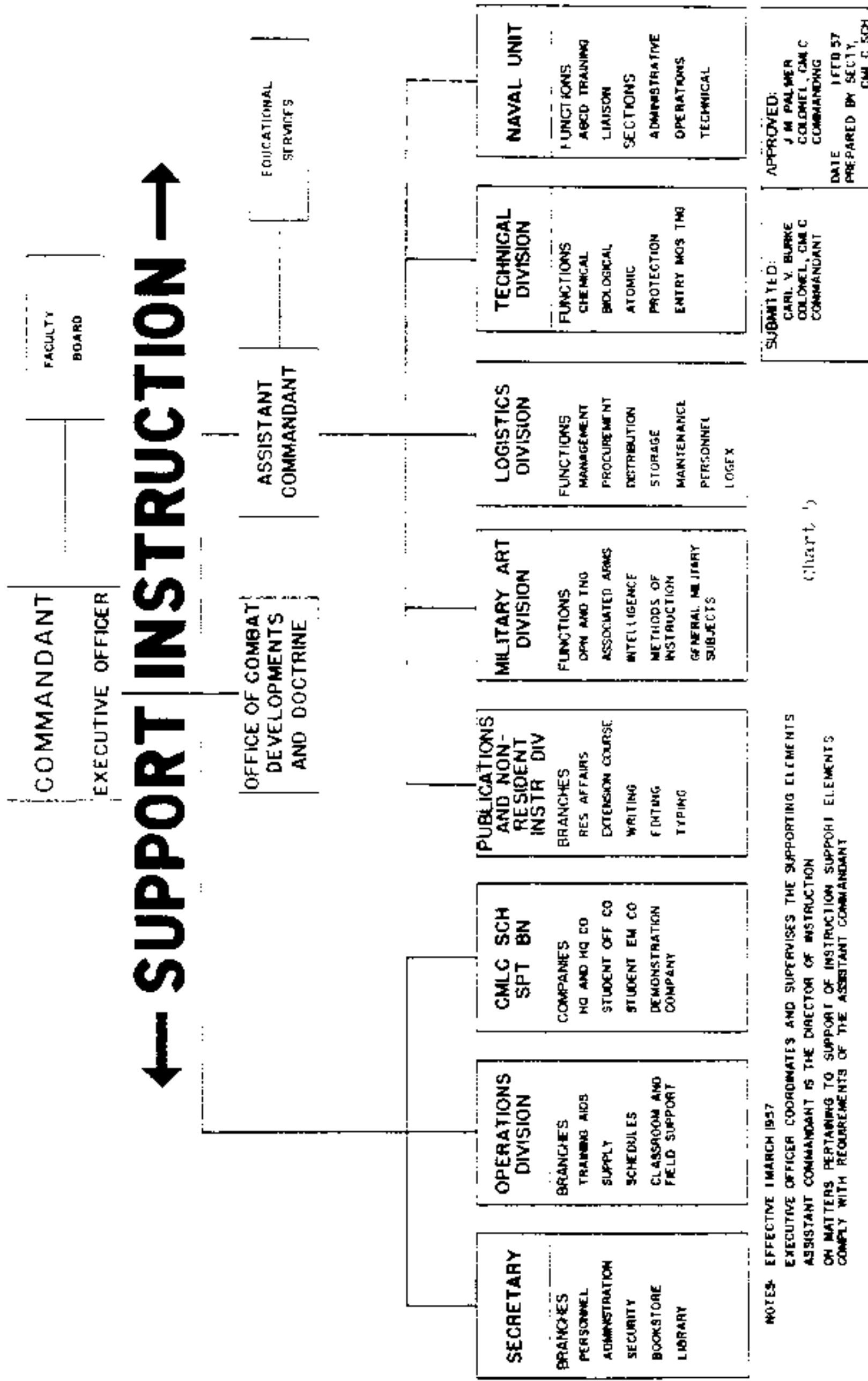
(1) Interv, Hist Off with Capt R. C. Effinger, Jr., 100th Group, 27 Jun 57. (2) Interv, Hist Off with Lt Col David V. S. Kirkpatrick, TNGCOM, 27 Jun 57. (3) Ltr, CO TNGCOM to CCmlO, 13 May 57, sub: Final Report CBR Proficiency Test FY 1957. (4) Rpt, TNGCOM, 10 May 57, Results of Evaluation of CBR Proficiency Tests, FY 1957, of General Army Interest.

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# UNITED STATES ARMY CHEMICAL CORPS SCHOOL



NOTES: EFFECTIVE 1 MARCH 1957  
 EXECUTIVE OFFICER COORDINATES AND SUPERVISES THE SUPPORTING ELEMENTS  
 ASSISTANT COMMANDANT IS THE DIRECTOR OF INSTRUCTION  
 ON MATTERS PERTAINING TO SUPPORT OF INSTRUCTION SUPPORT ELEMENTS  
 COMPLY WITH REQUIREMENTS OF THE ASSISTANT COMMANDANT

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### The Chemical Corps School

(U) Fiscal year 1957 saw a major reorganization of the Chemical Corps School. Sweeping changes were made which involved not only realignment of responsibility but innovation in concept.<sup>131</sup> Among the major principles underlying the reorganization were: (1) alignment of the instructional divisions with the major functions of the Chemical Corps; (2) control by the School of those elements which support it; (3) preparation by the faculty of the drafts of written material which formerly had been accomplished by the Publications Division; and (4) the provision of a combat developments and doctrine organization within the School's structure.

(U) In conformity with these concepts the Commandant reorganized the structure of the divisions at the School. A Logistics Division was created which combined the functions of the S - 1 and S - 4 Branches of the old Military Arts Division with the recently introduced management subjects. A new Military Art Division was established including the S - 2 and S - 3 functions of the old division as well as those of the Ground and Associated Arms Division, which was abolished.<sup>132</sup> Thus were combined in one division all those areas which truly could be classified as subjects of Military Art.

131

The portion on the reorganization of the Chemical Corps School is based on: (1) Interv, Hist Off with Col Carl V. Burke, Comdt, Chemical Corps School, 23 Jul 57. (2) Col Carl V. Burke, Discussion, Chemical Corps School Reorganization Plan, 1 Feb 57. (3) U.S. Army CmlC TMCOM, Manual of Organization and Functions, 20 May 57.

132

This division had included representatives from the Infantry, Artillery, Armor, Airborne Infantry, and Marine Corps who instructed in the organization and mission of their respective services.

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The third division, Technical, remained as it had been. These instructional divisions now served as counterparts to the major functions of the Chemical Corps.

(U) The Commandant also made changes in the non-instructional organization of the School. The Publications and the Extension Divisions were combined into one, now called the Publications and Non-Resident Instruction Division. The former Research and Analysis Division became the Office of Educational Services in the Office of the Assistant Commandant. This all-civilian organization no longer served as an "inspecting" agency but provided professional advice and assistance to the faculty upon request.

(U) A major change welcomed by the School, and encompassing the second of the principles listed above, was the transformation of the Special Troops into the School Support Battalion. This unit previously had occupied a parallel position with the School in the chain of command.

(U) In implementing the third major principle the Commandant directed the officers of the instructional divisions to prepare initial drafts of manuals and other written media. The theory behind this move was a logical one: let those who teach doctrine write doctrine. Who else would be better prepared for the task? Although the spaces for military writers were now removed from the Publications and Non-Resident Instruction Division, it would maintain a staff of editors whose job it was to put the material received from the instructional divisions in proper form for publication.

(U) Created on the organizational chart, although not actually functioning because of limitations in personnel, was the Office of Combat Developments and Doctrine. This office had no counterpart in the previous

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organization. The Commandant felt that, despite the location at Fort McClellan of the Field Requirements Agency with its doctrinal developing capability, sound organization and efficient operation called for an organic doctrinal development office within the School. The function of combat developments also was included in the office since that area represents "the tools by or thru which doctrine is expressed..."<sup>133</sup>

(U) At the end of the fiscal year the new organization had been in effect for only three months, too little time to properly evaluate the changes which were made. Personnel levels, a chronic problem at the Chemical Corps School, would doubtless influence some aspects of the reorganization. Indeed, as has been shown, the proposed Office of Combat Developments and Doctrine remained unmanned. It was also too soon to evaluate the effect of placing writing duties upon a faculty which already was considered too small to answer the teaching demands which had been placed upon it.

(U) For some years there had been a more or less chronic personnel problem at the Chemical Corps School. This problem had three facets: numbers, grade distribution, and quality. Fiscal year 1957 saw continuing difficulties in the first problem area and some help in the second and third.

(U) The actual strength of officers assigned to the School at the end of the fiscal year was 93 as compared to an authorized TD allotment of 115. Last year the respective figures were 103 and 115. This loss of personnel, which, if anything, will be accentuated in the coming year, promised to place

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133

Col Carl V. Burke, Discussion, Chemical Corps School Reorganization Plan, 1 Feb 57.

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increasing demands upon the existing faculty members.<sup>134</sup> The grade distribution of officers at the School also caused concern, although this problem was alleviated during the year. The School had suffered in the past by an overabundance of lieutenants and, as a corollary, a shortage of majors and lieutenant colonels. This meant that instruction was often in the hands of junior officers who, regardless of the excellence of their other qualities, lacked the experience and background so necessary for classroom presentations. Fiscal year 1957 saw a reduction in the number of lieutenants actually assigned to the Chemical Corps School and an increase in the captains and majors. Unfortunately, the number of lieutenant colonels at the School also declined.<sup>135</sup>

(U) On the positive side of the personnel picture was a marked improvement in the quality of the personnel assigned to the Chemical Corps School. The Career Management Division, OCCm10, was largely responsible for this situation which helped reduce the curse of inadequate numbers.<sup>136</sup>

(U) Fiscal year 1957 witnessed several additions in the courses given at the Chemical Corps School. In line with the overall Army school program providing for shorter "associate" courses, the School offered for the first time an Associate Advanced Chemical Officer Course. This 15-week course, designed

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134

(1) Ltr, Comdt, CmlC School to CCm10, 21 May 57, sub: Chemical Corps School Mission Versus Reduced Chemical Officer Assignment Level. (2) Quart Hist Rpts, CmlC School, Apr - Jun 56, Apr - Jun 57.

135

(1) Quart Hist Rpts, CmlC School, Apr - Jun 56, Apr - Jun 57. (2) Ltr, Lt Col J. S. Terrell, OACCm10 for P&D to CCm10, n.d., sub: Annual Training Inspection of the Chemical Corps School.

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Burke interv, 23 Jul 57.

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for those who for various reasons were unable to enroll in the regular advanced course, had a disappointingly small enrollment of fourteen. The first class of the Allied Chemical Officers Basic Course was held during the year attended by officers from Denmark, West Germany, Japan, South Korea, Turkey, and Greece. Further classes in the course have not been scheduled, however, because of a CONARC policy of having Allied officers integrated into regular school classes. A 6-week Chemical Corps Orientation Course designed for those who had recently been assigned to high-level positions in the Chemical Corps, including civilians, was conducted for the first time in FY 1957. Its twenty-nine students received three weeks of CER instruction and three weeks of management instruction, the latter coinciding with that given to the Advanced Class. CONARC cancelled the 1957 class of the Chemical Company Officer Course, first given last year, because of insufficient enrollment resulting from unexpected overseas requirements.<sup>137</sup>

(U) The enrollment of students rose from 2,289 during 1956 to 2,549 during 1957. In spite of the increase, student input did not come up to expectations. There were several reasons for this: (1) low input to Class No. 1, Chemical Officer Associate Advanced Course; (2) cancellation or under-subscription of CER Officer Course classes; (3) cancellation of several Chemical Entry classes; (4) cancellation of the Chemical Company Officer class.<sup>138</sup>

137

(1) Quart Hist Rpt, CmlC School, Oct - Dec 56. (2) Interv, Hist Off with Lt Col Kenneth W. Copeland and Mr James Edwards, OACCmlO for P&D, 10 Jul 57. (3) Interv, Hist Off with Capt Edward A. Drury, CmlC School, 25 Jun 57.

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Quart Rev, Jul - Sep 56, p. 27; Oct - Dec 56, p. 25; Jan - Mar 57, p. 17; Apr - Jun 57, p. 19.

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### Non-Resident Instruction

(U) During the year the Chemical Corps School accomplished much toward the revision of the Extension Course program. As mentioned in last year's Summary of Major Events and Problems (p. 104), CONARC had directed that the prefixed series, 10, 20, 30, 40, and 50, were to be replaced by subcourses consecutively numbered in the order in which they should be taken. This change enabled the Extension program to parallel, as far as possible, the resident and USAR School instruction. Another change in policy saw the Infantry School receive the administrative responsibility for all of the precommissioned program (the old 10 series). The Chemical Corps would continue the supervision of those students who entered the program before 2 July 1956. One unforeseen complaint arising from the new Extension Course breakdown came from the National Guard. That organization had used the old numbered series as a partial requirement for the promotion of officers. The revision offset this evaluation scheme. As the year closed, the Chief's Office was in the process of correlating the number sequence of the new system with that of the old in order to continue to meet National Guard requirements.<sup>139</sup>

(U) Because of the loss of precommissioned students there was a decreased enrollment in the Chemical Corps Extension Course Program in 1957 -- 1,690 students at the beginning of the fiscal year as compared to 1,416 at the end. On the other hand, there was a trend toward increased activity on the part of the fewer students who remained. The preparation of new subcourses

139

(1) Ltr, CGMLO to CG CONARC, 6 Mar 56, sub: Reorganization of the Army Extension Course Program, with 1st Ind, 26 Apr 56. (2) Quart Hist Rpt, CmlC School, Jul - Sep 56.

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during the year generally fell short of the objectives, largely because of the fewer civilian and military writers available at the School.<sup>140</sup>

(U) During the year the Chemical Corps ROTC unit at Ohio State University was converted to General Military Science (GMS) status. This action, in line with Department of the Army policy favoring GMS units, left the Corps with only four ROTC organizations, those at MIT, Texas A&M, Georgia Tech, and Purdue. In another action planned last fiscal year and put into effect in FY 1957, the Chemical Corps revised its USAR School program so that students could enroll in the first quarter of any of the three annual phases.<sup>141</sup>

(J) The Chief Chemical Officer in March 1957 established the U.S. Army Chemical Corps Orientation Unit with station at the Army Chemical Center.<sup>142</sup> This organization, which received administrative and logistical support from the Chemical Corps Board, was responsible for briefing various elements of the Department of Defense and for planning the program of instruction for the proposed resident High Level Orientation Course. The purpose of this course was the familiarization of senior commanders and key staff officers with the current capabilities of CER Warfare. Further action on this proposed 3½-day course was held in abeyance at the close of the year because of budget

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140

Quart Rev, Apr - Jun 57, p. 21.

141

(1) Copeland-Edwards interv, 10 Jul 57. (2) Summary of Major Events and Problems, FY 56, pp. 104 - 07.

142

OCCm10 GO 10, 22 Mar 57.

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considerations.<sup>143</sup>

### Publications

(U) Last year's Summary of Major Events and Problems called attention to the fact that the DA literature program had been revised from a yearly to a bi-annual basis. As a result of this the Chemical Corps literature programs for fiscal years 1956 and 1957 were combined. Reasons given for this change included the lack of doctrinal data for several of the manuals and the time required to obtain a review of drafts from experienced officers stationed overseas as well as in CONUS. Experience proved that even a two-year program did not allow sufficient time to correlate the development of doctrine and its publication in manual form.<sup>144</sup>

(U) Major accomplishments during FY 1957 included the publication of TC 3-2, "Radiological Surveys," and TM 3-250, "Storage, Shipment and Handling of Chemical Agents and Hazardous Chemicals." Also produced during the year were two training films, TF 3-2431, "Radiological Surveys," and TF 3-2499, "Individual Protection Against CER Attack." The latter was a remake of TF 3-1766 which had been declared obsolete.

(U) As a matter of interest, of the eight films given A priority in the FY 1957 Department of the Army film program, the first four were Chemical Corps projects. One of the four, TF 3-2431, was produced and distributed

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143

(1) Schmelzle interv, 9 Jul 57. (2) Quart Hist Rpt, OACCmlO for P&D, Apr - Jun 57.

144

(1) Waxman interv, 14 Aug 57. (2) See above, pp. 45 - 46.

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during the fiscal year and the other three are scheduled for release early in FY 1958.<sup>145</sup>

Field and Logistical Exercises

(C) Exercise KING COLE was held in the Louisiana Maneuver Area from 27 March to 16 April 1957 with a peak strength of 21,720 troops participating.<sup>146</sup> First among the objectives of this army command post and field training exercise was to provide staff and command training in tactical, intelligence, and logistical operations under assumed conditions of extensive atomic, CBR, and electronic warfare capabilities by both sides.

(C) Two Chemical Corps units, the 218th Chemical Battalion (SG) HHD and the 18th Chemical Detachment (TI), with a total strength of thirty-five, participated in KING COLE. This was in marked contrast to last year's Exercise SAGEBUSH where as many as twelve Chemical Corps units had taken part in the maneuvers.<sup>147</sup> Chemical logistical play in KING COLE was extremely limited. Player units minimized the problem of resupply, decontamination, and barrier clearance. There were no requests for chemical logistical support made by the XVIII Airborne Corps (the principal friendly combat unit) to the 15th

145

Interv, Hist Off with Mr J. P. Coyle, OACCM10 for P&D, 14 Aug 57.

146

Sources for this section were (1) Rpt, CO 218th Cml Bn (Smk Genr) to CO 100th Cml Grp (ComZ), 13 May 57, sub: Participation in Exercise King Cole, w/incl, sub: Final Report Exercise King Cole (218th Cml Bn (Smk Genr)); (2) Rpt, Hqs Exercise King Cole, Ft. Hood, Tex., to CONARC, 13 Jun 57, sub: Final Report, Exercise KING COLE, Part I (less annexes) and Part II.

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Summary of Major Events and Problems, FY 56, p. 113.

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Logistical Command (the principal friendly supply organization).

(C) Mobility of Chemical Corps units was stressed during the exercise. The XVIII Airborne Corps commander believed in the extensive use of smoke and coined the term "mobile smoke," a concept not envisioned in Chemical Corps doctrine. The phrase was defined as the ability to move and operate with any type of combat task force. The 218th Battalion was employed extensively by the 82d Airborne and the 3d Infantry Divisions, both of which made maximum use of smoke. Another reason for the emphasis on mobility throughout the maneuvers was the employment of atomic weapons which necessitated daily movements, usually under the cover of darkness. Units which did not move suffered nuclear attack.

(C) Chemical Corps participants made a number of recommendations at the end of the exercise. Because too much manpower and time were lost setting up and tearing down tent installations in the course of the daily moves, observers suggested that an operations van replace the tentage which now houses headquarters. It was also discovered that current communications within the battalion were inadequate, and a greater allocation of radios was recommended. Furthermore, Exercise KING COLE showed that under fast changing circumstances a need existed for better contact between staffs of higher headquarters and small units supporting a division. Such units were often overlooked or forgotten during the maneuvers.

(FOUO) LOGEX 57, the annual logistical exercise conducted for the administrative and technical service schools of the Army with the cooperation of the Navy, Air Force, and State Department, was held at Fort

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Lee, Va., during the period 12 - 18 May 1957.<sup>148</sup> Sixty-nine Chemical Corps officers and thirty enlisted men participated in the exercise at a cost to the Chemical Corps School of an estimated \$9,280.00.

(FOUO) Both friendly and aggressor forces engaged in CBR warfare during LOGEX 57. They used persistent and non-persistent agents, although the only agent referred to by name was mustard. Friendly forces used chemicals in order to place requirements for chemical munitions upon the players. Aggressor forces used chemical agents in problems involving contamination of road blocks and mines, as well as in attacks on various installations. Both sides simulated radiological fallout on a realistic basis in regard to extent and time limit of contamination.

(FOUO) As a result of this year's exercise, the Chemical Corps School recommended that in the preparation of scenario problems involving Rear Area Security Controller (RASC) operations subsequent to atomic attacks, the role of the staff chemical officer be developed in conformance with his duties as delineated in Department of the Army literature. The school also suggested that key positions in the offices of ACoFS G - 3 and ACoFS G - 4 be filled by officers selected by CONARC and that player instructions in security procedures be included in the Manual for Play, LOGEX 58. It was felt that Technical Service units should be located for maneuver play in areas other than those in which their respective major command staff sections operate.<sup>149</sup>

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148

This section on LOGEX 57 was based on Report of the Maneuver Director, LOGEX 57, 24 Jun 57.

149

Rpt of Maneuver Director, LOGEX 57, pp. 96 - 97.

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Intelligence

(J) In fiscal 1957, the second year of its existence, the Chemical Corps Intelligence Agency (CCIA) began to resolve many of the problems inherent in a new organization.<sup>150</sup> Recruitment of qualified personnel -- both civilian and military -- made considerable strides during the year and authorized levels were attained in all categories but enlisted men. As of June 1957, 40 civilians were employed which represented a 400 percent increase over the previous year. A personnel problem not completely solved was the lack of qualified technical intelligence officers. Studies were undertaken to determine methods of insuring the availability of such people within the Chemical Corps. Much of the problem was overcome through the personal efforts of the staff in recruiting the necessary military personnel.

(J) Effective 1 July 1956, the Technical Intelligence Office, CCIA, was established at Fort Detrick, Md., to co-ordinate and guide the intelligence activities of that station toward the achievement of an intelligence effort integrated with other areas of the Chemical Corps mission. Funds for another such office at Army Chemical Center have been made available, but insufficient time for planning and co-ordination with the Office of the Assistant Chief Chemical Officer for Planning and Doctrine and the Commanding General, Army Chemical Center and Chemical Corps Materiel Command, precluded its establishment during the 4th quarter.

(S) A program to provide increased guidance for intelligence collectors

150

This section is based on (1) Quart Revs, Class Sups, Jul - Sep 56, pp. 5 - 6; Oct - Dec 56, pp. 7 - 8; Jan - Mar 57, pp. 9 - 10; Apr - Jun 57, pp. 7 - 9. (2) Quart Hist Rpts, CCIA, FY 57. (3) Interv, Hist Off with Lt Col Donald G. McNamara, CCIA, 9 Jul 57.

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received emphasis during the year. Through the media of Specific Requests for Information, Intelligence Collection Memoranda,<sup>151</sup> and Intelligence Collection Guides, Army attaches and other U.S. collecting agency personnel were informed of CCIA intelligence objectives and programs. The result was a marked increase in the amount of information received by CCIA. The Chemical Corps participated in the Eighth Annual War Office Technical Intelligence Conference in London. In addition, an important liaison visit to Europe was undertaken during FY 1957. Collection activities and guidance were fully discussed with civilian and military representatives in London, Paris, Rome, and Copenhagen, as well as with USAREUR Chemical Corps and G - 2 personnel and with Chemical Corps assistant attaches. The trip to Sweden -- a country whose accomplishments in the CER field had been noteworthy -- was particularly rewarding in that it established a quid pro quo basis for the exchange of information. The liaison mission resulted in the development of an increased capability for future collection.

(S) CCIA undertook numerous briefing assignments and was required to resume the preparation and production of brochures for selected attaches-designate. Sixteen such brochures were completed by the end of the fiscal year. CCIA also presented briefings to members of the 39th and 40th Attache Classes, the Strategic Intelligence School (SIS), as well as briefings for the Commanding General, Second Army, and 400 staff members. Also, in

<sup>151</sup>

The four memoranda completed and forwarded to the field in FY 1957 were: (1) Production and Storage of Chemical Warfare Materiel in Poland; (2) Production and Storage of Chemical Warfare Materiel in Czechoslovakia; (3) Production and Supply of CER Materiel in Israel; and (4) Collection of Sino-Soviet Eloc Materiel.

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conjunction with a joint operation conducted by the Central Intelligence Agency and Assistant Chief of Staff, Intelligence (ACSI), the CCIA expended 380 manhours screening and interrogating a group of Hungarian refugees at Fort Kilmer, N. J. The result was forty debriefings and thirty-five extremely informative intelligence reports on Hungarian and USSR CBR capabilities. During the 4th quarter CCIA continued to interrogate certain Hungarians at their final destinations in the United States.

(S) A considerable number of studies representing a wide range of intelligence topics were produced during the year. Among them were several Intelligence Agency Studies dealing with chemical warfare training in the USSR and some Soviet satellites, as well as with foreign CBR developments and logistical trends. DA Pamphlet 30-10-2, "Foreign Military Weapons and Equipment, Soviet Satellites," and DA Pamphlet 30-12-3, "Foreign Military Weapons and Equipment, Chemical Equipment, North Atlantic Pact Countries," were completed and contributed essential technical, tactical, and recognition data on all types of chemical warfare materiel employed by foreign ground forces. In addition, a number of CBR Estimates were compiled.<sup>152</sup> and 123 items of foreign CW materiel were acquired (as compared to an expected acquisition of 200 items) and analyzed. A number of contributions were made

<sup>152</sup>

The final draft of the estimate on North Korea was completed and being reviewed by ACSI at the end of FY 1957. Also, initial drafts of CBR Estimates on Indochina, the Baghdad Pact countries, East Germany, and Hungary were being reviewed as of 30 July 1957.

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to the National Intelligence Survey program.<sup>153</sup> The Intelligence Annex of the "Estimate of the GER Situation," was revised by CCIA and brought up to date and was well received by ACSI and Central Intelligence Agency.<sup>154</sup> All deadlines for scheduled and recurring reports for FY 1957 were met.

153

Contributions were made in the following areas: Finland, Nationalist China, Netherlands, Rumania, and North Vietnam. A total of 57 NIS contributions were programmed during the year and 54 were completed. During FY 1957, ACSI cancelled all requirements for NIS, Sections 18, 76, and 80, and there will be no requirements for these sections in the foreseeable future.

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McNamara interv, 9 Jul 57.

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RESEARCH, DEVELOPMENT AND ENGINEERING

Administration

(U) The funds obligated for research and development as of 30 June 1957 were \$38,065,000, 43 percent of the Corps' actual obligations, and a decrease from the \$41,953,000 obligated by the end of FY 1956.<sup>155</sup>

(C) The research and development funds received from other agencies were as follows:

<u>Source</u>	<u>Amount as of 30 June 1956</u> <sup>156</sup>	<u>Amount as of 30 June 1957</u> <sup>157</sup>
Navy	\$1,081,517	\$1,064,904
Air Force	1,768,860	1,066,778
Ordnance	55,000	333,147
Surgeon General	150,000	405,204
Quartermaster	144,770	122,735
National Security Agency	10,000	-----
Armed Forces Special Weapons Project	187,671	289,616

(C) Four agencies of the Chemical Corps were responsible for the projects in research, development, engineering and testing. These were the

155

(1) Quart Rev, Apr - Jun 56, p. 17. (2) Quart Rev, Apr - Jun 57, p. 102.

156

CCTC Item 3275.

157

CCTC Item 3323.

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# U S ARMY CHEMICAL CORPS RESEARCH AND DEVELOPMENT COMMAND

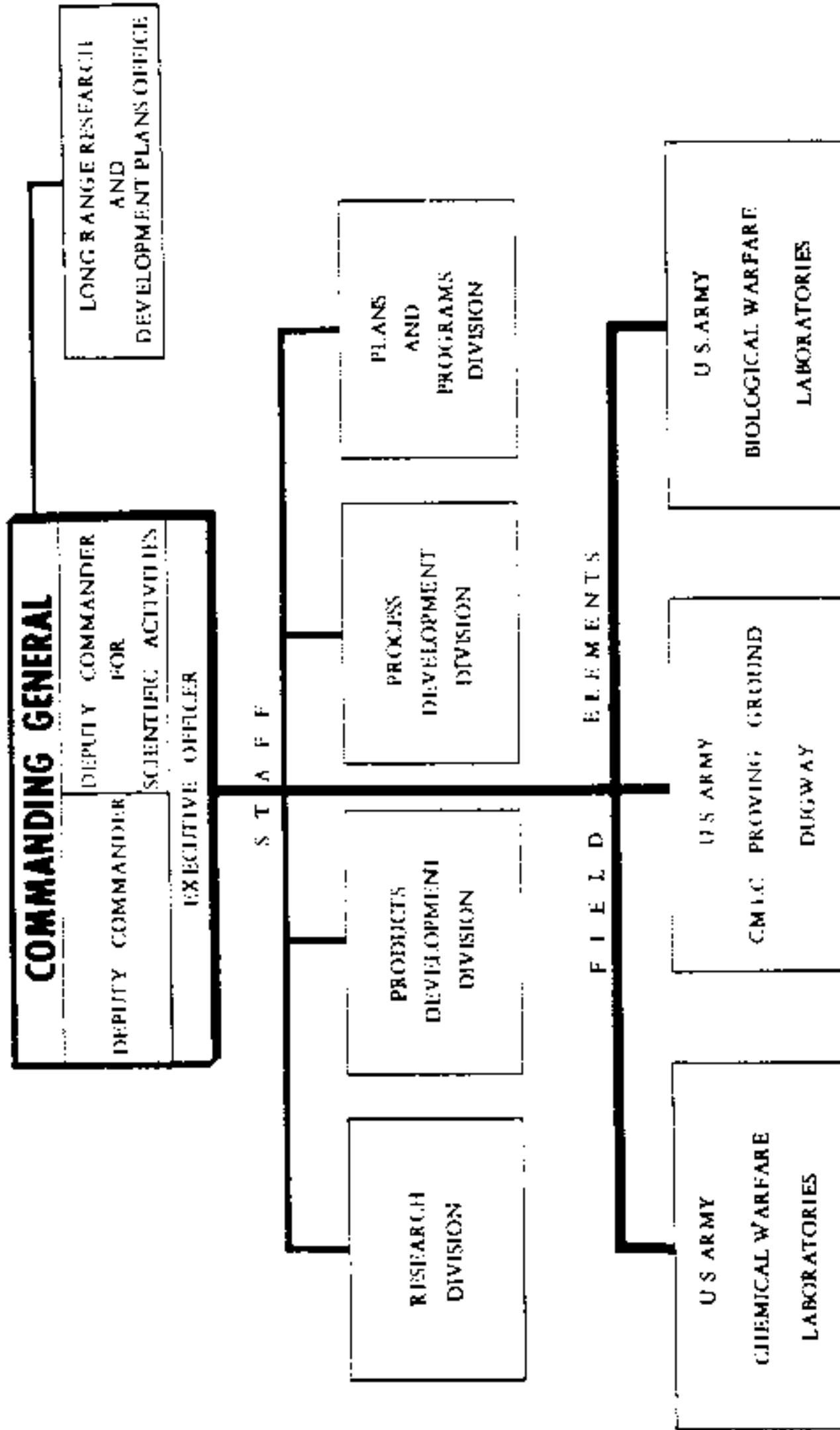


Chart 6

SUBMITTED:	<i>J.H. Botreched</i>
APPROVED:	<i>William M. Creasy</i>
DATE:	5 APRIL 1957

J.H. BOTRECHED  
 BRIGADIER GENERAL USA  
 COMMANDING  
 WILLIAM M. CREASY  
 MAJOR GENERAL USA  
 CHEMICAL OFFICER  
 PREPARED BY MG1 ENGR BR QUAMPTON/ALB.C.M.C.

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CHEMICAL CORPS ENGINEERING COMMAND

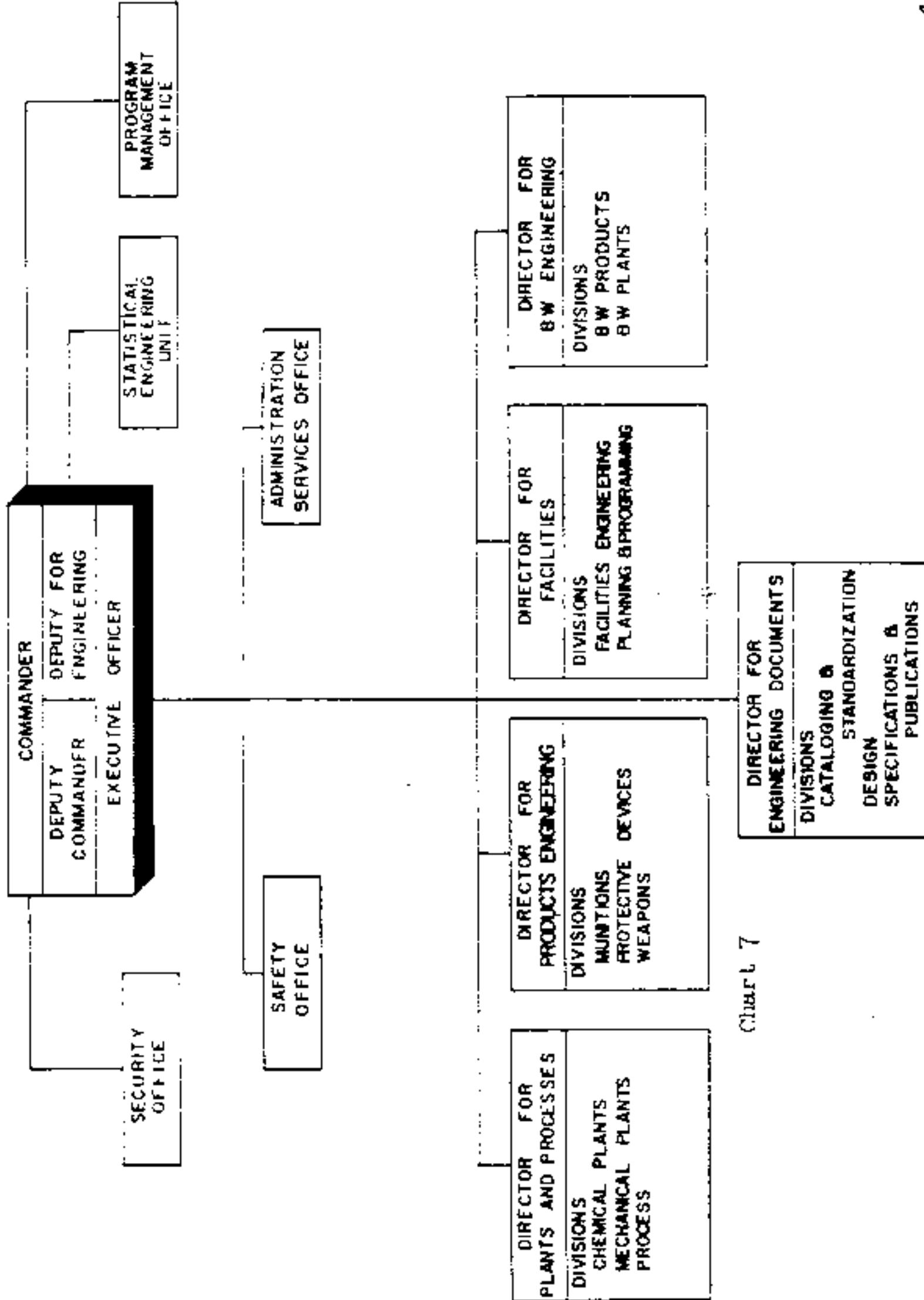


Chart 7

SUBMITTED *William J. Allen*  
 WILLIAM J. ALLEN  
 COLONEL, CW4, C  
 COMMANDER

APPROVED *William M. Creasy*  
 WILLIAM M. CREASY  
 MAJOR GENERAL USA  
 CHIEF, CW4, OFFICER  
 DATE: 17 AUGUST 1966  
 PREPARED BY PROGRAM MGT. OFFICE

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Chemical Warfare Laboratories, the Biological Warfare Laboratories, Dugway Proving Ground, and Engineering Command. (Charts 6, 7). During FY 1957 the Corps had underway 40 projects and 110 subprojects at the Chemical Warfare Laboratories, 22 projects at the Biological Laboratories, 2 projects and 3 subprojects at Engineering Command, and 2 projects and 3 subprojects at Dugway Proving Ground.<sup>158</sup>

(U) The Corps began to take steps to decrease the time required to pass an item through the development cycle. This action grew out of the discovery, early in 1957, that a news release on the mouth-to-mouth resuscitator stated that the item would be available in a year, whereas a news release back in 1952 implied that the item was then ready for issue. This discovery prompted the Logistics Planning Division to analyze the time required to develop an item starting from the time when a military requirement was established up to the point of standardization. This analysis indicated that the cycle took eight years. As the fiscal year ended the Deputy Chief Chemical Officer for Scientific Activities was making plans for brainstorm meetings to consider means of reducing development time. The Corps hopes to cut the time in half; that is, to reduce the cycle from eight to four years.<sup>159</sup>

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<sup>158</sup>

Chemical Corps Consolidated R & D Annual Project Report, 31 Dec 56, with revisions to 15 Jun 57. Hereafter cited as CMC Consolidated R & D Annual Proj Rpt.

<sup>159</sup>

(1) Interv, Hist Off with Lt Col W. G. Willman, Asst to DCCalO for SA, 12 Aug 57. (2) Memo, Lt Col W. G. Willman for DCCalO for SA, 26 Jul 57, sub: Report on Brainstorming Meeting to Consider Means of Reducing Development Time.

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(S) The U.S. Army Chemical Corps Research and Development Command (RDCOM) instituted a new Technical Program to fill a need, realized by General Rothschild, for a method of unifying all the research and development projects in order to concentrate on those of greatest value, in order to allow a more systematic and effective defense of the budget before the Staff, and in order to ascertain what parts of the mission were being accomplished without a review of the entire program. The concept was conceived in September 1956. Headquarters, RDCOM, divided the entire technical program into twenty-three systems or major objectives. They then wrote guidance for each system, projecting the guidance into the future. For example, in the Development Schedule for Lethal-Type Biological Antipersonnel Systems the objective (target area) by FY 1959 is 1 to 5 square miles; by 1961, 5 to 25 square miles; by 1963, 25 to 100 square miles with the SNARK or NAVARO missile, and 100 to 1,000 square miles by aircraft, missile or Off-Target Dissemination; by 1966, 1,000 to 100,000 square miles. RDCOM believed that the new Technical Program would assist the Corps in reaching its major goals more rapidly, economically, and efficiently.<sup>160</sup>

(U) This year the Corps took a prominent part in the first Army-wide Science Conference held at the United States Military Academy, West Point, 26 - 28 June. Dr. Per K. Frolich, Chief Scientist of the Army Chemical Corps, presided at one of the four concurrent sessions. Thirty-five Chemical Corps

<sup>160</sup>

(1) U.S. Army Chemical Corps Research and Development Command Technical Program, 1 Jun 57. (2) Interv, Hist Off with Mr Daniel J. Shearin, RDCOM, 18 Sep 57.

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scientists attended the meetings. Scientists from the Chemical Warfare Laboratories, Engineering Command, Dugway Proving Ground, Biological Warfare Laboratories, Materiel Command, Chemical Corps Board, and Chemical Corps School contributed thirteen papers. Mr. William G. Tank, Dugway Proving Ground, received one of the three \$500 awards for outstanding papers, his papers being, "Downwind Dosage Predictive Equations." Dr. Arthur J. Dziemian, Chemical Warfare Laboratories, received one of the six \$300 prizes. Dr. Dziemian's paper was entitled, "Wound Ballistics Assessment of Bullets." Four other Chemical Corps scientists, Messers R. M. Acker, R. W. Hartmeyer, R. H. McQuain, and Harvey S. Greenfield, were awarded certificates of achievement. All-in-all, Chemical Corps papers received four awards out of twenty-two, an excellent showing.<sup>161</sup>

Technical Operations

V-Agents

(S) The Corps placed major emphasis on the development of a class of compounds known as the V-Agents. The V-Agents, discovered in 1954, are the most promising potential agents that have appeared since the Germans found the G-Agents in the late 1930's. These compounds, judging by animal tests, are slightly more toxic than GB when inhaled, approximately fifty times more toxic when absorbed through the skin from a cloud, and several hundred times more toxic when absorbed through the skin from liquid droplets. It is this

161

(1) 1957 Army Science Conference Fact Sheet. Chemical Corps Papers Accepted for the Concurrent Sessions. (2) Roster of Chemical Corps Personnel, Army Science Conference, West Point, N. Y., 26 - 28 Jun 57. (3) News releases, PIO, U. S. Military Academy, 22 Jun 57, 28 Jun 57.

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percutaneous toxicity that makes the compounds particularly important, since a mask alone will not protect a soldier. He will need protective clothing, protective ointments, and, if contaminated with V-Agents, prompt medical attention.<sup>162</sup>

(S) The agents that have received the most attention are given below, with their EA (Edgewood Arsenal) number and Chemical Corps symbol:

<u>EA No.</u>	<u>Symbol</u>	<u>Name</u>
1508	VG	<u>O</u> , <u>O</u> -diethyl-S-2-diethylaminoethyl phosphorothiolate
1511	VP	3-pyridyl 3,3,5-trimethylcyclohexyl methylphosphonate
1517	VS	<u>O</u> -ethyl-S-2(2-diethylaminoethyl)ethylphosphonothiolate
1664	VM	<u>O</u> -ethyl-S-(2-diethylaminoethyl) methylphosphonothiolate
1677	VS	<u>O</u> -ethyl-S-(2-diisopropylaminoethyl) ethylphosphonothiolate
1701	VX	<u>O</u> -ethyl-S-(2-diisopropylaminoethyl) methylphosphonothiolate

In February 1957 the Research and Development Command selected VX as the agent upon which to concentrate.<sup>163</sup> The Chemical Warfare Laboratories, however, continued their investigation of the V-Agents under the possibility that one or more compounds superior to VX might be found.

(S) The V-Agents evaporate more slowly than G-Agents or mustard. The volatility of VX resembles that of lubricating oil. As a consequence the

162

U. S. Progress Report on CW Agents, Aug 56, Tech Lib, ERF 550-1173.

163

Quart Hist Rpt, RDCOM, Jan - Mar 57.

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compounds will probably be disseminated as liquid droplets, as airborne clouds, or in munitions especially designed to penetrate clothing and allow the liquid to reach the skin. Droplets from spray tanks can contaminate equipment, buildings, vegetation, the ground, and unsheltered soldiers. Airborne clouds, in which the particles must be large enough to impact effectively on the skin, but still small enough not to settle out, can find their way into buildings and field fortifications. The dissemination of V-Agents has required the establishment of new techniques and means of evaluation. For example, technicians must determine the most suitable particle size, taking into consideration the rate at which clouds will travel, the absorption through clothing and skin, and so on, and then try to adjust munitions to provide particles of the desired size. The Corps has been studying the dispersion of V-Agents by the so-called self-dispersing bomblets, which can be dropped from aircraft or guided missiles. To handle the problems that will arise in the testing and evaluation of V-Agents, Dugway Proving Ground organized a V-Agent team in April 1957.<sup>164</sup>

(S) The V-Agents are similar to GB in general physiological action. Casualties caused by aerosol or liquid agents may occur within hours or minutes, depending upon the amount that comes in contact with the soldier. If the soldier should happen to inhale V-Agents, he would be a casualty in a few minutes. The indicated treatment for the V-Agents is the same as for the

164

(1) Considerations in the Employment of V-Agents, CCB, Aug 56, Tech Lib, ERF 550-1192. (2) Quart Hist Rpt, Dugway Proving Ground, Mar - Jun 57.

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G-Agents; that is, by injections of atropine and artificial respiration. Laboratory experiments indicated that M5 ointment is as effective against V as it is against mustard. The Corps endeavored to improve its ointments to provide better protection against both G- and V-Agents.<sup>165</sup>

(S) As is the case with the G-Agents, a field alarm and an area scanning alarm are extremely important for the rapid detection of V-Agents. The Corps has been investigating the possibility of using IOPAIR (Long Path Infrared) equipment originally developed for G-Agents for V-Agent detection.<sup>166</sup>

(S) While the standard mask is sufficient protection against vapor-borne V-Agents, standard protective clothing is less satisfactory. One of the problems facing the personnel engaged in the development of protective items is the design of clothing which will give soldiers much more protection against the new agents.<sup>167</sup>

(S) The standard decontaminants appear to be satisfactory for destruction of V-Agents. The agents are soluble in water. This means that rain will assist in removing V-Agents from a contaminated area, and also that soldiers can wash equipment or buildings with hoses as an emergency measure.

(S) During the year the Corps prepared to produce V-Agents in Chemical Corps plants. The methods of production and the raw materials needed in the

<sup>165</sup> CmlC Consolidated R&D Annual Proj Rpt, Project 4-08-06-032.

<sup>166</sup> Potential Detection System for V-Agents, Aug 56, Tech Lib, ETP 550-1212.

<sup>167</sup> CmlC Consolidated R&D Annual Proj Rpt, Project 4-80-04-013-01.

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reaction are expected to be similar to those involved in the production of GB. The Engineering Command constructed steps I and II of the pilot plant, and operated step I using a simulant. The Command made a study of the feasibility of having a private contractor construct and operate a 10-ton unit. At the end of the year this study was under consideration by the Deputy Chief Chemical Officer for Scientific Activities in light of current funding conditions.<sup>168</sup>

### K-Agents

(C) During the last few years the Chemical Corps has given increasing priority to the investigation of compounds which, instead of killing, cause stupefaction, hallucinations, in-co-ordination, faulty judgment, depression, or other types of mental incapacitation. These compounds were formerly called "psychochemicals," but by order of Dr. Per K. Frolich, Deputy Chief Chemical Officer for Scientific Activities, were, after 1 October 1956, designated as "K-Agents."<sup>169</sup>

(S) The Research and Development Command has been interested chiefly in three principal groups of K-Agents. These are mescaline derivatives, lysergic acid and its analogues, and tetrahydrocannabinol derivatives. The history of mescaline dates back to antiquity. In 1951 the Corps awarded a contract to

168

(1) Considerations in the Employment of V-Agents, CCB, Aug 56, Tech Lib, RPF 550-1192. (2) Briefing Notes, Directorate for Plants & Processes, ENCOM, 1 Apr - 30 Jun 57.

169

Ltr, Per K. Frolich, ECCm10 for SA to CG, RDCOM, sub: Psychochemicals, 1 Oct 56, CMLNS.

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the New York State Psychiatric Institute to investigate the clinical effects of mescaline and its derivatives. The contractor tested six derivatives, the Chemical Warfare Laboratories tested thirty-five. The results of the investigation indicated that mescaline and its derivatives would not be practical as an agent because the doses needed to bring about the mental effects were too large. Consequently, the Research and Development Command shifted emphasis to lysergic acid diethylamide.<sup>170</sup>

(S) Prior to July 1956, Tulane University and New York State Psychiatric Institute investigated lysergic acid diethylamide under contract. In July 1956 the Corps awarded a contract to University of Maryland Psychiatric Institute to form a research team to investigate effects of the compound. On this team were two psychiatrists, a psychologist, a research technician, and personnel from the Neurology Branch. The Second Army provided volunteers for the program, which was carried out at Army Chemical Center. The program is expected to be a long-term project, and the ultimate goal is to determine whether lysergic acid diethylamide can be used as an effective chemical warfare agent. That is, to determine if it is practical in impairing the ability of officers to command troops, the ability and willingness of soldiers to obey officers, and the ability of groups of men to perform complicated military tasks such as operating guided missile emplacements and operating tanks.<sup>171</sup>

170

(1) CmlC Consolidated R&D Annual Proj Rpt, Project 4-08-03-016.  
(2) Psychochemical Agents. (3) Operational Aspects of the Employment of Psychochemical Agents.

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CmlC Consolidated R&D Annual Proj Rpt, Project 4-08-03-016.

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(S) The third K-Agent of interest to the Corps is a derivative of tetrahydrocannabinol carrying the symbol KA 1476. The University of Michigan has been carrying on an investigation, under contract, of the effects of the compound on cats and dogs. Preliminary observations suggest that the compound may bring on pathological changes, and if this proves to be true, the testing of the compounds on volunteers will have to be done with great caution.<sup>172</sup>

Thickeners for Flame Warfare

(C) At the beginning of World War II the Corps adopted thickeners made from natural rubber and artificial rubber. Experimentation has continued with these classes of materials, and has led to K10, a mixture consisting of 94 percent special synthetic rubber, 3 percent talc, and 3 percent solid nonionic wetting agent. Numerous field tests have demonstrated the superiority of K10 over other thickeners. It mixes more easily with gasoline, it does not require mechanical mixer, it is not affected by water, and it has a greater range. The Corps awarded a contract to Olin Mathieson Chemical Corp. for the production of 5,000 pounds of the synthetic rubber. The first batches were not entirely satisfactory, and the contractors are investigating the various factors that control the gelling characteristics of the thickener. The Corps did not foresee any unresolvable problems in production, and development of K10 will continue.<sup>173</sup>

172

Ibid.

173

GmC Consolidated R&D Annual Proj Rpt, Project 4-09-06-004.

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(C) During World War II napalm-thickened gasoline was developed as a fuel for flame throwers and a filling for incendiary bombs. After the war further research along the same line led to better thickeners, M2 and M3. M2, a free-flowing napalm, was adopted as the standard fuel for flame throwers and for fire bombs. M3, the Aluminum diacid soap of 2-ethylhexoic acid, was standardized for use in fire bombs. Continued work on aluminum-type soaps resulted in a new material, E4R1, the aluminum diacid soap of isooctoic acid mixed with an antiagglomerant.<sup>174</sup>

(C) In FY 1957 the E4R1 thickener was produced under Chemical Corps Materiel Command contract. Some lots were unsatisfactory. Satisfactory lots were shipped to Dugway Proving Ground for tests sponsored by the Chemical Corps Board. The Corps expects to standardize this thickener after flaws have been removed from production methods.<sup>175</sup>

#### One-Shot Portable Flame Thrower

(C) The Chemical Corps sought to develop a one-shot flamethrower in World War II, dropped the project after the war, and, revived it again during the Korean conflict at the request of CONARC and the Marine Corps. One of the weapons developed under contract was the E30, a U-shaped aluminum fuel tank with rubber ball to act as piston. The gas for pushing the ball came from a solid fuel. The Corps made several significant changes in the E30, re-designating the improved model as the E30R1. Model E30R1 passed the final

174

Ibid.

175

Briefing Notes, Directorate for Products Engineering, ENCOM, Apr - Jun 57.

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engineering tests, but the rubber ball did not perform satisfactorily at low temperatures. The Chemical Warfare Laboratories obtained a new rubber material which worked well between 0° and -25°F. CONARC subjected the weapon to a test and recommended that the flame thrower be type classified after minor flaws were corrected. Drawings and specifications are being prepared by the Engineering Command, and the weapon is scheduled for user test in FY 1958.<sup>176</sup>

Plasticized Smoke Mixtures

(C) The Munitions Division, Research and Development Command, continued its investigations of smoke mixtures containing plastic binders. The Olin Mathieson Chemical Corporation, under contract, produced yellow, red, and green mixtures plasticized with polyvinyl acetate. The Corps filled M2 colored smoke canisters, M18 grenades, and M15R1 grenades with the mixes, and placed the munitions under surveillance. Such plastic smoke mixtures can be cast directly into grenades, pots, and canisters, thereby eliminating the use of heavy presses that are required to compress powdered mixtures. The new method of filling smoke munitions would be particularly important in time of war when heavy capacity presses are on the critical list.<sup>177</sup>

176

(1) CMLC Consolidated R&D Annual Proj Rpt, Project 4-09-02-018-02.  
(2) Progress Reports, Aerojet-General Corp, Contracts DA-18-108-CML-4987 and DA-18-108-CML-5658. (3) Briefing Notes, Directorate for Products Engineering, ENCCM, Apr - Jun 57.

177

(1) Progress reports, Olin Mathieson Chemical Corp, Contract DA-18-108-CML-5512, Research and Development of Flammable Plastics for Colored Smoke Use. (2) Progress reports, Olin Mathieson Chemical Corp, Contract DA-18-108-CML-5920, same title.

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E13 Field Protective Mask

(C) For a number of years the Corps has been developing a field protective mask capable of giving an absolutely leakproof face seal regardless of face size, shape or skin texture, and capable of being worn for extended periods of time under a wide range of environmental conditions with a minimum of inconvenience, physical discomfort, and loss in efficiency of the wearer. Research led to the helmet-mounted E73 protective mask with a pneumatic face seal. Field tests showed that this mask had low breathing resistance and could be donned in a few seconds, but that it also had the disadvantages of having a large number of parts, and of being heavy on the soldier's head. The Protective Development Division of Chemical Warfare Laboratories then turned to a mask having filtering pads instead of canisters. The most promising canisterless-type mask, model E13, had a detachable gas-aerosol filter pad on each side in the cheek position. The pads contained about 50 percent as much charcoal as the M11 canister, and had better vision and speech transmission. After extensive laboratory and field tests by the Corps and Army Field Forces Board No. 3, the Corps decided on the general design of the E13 mask. Improvements were made in the faceblank, the voicemitter, the filter pad and the eye ring. To insure that representative samples would be available for tests, and to insure that the unconventional mask could be produced by usual industrial techniques, the Corps designed a zinc alloy production mold. The mask finally evolved into model E13R9, which is more comfortable, has a better fit, and less dead air space. Final engineering tests were practically completed at the end of FY 1957, and the mask was scheduled to be available for

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operations early in FY 1959.<sup>178</sup>

Phasing Out of Anticrop Research

(S) On 7 June 1957 Lt. Gen. James M. Gavin, Chief of Research and Development, Department of the Army, directed the Chemical Corps not to allocate further funds in the area of anticrop warfare and, in effect, relieved the Corps of responsibility in this field. General Creasy, in reply asked the Chief of Research and Development for permission to continue anticrop research and requested an increase in funds for the purpose. General Gavin was sympathetic to General Creasy's request, but he pointed out that the Air Force had the clearest requirement for end items in anticrop warfare, rather than the Army, and that the lack of funds prevented the Army from continuing research in this field. He stated, however, that the Army would be willing to continue research if funds could be obtained from another source. The Commanding General, Chemical Corps Research and Development Command, drew up a plan under which the anticrop research would be phased out by 1 January 1958. Under this plan the Army would maintain the existing limited capability in offense anticrop biological warfare with the agents already developed.<sup>179</sup>

178

GmlC Consolidated R&D Annual Proj Rpt, Project 4-80-02-030-05.

179

(1) Ltr, Maj Gen William M. Creasy to Ch, R&D, DA, 15 Jan 57, sub: Research and Development Program Directive, with four comments. (2) Cmt 3, Col W. G. Dolvin, GS, Ch, Combat Mat Div to CGmlC, 21 May 57, sub: Anticrop Warfare Program, on Cmt 1, sub: Research and Development Directive, 7 Jan 57. (3) Willman interv, 12 Aug 57.

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Risk to US Armed Forces of BW Attacks

(S) In December 1954 the Corps established a project, CD-22, to study the susceptibility of man to aerosols of an infectious agent. This was the first BW volunteer program. In 1955 and 1956 volunteers were exposed to aerosols of Coxiella burnetii, the cause of Q fever, disseminated from a prototype munition in the test sphere at Fort Detrick and on the test field at Dugway Proving Ground. The program was carried on under supervision of The Surgeon General. As a result of this highly important work the Corps determined that a prototype munition which generated aerosols could infect soldiers in the field.<sup>180</sup>

(S) These studies were so successful that the Corps decided to continue and expand them into a more comprehensive study. The Chemical Corps and the Medical Corps drew up an agreement to define the portions of the program for which each would be responsible. Under this agreement The Surgeon General set up a special medical unit at Fort Detrick to operate the hospital facility, and in addition to provide assistance on the medical aspects of the program. In October 1956 the Chemical Corps Technical Committee established Project 4-11-01-006, Risk to US Armed Forces of BW Attacks, under which the Chemical Corps and Medical Corps would proceed. The objective of this project was to determine the risk of American soldiers to biological agents and to develop appropriate biological protective measures.<sup>181</sup>

180

CmC Consolidated R&D Annual Proj Rpt, Project 4-11-01-005, Vulnerability of Military Personnel to BW Attack.

181

(1) CCTC Item 2963, Establishment of Project 4-11-01-005, Vulnerability of Military Personnel to BW Attack, 9 Dec 54. (2) CCTC Item 3162, Memorandum, Joint Medical Service Chemical Corps Agreement on Responsibilities for the Conduct of Research and Development for Defense Against Biological Warfare, 21 Feb 56, as amended by CCTC Item 3215, 22 Aug 56. (3) CCTC Item 3240, Establishment of Project 4-11-01-006, Risk to US Armed Forces of BW Attacks, 26 Oct 56.

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Standardized Products

(U) (1) Sampling Kit, Biological Agent, M17 (E25R1) and Refill Kit, Biological Agent Sampling, C17. In 1951 the Corps started a project to develop a kit to permit the collection of samples of contaminated air, soil, and other material for dispatch to laboratories. The final model, E25R1, was a plastic case approximately 6 by 11 by 13.5 inches in size, containing commercially available equipment for collecting BW samples from air, food, water, surfaces, and materials, and for the initial culturing of the samples while they were enroute to a laboratory.<sup>182</sup> The kit weighed approximately 18 pounds, and contained equipment for the collection of 24 samples. A refill kit contained components that are needed to replace the expendable parts of the sampling kit. The Federal Civil Defense Administration, as well as the Army and Navy, intends to use this kit which was classified as standard type Sampling Kit, Biological Agents, M17 (E25R1), in April 1957.<sup>183</sup>

(C) (2) Gun, Portable, Flame Thrower, M7 (E32) and Hose, Fuel, Flame Thrower, M8 (E37). Since World War II the Corps has been working to improve the portable flame thrower by decreasing the weight, lowering the silhouette, and lengthening the range. Combat experience in Korea showed the need for a gun that is more easily operated by men with small hands and stature and, at

182

Final Historical Rpt, Phase III, Kit, Biological Warfare, Field Sampling, E25R1, 18 Nov 55.

183

COTC Item 3296, Classification of Sampling Kit, Biological Agent, M17 (E25R1) and Refill Kit, Biological Agent Sampling, C17 as Standard Types for Training Purposes, 25 Apr 57.

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the same time, is more easily produced. This need has been filled by a new gun composed primarily of aluminum die castings, an aluminum forging and a stainless steel pintle rod. The gun is 21 inches long and weighs 4.5 pounds, being 2.7 pounds lighter than the M2A1 gun. The valve lever can be operated by a person with small hands, and the ignition lever can be operated by a person wearing artic-type mittens. A new hose of seamless Buna-M rubber covered with a braided wire guard and mildewproof cloth and having improved couplings was also developed. The hose weighs only 1.8 pounds, is safer than the M1 hose owing to greater tensile strength and improved couplings, and is more flexible at all temperatures. Following successful tests by Chemical Corps agencies and CONARC, the new items were standardized in April 1957 as Gun, Portable Flame Thrower, M7 (E32), and Hose, Fuel, Flame Thrower, M8 (E37).<sup>184</sup> The entire flame thrower assembly, consisting of the old M2A1 fuel and pressure unit, the new M7 gun and new M8 hose, was classified as model M2A1-7 Portable Flame Thrower.<sup>185</sup>

(C) (3) Detector Kit, Chemical Agent, M15. The current standard Army issue kit for the detection of chemical agent is the M9A2 which was type classified in May 1952.<sup>186</sup> The M9A2 will detect all known agents that might

184

(1) CRIR, Final Engineering Tests, Gun, Portable Flame Thrower, E32, 16 Feb 54. (2) CCB Proj 874, Flame Gun, E32, Prototype for Portable Flame Thrower, M2A1, 24 Feb 55. (3) CCTC Item 3291, Classification of Flame Thrower, Portable, M2A1-7; Gun, Portable Flame Thrower, M7 (E32); Hose, Fuel, Flame Thrower, M8 (E37); and Service Kit, Portable Flame Thrower, M2A1-7 as Standard Types; and Reclassification of Superseded Models.

185

CCTC Item 3291.

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186

CCTC Item 2480, 22 May 52.

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be used during war. The Bureau of Ships felt that this kit was too complex for naval use and, in 1954, requested the Chemical Corps to devise a kit that would enable the crew of a vessel or the personnel of a shore installation to determine if the atmosphere were sufficiently free of mustard gas or G-Agents so that the Navy gas mask would not be required. The Corps devised a kit weighing approximately three-quarters of a pound, and containing sufficient reagents to make 25 to 50 tests for H and for G-Agents.<sup>187</sup> This kit, known as experimental model E27R4, was accepted by the Navy and was standardized as Detector Kit, Chemical Agent, M15, in October 1956.<sup>188</sup> The kit is also suitable for civil defense work, and has been ordered in quantity by the Federal Civil Defense Administration.

(C) (4) Conversion Set, External Cluster Stowage, M16 (E5R3). In the FY 1951 research and development program the Corps established a project to stream-line aircraft bombs and clusters to accommodate the greater speeds, higher operating altitudes, and other critical factors in newer aircraft.<sup>189</sup> Out of this development work came the E5R3 conversion set which streamlines M34 and M34A1 1,000-lb. GB clusters so that they may be fastened externally to F-84 and F-86 type aircraft.<sup>190</sup> The set passed Air Force tests at Holloman

187

CRLR 471, Development of the E27R4 Chemical Agent Detector Kit for G & H.

188

CCTC Item 3237, Classification of Detector Kit, Chemical Agent, M15 (E27R4) as a Standard Type, 26 Oct 56.

189

Project 4-04-06-002, External Stowage of Bombs & Clusters.

190

CRLR 480, Development & Experimental Test of E5R3 (M34) 1,000-lb Cluster Modified for External Stowage with E5 conversion Kit, 9 Jun 55.

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Air Force Base, and was subsequently classified as standard type Conversion Set, External Cluster Stowage, M16 (E5R3) in April 1957.<sup>191</sup>

(U) (5) Dispensing Pump, Hand Driven, M2A1. In 1940 the Corps classified Pump, Airplane Smoke Tank, M2 as a substitute standard article.<sup>192</sup> This pump was used for transferring mustard gas, lewisite, chloracetophenone solution or FS (sulfur trioxide-chlorosulfonic acid solution) from containers to airplane spray tanks. In 1947 the item was reclassified as a standard item.<sup>193</sup> In 1953 the Corps placed an educational order for ten pumps and found that the original design, which corresponded to the Blackmer Rotary Hand Pump Series-405, was no longer being manufactured. The Corps then chose and tested an alternate model (Blackmer 414A) with a slightly larger pumping capacity. This pump was classified as the standard model Dispensing Pump, Hand Driven, M2A1, in October 1956, and the old M2 model reclassified as a limited standard type.<sup>194</sup>

(U) (6) Guard, Shipping, 750-lb. Cluster, M4. In December 1954 the Corps standardized the M35 and M36 750-pound incendiary bomb clusters. The M35

<sup>191</sup>

CCTC Item 3282, Classification of Conversion Set, External Cluster Stowage, M16 (E5R3) as a Standard Type, 25 Apr 57.

<sup>192</sup>

CWTC Item 277, Standardization of Pump, Chemical Smoke Tank, M2, 30 Oct 40.

<sup>193</sup>

CCTC Item 1783, Reclassification of the Pump, Airplane Smoke Tank, M2, as a Standard Type, 25 Sep 47.

<sup>194</sup>

CCTC Item 3243, Classification of Dispensing Pump, Hand Driven, M2A1, as a Standard Type and Reclassification of the M2 Pump, 26 Oct 56.

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cluster weighs approximately 700 pounds, the M36 approximately 900 pounds. Both are protected during shipment by the M3 Shipping Guard. This guard is a molded wood-fiber casing, 69.5 inches long and 21 inches in diameter, weighing 200 pounds. Owing to difficulties in the mass production of the M3 Guard, the Chemical Corps Engineering Command developed an experimental guard, M41, fabricated from soft wood. The M41 weighs 90 pounds less than the M3, and will cost less than half (estimate, \$15) of the price of the M3 (\$37.50). The new guard was classified in April 1957 as a substitute standard type with the designation Guard, Shipping, 750-pound, Cluster, M4.<sup>195</sup>

(U) (7) Set, Gas, Toxic, HD, M2. In the early days of World War II, AR 775-10 was revised to permit the use of mustard gas for training purposes. In order to ship the agent to training centers safely, the Chemical Corps developed special containers. These containers were standardized as Set, Gas, Toxic, M1 in October 1942.<sup>196</sup>

(U) In spite of the precautions used in packing bottles of HD in the M1 Set, some breakage was reported. This led the Corps to develop a new set, M11. Complete evaluation of the M11 by rough handling trials over rough roads and by other means proved that it was able to stand rough handling without damage.<sup>197</sup>

<sup>195</sup>

CCTC Item 3292, Classification of the Guard, Shipping, 750-lb. Cluster, M4 (M41) as a Substitute Standard Type, 25 Apr 57.

<sup>196</sup>

(1) CWTC Item 567, Standardization of Set, Gas, Toxic, M1; Military Requirement and Military Characteristics, 14 Aug 42. (2) CWTC Item 617, same title, 1 Oct 42.

<sup>197</sup>

(1) CRER 123, Final Engineering Test, Set, Gas, Toxic, M11, 16 Mar 53. (2) Dugway Proving Ground Report 169, Test of M11 Toxic Gas Set, CCB 3-55, 27 Apr 56.

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This model was type classified as Set, Gas, Toxic, HD, M2 in October 1956, and the old M1 set was reclassified as the Limited Standard Type.<sup>198</sup>

(U) (8) Case and Tube, Shipping, Toxic Gases, Four Ampoule, M2. The Corps must frequently ship relatively small samples of toxic compounds to various agencies, and in addition must ship samples to and from contractors who are working on chemical projects. At times Type A shipping containers have been used, particularly by the Chemical Corps Technical Detachment, but this container does not meet ICC regulations. Containers designed for the gas identification set have also been used, but the shipment of small quantities of chemicals in these containers is uneconomical. To obviate these difficulties the Chemical Warfare Laboratories completely redesigned Type A container to meet all ICC regulations. The new container is a plywood box in which is a steel cylinder containing four flame-sealed glass ampoules. The ampoules are provided with felt or cotton shock absorbers, and are surrounded with activated charcoal to absorb any leaking chemicals. This new container passed rough handling tests, and was classified as Case and Tube, Shipping, Toxic Gases, Four Ampoule, M2, in April 1957.<sup>199</sup>

<sup>198</sup>

CCTC Item 3242, Classification of the Set, Gas, Toxic, HD, M2 as a Standard Type and Reclassification of the Superseded M1 Set to Limited Standard Type, 26 Oct 56.

<sup>199</sup>

CCTC Item 3295, Classification of Case and Tube, Shipping, Toxic Gases, Four Ampoule, M2 as a Standard Type and Obsolescence of the Superseded Type A Container.

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(U) (9) Gas Dispenser, Skid Mounted, GED, 5,000 CFM, M12 (K12R1). In the latter part of World War II the Army Ground Forces stated a need for a large irritant gas dispenser that could be used by military police to control riots. The project was dropped after the war owing to lack of funds, but was started again in 1953. Under this project the Corps modified a large size, commercial agricultural crop duster to disperse pulverized CN, DM or CN-DM. The dispenser is mounted on a skid, which in turn can be carried on a 3/4-ton truck. The hopper has a capacity of forty pounds of powdered agent, and has two discharge rates. An axial flow turbine blower, powered by a gasoline engine, discharges the powder into the air. The cloud of agent varies from 30 to 65 feet in width, at wind velocities of from 4 to 10 miles per hour. The unit can be moved so as to cover a 500-foot front (about a city block) with ease. The Military Police Board witnessed tests of the dispenser at Army Chemical Center, and approved the final model, K12R1, which was then standardized as Irritant Gas Dispenser, Skid Mounted, GED, 5,000 CFM, M2 (K12R1) in April 1957.<sup>200</sup>

200

(1) CCTC Item 3298, Classification of Irritant Gas Dispenser, Skid Mounted, GED, 5,000 CFM, M2 (K12R1), 25 Apr 57. (2) CCTC Item 3306, Classification of Irritant Gas Dispenser, Skid Mounted, GED, 5,000 CFM, M2 (K12R1) as a Standard Type.

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## MATERIEL

### Management and Organization

(U) Chemical Corps emphasis in the materiel area during fiscal year 1957 was placed upon: (1) adjusting to the Chemical Corps reorganization of fiscal year 1956, (2) continuing the refinement of current procedures to achieve maximum efficiency and economy, and (3) planning operations in a period of declining resources to maintain a high current and mobilization potential. The proposal made during FY 1956 as a result of an interpretation of the recommendations of the Ad Hoc Advisory Committee on Chemical Corps Mission and Structure that the scope of the Chemical Corps logistics mission be drastically curtailed was rejected by the Deputy Chief of Staff for Logistics early in FY 1957.<sup>201</sup> For the remainder of the year an emphasis appropriate to a period of declining resources was placed upon the Chemical Corps materiel mission. In connection with a survey of depot operations made late in fiscal year 1957 the Office of the Deputy Chief of Staff for Logistics indicated no intention of altering the assignment of Chemical Corps supply responsibilities.<sup>202</sup>

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201

Summary of Major Events and Problems, FY 56, pp. 143 - 50.

202

(1) Interv, Hist Off with Brig Gen Marshall Stubbs, CG, MCmlC and MATCOM, 9 Jul 57. (2) Interv, Hist Off with Mr E.R. McDaniel, Log Pl Div, CCCmlO, 30 Jul 57. (3) Draft Study, Depot Supply Plan for the Continental United States, 25 Jul 57, prepared in the Office of the Deputy Chief of Staff for Logistics.

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(U) During fiscal year 1957 the Chemical Corps enlarged its activities in several fields of logistics responsibility. The most important new assignment was for gas and incendiary rockets<sup>203</sup> although the assignment of chemical and pharmaceutical production equipment could be of considerable significance should a national emergency arise. The responsibility for miscellaneous communications equipment was of considerable importance in the research and development field and promised to have an effect in the materiel area in years to come.<sup>204</sup>

### Adjustment to the Chemical Corps Reorganization

(U) Adjustment to the Chemical Corps reorganization proceeded smoothly in all major details without significant alteration in organizational or program structure. Minor problems in communication with higher authority and in co-ordination among Chemical Corps elements remained at the end of the fiscal year, but these problems were fewer than at the end of fiscal year 1956.<sup>205</sup> Brig. Gen. Marshall Stubbs, Commanding General, Army Chemical Center and Chemical Corps Materiel Command, stated that, as in the previous

203

See above, pp. 50 - 51.

204

(1) Interv, Hist Off with Mr C.D. Yeffman, Log Fl Div, OCCmlO, 31 Jul 57. (2) AR 701-1340, 18 Feb 57; AR 701-1500, 2 Mar 57; AR 701-1390, 25 Jun 57.

205

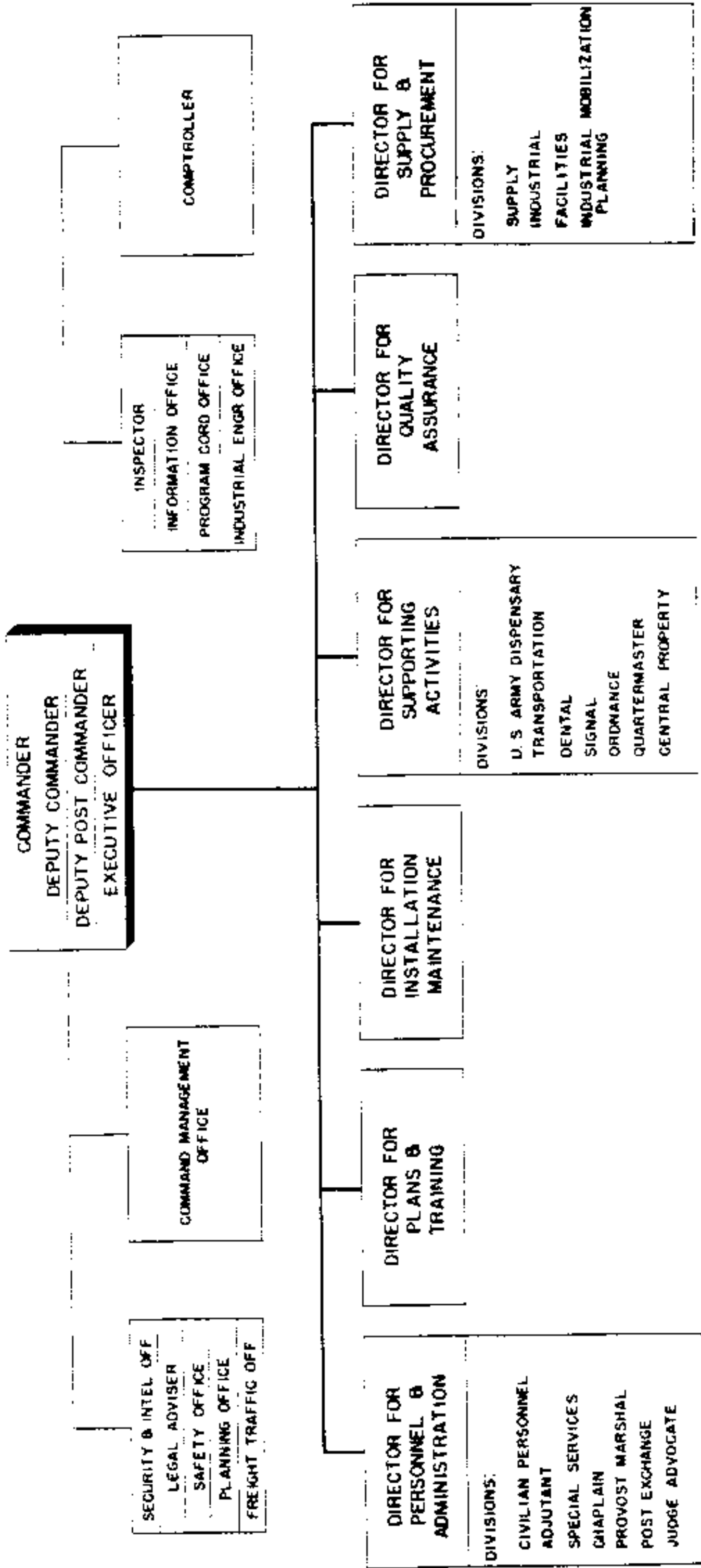
(1) Summary of Major Events and Problems, FY 56, pp. 153 - 56. (2) Stubbs interv, 9 Jul 57. (3) Interv, Hist Off with Lt Col T.C. Williams, Log Fl Div, OCCmlO, 30 Jul 57.

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HEADQUARTERS, U. S. ARMY CHEMICAL CENTER & CHEMICAL CORPS MATERIEL COMMAND



SUBMITTED: *Franklin Stubbs*  
MARSHALL STUBBS  
BRIG GEN, USA  
COMMANDING

APPROVED: *William M. Greasy*  
WILLIAM M. GREASY  
MAJ GEN, USA  
CHIEF CHEMICAL OFFICER

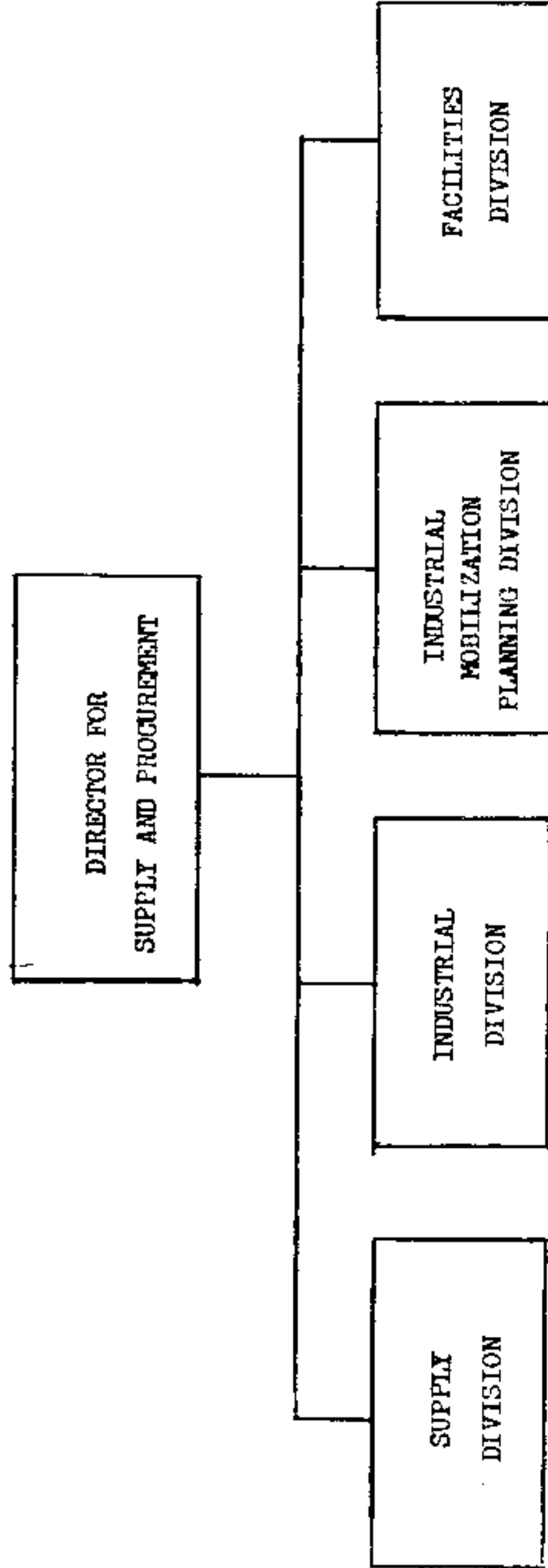
DATE: 10 JUNE 1957

PREPARED BY: COMPTROLLER  
MANAGEMENT ENGR BR

Chart 9

HEADQUARTERS, ARMY CHEMICAL CENTER AND CHEMICAL CORPS MATERIEL COMMAND

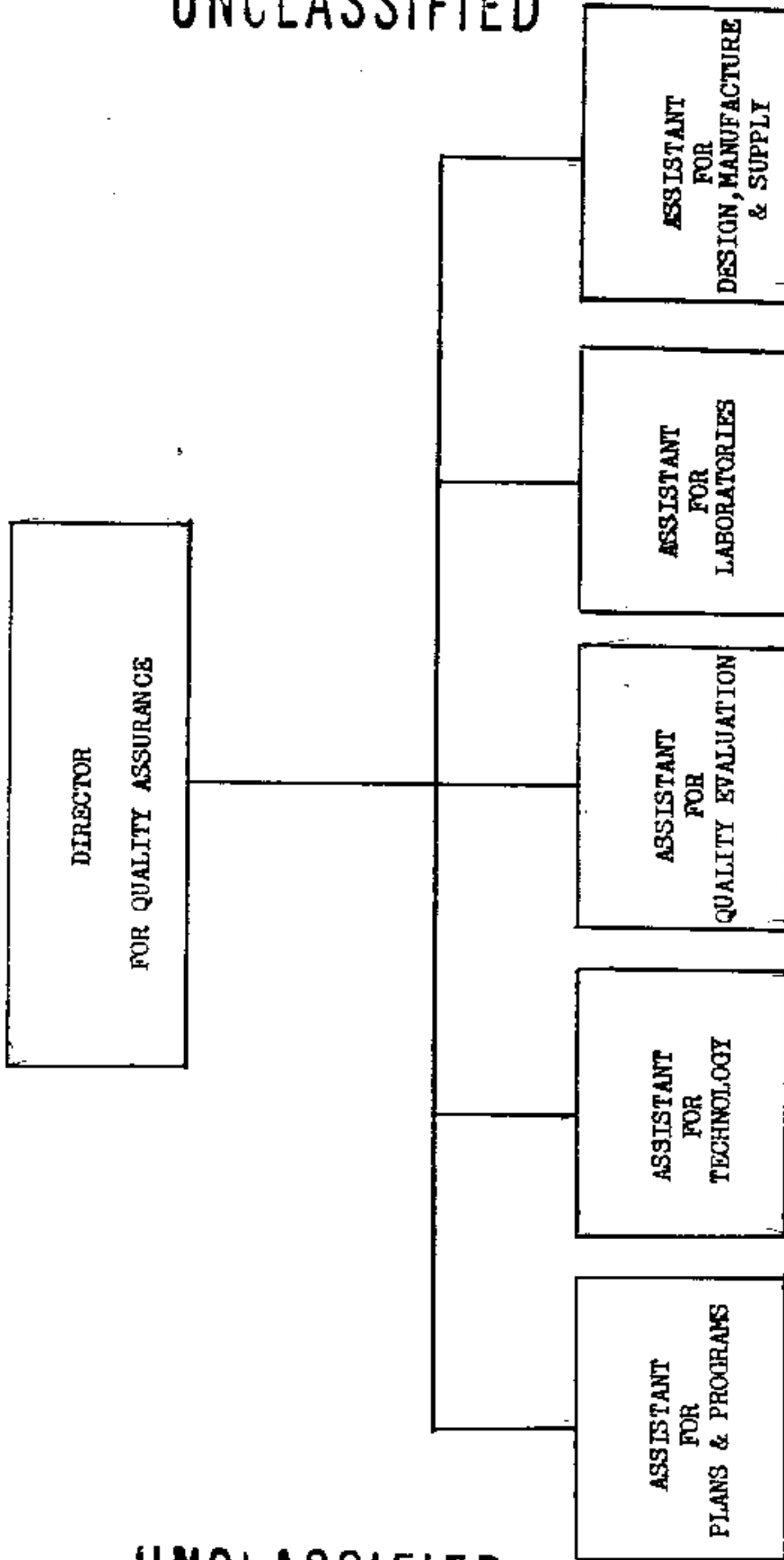
DIRECTOR FOR SUPPLY AND PROCUREMENT



Source: Organization and Functions Manual, Headquarters, Army Chemical Center and Chemical Corps Materiel Command, 1 Nov 57, Section I - 8.

HEADQUARTERS, ARMY CHEMICAL CENTER AND CHEMICAL CORPS MATERIEL COMMAND

DIRECTOR FOR QUALITY ASSURANCE

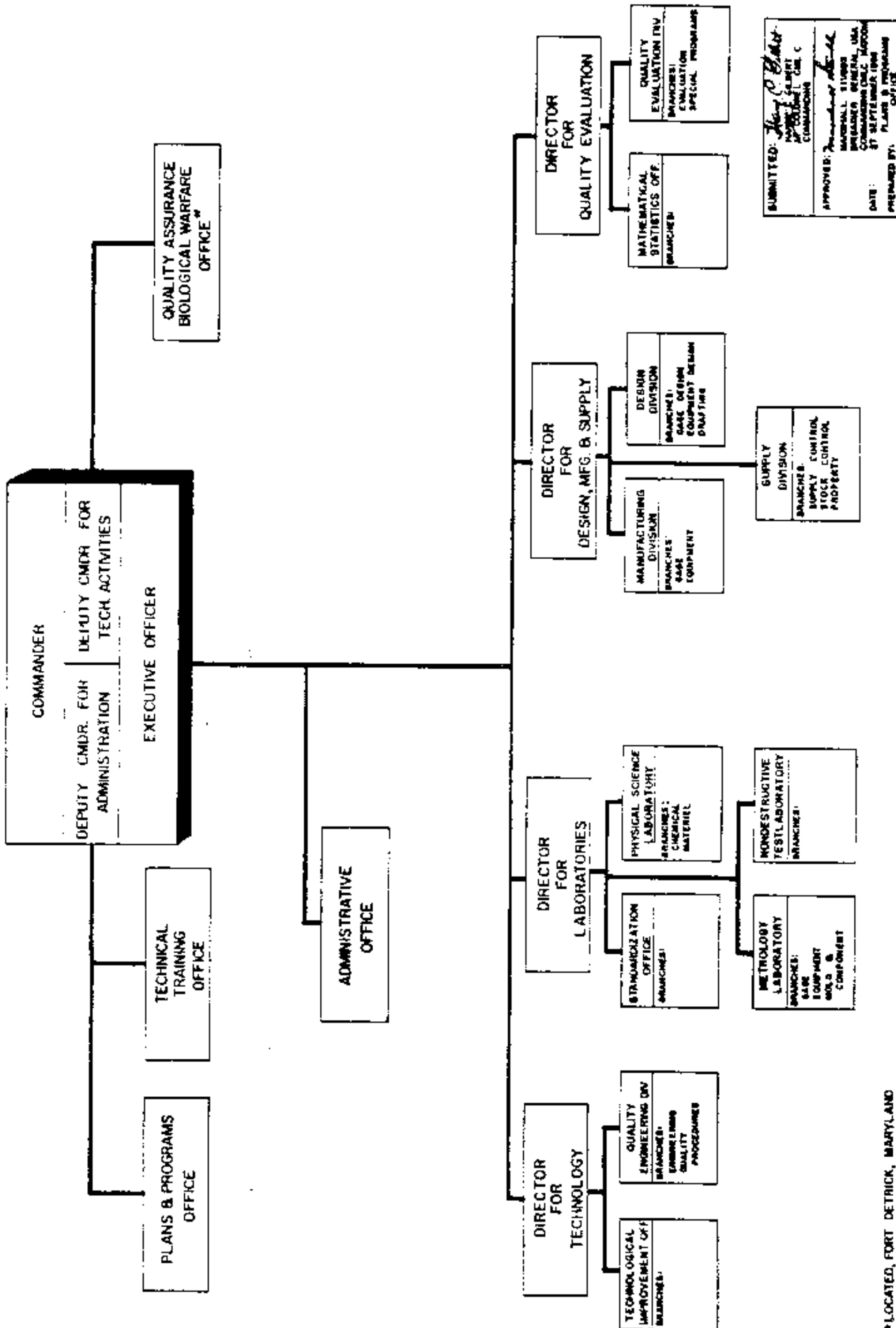


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Source: Organization and Functions Manual, Headquarters Army Chemical Center and Chemical Corps Materiel Command, 1 Nov 57, Section I - 7.

QUALITY ASSURANCE TECHNICAL AGENCY



SUBMITTED: *Henry P. Baker*  
 APPROVED: *James P. Baker*  
 DATE: 27 SEPTEMBER 1966  
 PREPARED BY: PLANS & PROGRAMS OFFICE

\* LOCATED, FORT DETRICK, MARYLAND

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year, support and assistance to his command from the Office of the Chief Chemical Officer was excellent.<sup>206</sup>

(U) The internal reorganization within the Headquarters, Materiel Command, (Chart 8) proved highly satisfactory. The immediate office of the Director of Supply and Procurement (Chart 9), which General Stubbs had originally hoped to restrict to planning and long-range management, became somewhat more involved in current operations than intended primarily because it was necessary for the office to serve as liaison between command and divisional echelons. Lt. Col. James A. Richardson, who headed the directorate, was able, however, to realize the commanding general's goal by devoting most of the attention of his office to the development of new ideas and methods. A device he used to achieve this concentration was to so restrict the number of individuals in his immediate office that the handling of operational detail was impossible.<sup>207</sup> Since Lt. Col. H.C. Gilbert, the Director of Quality Assurance (QA), and his immediate staff performed the dual functions of the directorate (Chart 10), a planning and management office, and the Quality Assurance Technical Agency (QATA) (Chart 11), an operating field activity, the original goal was to evolve procedures for handling both functions, and

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206

Stubbs interv, 9 Jul 57.

207

(1) Summary of Major Events and Problems, FY 56, pp. 156 - 58.  
(2) Stubbs interv, 9 Jul 57. (3) Interv, Hist Off with Lt Col J.A. Richardson, Director of Supply and Procurement (Dir S&P), MATCOM, 19 Jul 57.

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the segregation of staff and operational duties became a problem for each individual supervisor. The necessary administrative experimentation was carried on in both staff and operational quality assurance areas throughout the fiscal year. It was felt that the methods, plans, and policies adopted were successful, but the quantity of operation was insufficiently large to test all procedures. As in any new, experimental organization, the inertia of the old organization and of customary procedures, both internal and external, must be overcome. The operation of the project engineer-associate project engineer system was a significant means of overcoming both internal and external inertia not only in the quality assurance field but also in all materiel activities. The co-ordination and co-operation among Research and Development, Engineering, and Materiel Commands notably improved during fiscal year 1957.<sup>208</sup>

(U) An entirely satisfactory means of handling support activities, such as planning and personnel services, for the Materiel Command portion of the combined Army Chemical Center and Chemical Corps Materiel Command Headquarters had not been evolved by the end of the fiscal year. Also, the most efficient operating procedures and staffing patterns had not been found in some elements of the headquarters where both post and Corps-wide programs and projects were administered. A part of the difficulty lay in securing a sufficient number

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208

(1) Stubbs interv, 9 Jul 57. (2) Interv, Hist Off with Lt Col H.C. Gilbert, Director for Quality Assurance (Dir QA) and CO, QATA, 10 Jul 57.

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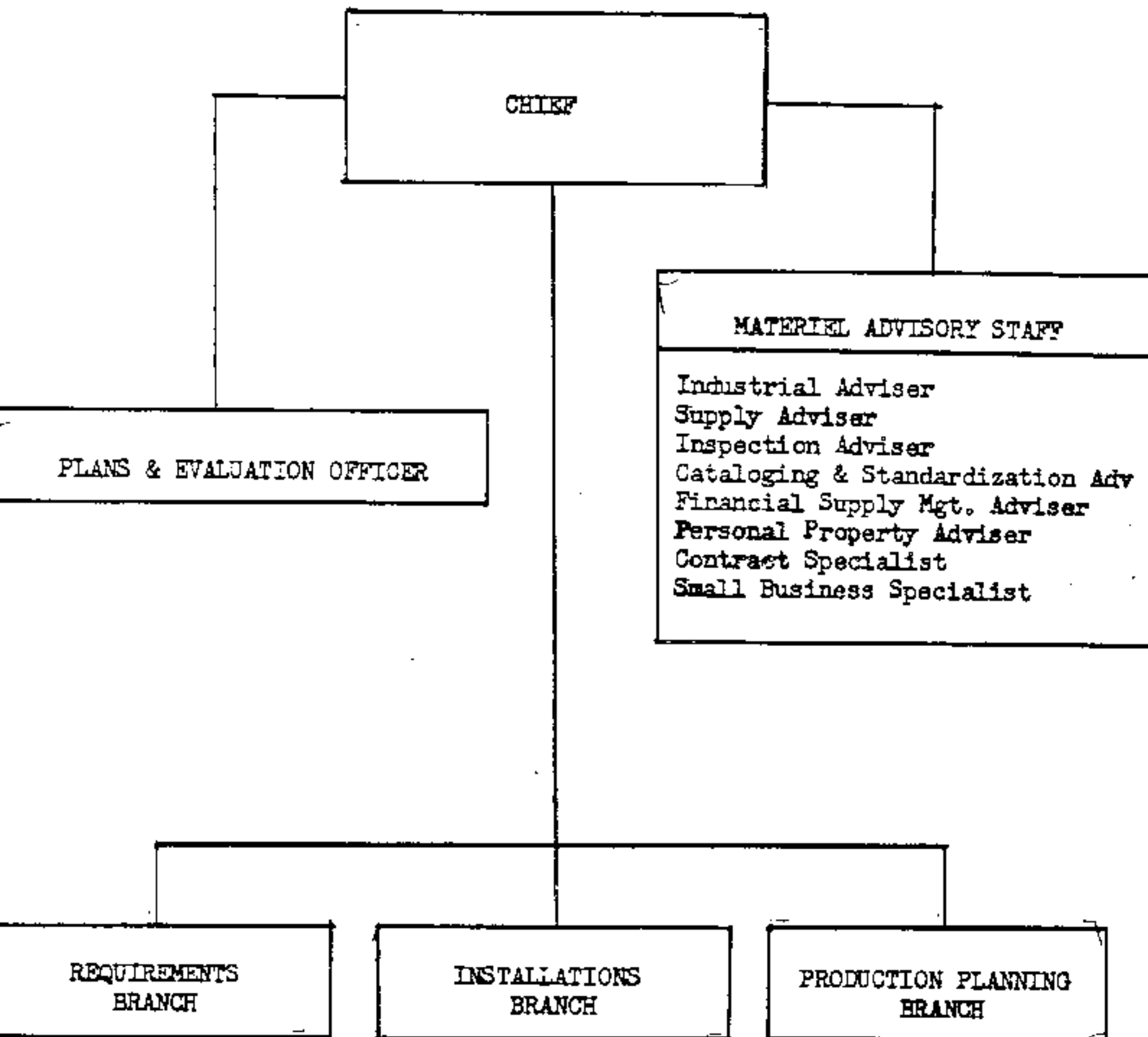
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Chart 12

OFFICE OF THE CHIEF CHEMICAL OFFICER

LOGISTICS PLANNING DIVISION

ORGANIZATION CHART



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of employees skilled in the handling of exacting and diverse administrative and support tasks. One result was that the headquarters was deficient in long range administrative planning at the end of the fiscal year. Only more experience, training and administrative experimentation, it was felt, could solve these problems. The FY 1956 difficulty in arranging comptroller services for the Headquarters, Chemical Corps Material Command, was reduced to insignificance during FY 1957 through better co-ordination with the Office of the Comptroller, OCCmlO, and through the assumption of additional functions by the Comptroller, Army Chemical Center.<sup>209</sup>

(U) The organization of Logistics Planning Division, OCCmlO, (Chart 12) was unchanged with one minor exception during fiscal year 1957. The exception was that the position of Personal Property Officer was raised to the Advisory Staff. The position which had existed, first in the Comptroller's office and later in Logistics Planning Division, since 1954 was established to account for government owned property in the hands of private contractors. The position was re-established as the Personal Property Advisor to simplify lines of communication and to broaden and clarify responsibility. The Personal Property Advisor now monitors Corps-wide activities pertaining to post, camp, and station property as well as government-owned equipment in the hands of private contractors. In addition, he insures training of

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209

- (1) Summary of Major Events and Problems, FY 56, pp. 160 - 61.  
(2) Stubbs interv, 9 Jul 57.

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procurement officers in proper procedures in his field, and reviews procurement regulations to determine coverage of property procedures.<sup>210</sup>

### Refinement of Current Procedures

(U) Following the assumption of responsibilities for the direction of Chemical Corps Program 9 (Supply, Distribution and Maintenance) in FY 1956,<sup>211</sup> planning was instituted for the centralization of all end item requirements determination, supply control, inventory distribution, procurement direction, and stock accountability within the headquarters of the Chemical Corps Materiel Command. These responsibilities had formerly been distributed among chemical supply sections at general depots, Chemical Corps branch depots, the Office of the Chief Chemical Officer, and the Chemical Corps Materiel Command Headquarters. Centralization plans were given impetus by Department of Defense directive in October. By 15 March 1957 the Supply Division of the Chemical Corps Materiel Command had assumed control of domestic requisitions, overseas extract requisitions, station excess reports, and all followup correspondence formerly handled by U.S. Army Chemical Depot, Eastern, and the Chemical Supply Section of the U.S. Army General Depot, New Cumberland. Three days later maintenance of stock control and accountability was transferred from those installations to the Supply Division. On 29 March and 1 April 1957 the same

210

(1) Williams interv, 30 Jul 57. (2) Interv, Hist Off with Mr R.S. Risley, Log Pl Div, OCCmO, 31 Jul 57. (3) Quart Hist Rpt, Log Pl Div, OCCmO, Oct - Dec 56.

211

Summary of Major Events and Problems, FY 56, p. 159.

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responsibilities which had been exercised at the U.S. Army Chemical Depot, Midwest, and in the Chemical Supply Section, U.S. Army General Depot, Memphis, were transferred. On 3 and 6 May 1957 the stocks and responsibilities of the Chemical Supply Section, U.S. Army General Depot, Utah, and the Chemical Corps Rocky Mountain Storage Area were added to complete the list of Chemical Corps storage installations. During these transfers, pertinent records and functions of Requirements Branch, Logistics Planning Division, OCCmlO, were transferred as the need arose. The phased transfer of other requirements determination, supply control, inventory distribution, and procurement direction functions from OCCmlO to the Materiel Command began in May and was scheduled for completion on 1 July 1957.<sup>212</sup>

(U) The major problem associated with the transfer of supply control functions from storage installations and from the Office of the Chief Chemical Officer was in obtaining an adequate staff and an adequately trained staff to handle the new functions. A working solution to the staffing problem was in effect at the end of the fiscal year, but no long-term solution was apparent. The staffing needs would become particularly urgent if the activity level should rise. The centralized operation was, in so far as the partial operation of the year indicated, both efficient and economical. Shipping orders can now be placed upon the supply point having the greatest stockage, or the most

212

- (1) Stubbs interv, 9 Jul 57. (2) Richardson interv, 19 Jul 57.  
(3) Interv, Hist Off with Lt Col D.W. Dick, Supply Div, MATCOM, 19 Jul 57.  
(4) Interv, Hist Off with Mr W.J. Patro, Supply Div, MATCOM, 22 Jul 57.  
(5) Interv, Hist Off with Mr G.I. Rhorer, Log Pl Div, OCCmlO, 30 Jul 57.  
(6) DOD Directive 4140.1, 12 Oct 56. (7) DA Cir 725-2, 15 Feb 57. (8) OCCmlO GC 17, 11 Jun 57. (9) Quart Hist Rpts, MATCOM, FY 57. (10) Quart Hist Rpts, Log Pl Div, OCCmlO, Jul - Sep, Oct - Dec 56; Jan - Mar 57.

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available stockage, of wanted items. The cost of transportation can be reduced by planning shipments on a nationwide basis rather than on an individual depot basis. The expense and delay involved in extracting requisitions for unavailable stocks to the headquarters and to other depots can be entirely eliminated. All factors concerning overseas supply can now be assessed in one controlling location. These advantages were expected to be even more apparent when the anticipated mechanization of supply control and stock control operations goes into effect, probably during FY 1958. During the partial operation in FY 1957 these operations were performed by hand; the clerical load involved in typing and retyping requisitions, shipping documents, and record documents was excessive and the process was time consuming. A survey was made to determine the feasibility of installing automatic data processing and electronic communications machinery. Installation was recommended as a result of the survey, and contractors' estimates were to be forwarded to higher authority early in FY 1958. Mechanized operation should fit in well with a commodity basis materiel control procedure which, by directive of the Deputy Chief of Staff for Logistics, was put in effect through a reorganization of Materiel Control Branch, Supply Division, Chemical Corps Materiel Command, in the last quarter of CY 1956.<sup>213</sup>

<sup>213</sup>  
(1) Stubbs interv, 9 Jul 57. (2) Richardson interv, 19 Jul 57. (3) Dick interv, 19 Jul 57. (4) Patro interv, 22 Jul 57. (5) Logistics Directive 111-780, 13 Jun 56. (6) Quart Hist Rpt, MATCOM, Oct - Dec 56. (7) Semi-Annual Presentation of Chemical Corps Programs and Activities, MATCOM, 2 Apr 57, in file "Briefing - General Creasy, Folder 1" maintained by Supply Div, MATCOM. (8) Briefing on Major Aspects of Materiel Command Programs and Activities, MATCOM, 2 Jul 57, in file "Briefing - General Creasy, Folder 2" maintained by Supply Div, MATCOM.

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Current and Mobilization Potential

(FOUO) The problems associated with maintaining a high mobilization potential in the Chemical Corps materiel field were more difficult of solution than those arising from refinement of procedures. The demands of economy and declining current procurement activity dictated a reduction in the Chemical Corps procurement organization below the level authorized at the time of the Corps reorganization and considerably below that authorized by the reorganization of 1 July 1955.<sup>214</sup> Fiscal year 1957 saw no significant reduction, but headquarters, Materiel Command, drew up plans to cover the reduction scheduled for FY 1958. These plans provided for the designation of the U.S. Army Chemical Procurement District, New York, as the major Corps procurement agency. Procurement offices within the various installations would continue to render installation support. The Chicago district, which was not assigned to new procurement in FY 1957, would close out or transfer all the business on hand, and, with a staff of approximately fifty individuals, both military and civilian, would carry on planning activities and provide limited assistance to New York for active procurement in the Chicago geographical area. The San Francisco district would maintain its planning and limited procurement status. The Dallas and Atlanta districts with staffs of about

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(1) See below pp. 129 - 30 for details on the decline in procurement activity. (2) Summary of Major Events and Problems, FY 54, pp. 97 - 100; FY 55, pp. 122 - 23; FY 56, p.164

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five individuals each would be reduced to limited planning. As of 30 June 1957 the future status of the Boston sub-office of the New York district was uncertain. No method was found of retaining a sufficient hard-core procurement personnel force for mobilization duty under the proposed system. In subsequent fiscal years the Chemical Corps faces the task of formulating chemical procurement measures to meet a possible national emergency.<sup>215</sup>

(S) Another problem in the retention of mobilization potential was to maintain a sufficient amount of activity in Chemical Corps arsenals to provide a measure of mobilization production capability and to retain key personnel. A proposal for placing one or two arsenals in standby was viewed unfavorably by Chemical Corps Materiel Command headquarters since each of the arsenals has distinctive specialities together with equipment and personnel to produce in these specialized areas. These specialities are: Edgewood, protective items, smoke munitions, experimental and small order work; Pine Bluff, incendiary and biological munitions; Rocky Mountain, toxics and toxic munitions. Transfer of equipment or personnel between arsenals would be economically impossible. It was therefore proposed to maintain all three arsenals on a minimum production rate, and it was pointed out that this proposal would be only slightly more expensive than standby maintenance. The proposal was before higher authority at year's end. If this proposal should

215

(1) Stubbs interv, 9 Jul 57. (2) Richardson interv, 19 Jul 57.  
(3) Interv, Hist Off with Lt Col R.D. George and Mr F.A. Abbruscato, Indus Div, MATCOM, 26 Jul 57.

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be accepted, there was a possibility of scheduling some engineering test and user test procurement in the arsenals to increase the workload.<sup>216</sup>

(U) The five year projection military item supply control form originated by the Office of the Deputy Chief of Staff for Logistics and completed in the Office of the Chief Chemical Officer and in Chemical Corps Materiel Command was a management device of great assistance in formulating the arsenal production plans and in scheduling all procurement. This device, introduced in the Chemical Corps during FY 1957, permits the assessment of procurement by categories or by individual items in terms of funds, past procurement, and planned procurement. Assets, anticipated losses, quantities of unserviceable material, requirements for industrial mobilization, supply of repair parts, conditions of procurement, storage, distribution and disposal, and demands of customers other than Army are also indicated for each item. Employment of the form has taken much of the "guess-work" out of computing current and mobilization potentials.<sup>217</sup>

(U) A Chemical Corps administrative device which originated in and is maintained by Logistics Planning Division, OCCmlO, was the documentary presentation, "Readiness Position of Selected Chemical Corps Items." This

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(1) Stubbs interv, 9 Jul 57. (2) Richardson interv, 19 Jul 57.  
(3) George-Abbruscato interv, 26 Jul 57. (4) Interv, Hist Off with Mr O.R. Mullen, Mr W.H. Van Sant, and Mr Sidney Katz, Log Pl Div, OCCmlO, 31 Jul 57.

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(1) DCSLOG Form 53 (Temp), 24 May 57. (2) Richardson interv, 19 Jul 57. (3) George-Abbruscato interv, 26 Jul 57.

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presentation was intended to provide the Chief Chemical Officer with "a review of the responsiveness of the Chemical Corps in meeting established objectives for the introduction of selected development items into the supply system." The intermittent report, published twice in the second half of FY 1957, surveys the progress and projected schedule of each item from the statement of requirements through all logistics procedures to distribution. A unique time phase and variable development phase graphic presentation which permits a one-glance appraisal of all factors was devised by Mr. J.W. Gese of the Program Coordinating Office, Office of the Chief Chemical Officer. Since this information points up delays in any logistics phase from the establishment of a research and development item project to delivery of the first item into the supply system, it received wide use and attention in the Chemical Corps and it became one of the bases for further study of the logistics process by the Office of the Deputy Chief Chemical Officer for Scientific Activities.<sup>218</sup>

(U) Still another planning measure was undertaken at the suggestion of the Inspector General, Office of the Deputy Chief of Staff for Logistics. The Inspector General commented in the report of his annual inspection of the Office of the Chief Chemical Officer that the informal working arrangements between the Chemical Corps and the Ordnance Corps with respect to co-ordinating responsibilities for toxicological munitions should be formalized. The Chief

218

(1) Mullen-Van Sant-Katz interv, 31 Jul 57. (2) See above p. 91. (3) Rpts, Readiness Position of Selected Chemical Corps Items, Office of the Chief Chemical Officer, 11 Mar 57, 1 May 57. (4) CCR 11-6, 9 Apr 57. (5) Ltr, Lt Col W.G. Willmann, Asst to DCCMLO for SA to CG, ACmlC and MATCOM, et al., 13 Jun 57, sub: Time Required to Develop End Items. (6) Quart Hist Rpt, Log Pl Div, OCCMLO, Oct - Dec 56.

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Chemical Officer and the Chief of Ordnance accordingly agreed that each would appoint liaison officers to supervise joint supply control procedures set up in July 1955, and that specific dates would be set for co-ordination and review of five-year procurement and production programs and item projects. The formalized procedure was effective in April 1957. Brief experience before the end of the year proved that better co-ordination and planning resulted. The only problem encountered and not entirely solved at year's end was establishing a regular and speedy channel for communication among the Ordnance and Chemical elements concerned which included the Ordnance Supply Command at Joliet, Illinois, the Ordnance Letterkenny General Depot, and the Chemical Corps Materiel Command as well as the Offices of the Chief Chemical Officer and the Chief of Ordnance.<sup>219</sup>

### Procurement and Production

(U) Fiscal year 1957 procurement and production funds made available to the Chemical Corps amounted to a total of about \$17.5 million. Slightly less than \$14.5 million was allotted by the Department of the Army and the remainder by other agencies. The total of new funds was about eight millions less than in the preceding year. Total funds available in FY 1957 from all sources and from carryover for procurement and production expenditure was about \$75 million. Of this amount \$39.4 million, representing 96 percent of

219

(1) Mullen-Van Sant-Katz interv, 31 Jul 57. (2) DF, Col G.P. Gibbons, Mat Div, OCCmlO to C of Ord, 15 Mar 56, sub: Toxicological Munitions, with Cmt 2, C of Ord to CCmlO, 27 Mar 56. (3) DF, Col G.P. Gibbons, Log Pl Div, OCCmlO, to C of Ord, 29 Mar 57, sub: Toxicological Munitions. (4) Quart Hist Rpt, Log Pl Div, OCCmlO, Jan - Mar 57.

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he schedule, was actually expended.<sup>220</sup>

(U) In continuation of a trend beginning in fiscal year 1954 there was a decline in the amount of new procurement business in FY 1957. This decline coupled with the decline in obligated carryover funds had a serious impact upon the whole Chemical Corps materiel system, but the impact was particularly severe on the arsenals. The district share of new business rose from less than half of the total in FY 1956 to 73 percent in FY 1957.<sup>221</sup>

(U) An accomplishment of FY 1957 was the channeling of a larger share of the district business into the hands of small businessmen. Small business contract awards amounted to 47 percent of the value of all awards as opposed to 37 percent in the preceding year and a Department of the Army target of 35 percent. This raise in percentage of small business was particularly significant in view of the fact that small business handled all but about three million dollars worth of Chemical Corps procurement which conceivably could have been awarded outside of major industry. The Chemical Corps is particularly able to take advantage of working with small businesses since many of its contracts fall within the small business range. The advantages to the Chemical Corps have been individual attention to contracts and a

220

(1) Quart Rev, Apr - Jun 57, pp. 50, 102. See page 102 for obligation figures including carryover funds reprogrammed from the preceding fiscal year. (2) Summary of Major Events and Problems, FY 56, p. 162.

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(1) Quart Rev, Apr - Jun 57, p. 104. (2) Summary of Major Events and Problems, FY 56, p. 163. (3) See above, pp. 125-27 for district and arsenal plans.

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greater opportunity for exchange of information between businessmen and military project officers.<sup>222</sup>

(U) There were several management improvements in the procurement and production field in FY 1957 in addition to the planning improvements mentioned above.<sup>223</sup> These improvements included consolidation and co-ordination of various forms of procurement instructions and regulations, the closing out of completed contracts, and a concentrated effort to reduce materiel lead times.

(U) In the year between 1 March 1956 and 1 March 1957 a net reduction in all types of procurement instructions of 25 percent was made. This was done as part of a project to simplify and speed the the detail work of procurement administration. The goal of the project was to develop one medium of procurement regulation -- the Chemical Corps Procurement Instruction -- to replace the various orders, regulations, and instructions which have previously been issued.<sup>224</sup>

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222

(1) Statement, Maj Gen W.M. Creasy, Chief Chemical Officer, before the Government Procurement Subcommittee of the Senate Select Committee on Small Business, 30 Jul 57. (2) Statement, Brig Gen J.H. Rothschild, CG, RDCOM, before Subcommittee as above. (3) Statement, Col G.P. Gibbons, Log Pl Div, OCCm10, before Subcommittee as above. (4) Interv, Hist Off with Mr A. J. Caiozzo, Log Pl Div, OCCm10, 31 Jul 57. (5) Quart Rev, Apr - Jun 57, pp. 55, 56.

223

See above, pp. 127 - 29.

224

(1) George-Abbruscato interv, 26 Jul 57. (2) Interv, Hist Off with Mr A.F. Brinkman, Indus Div, MATCOM, 26 Jul 57.

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(U) The closing out of completed contracts which have been held up for fiscal or legal reasons by the Government or by the contractor had been a Chemical Corps problem for the last several years. Vigorous measures were taken during fiscal year 1957 to remove the obstacles to closing in each individual case. As of 30 June 1956 there were 139 contracts which had been completed but not closed out for a period ranging from six months to more than two years, and as of 30 June 1957, despite the addition of many contracts to the group during the year, the number stood at 115. In the second half of the year a total of fifty-two contracts were closed out.<sup>225</sup>

(U) The accurate calculation of materiel lead time had been a Chemical Corps problem for a number of years, and during the past five years various efforts, some successful, have been made to standardize and reduce lead time in specific instances. During FY 1957 it was decided to approach the problem as a whole and to set arbitrary lead time limits in order to have a yardstick against which performance data could be measured. Administrative lead time, from the time procurement authority was received in Materiel Command until signature of a contract, was the principal area of difficulty. The arbitrary limit for district procurement was set at 80 days, and for arsenal procurement

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225

(1) Ibid. (2) Interv, Hist Off with Pfc J.T.O'Connell, Indus Div, MATCOM, 29 Jul 57. (3) Indus Div, MATCOM, "Review of Progress made by Activities in Closeouts from 31 December 1956 to 30 June 1957," extracted from Report of Contracts Completed but not Closed Out (RCS: CMLWX-T-230), 25 Jul 57. (4) Quart Rev, Jul - Sep 56, pp. 91, 92; Oct - Dec 56, pp. 57, 58, 122 - 24; Jan - Mar 57, pp. 47, 48, 112 - 14; Apr - Jun 57, pp. 53, 54, 117 - 19.

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Table 5 - Chemical Corps Procurement by Item and Month (FY 57)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Cumulative (FY 57)
Quartermaster, Incendiary, Bomb, FT1, 750 lb, K35	2367	0	2795	0	2363	0	2731	0	2694	0	2346	1784	1784
Quartermaster, Incendiary, Bomb, FT1, 750 lb, K36	1151	1650	1115	212	15	21	0	10	0	77	0	47	4255
Bomb, Fire, 750, M116A1	3000	3075	2835	3100	3173	3060	3585	3030	3120	2730	3180	3270	38018
Protector, Collective, Hospital, 6-man, M7A1	0	0	0	0	167	64	208	298	283	20	0	0	980
Alarm, Flood, Automatic, K-71	0	0	0	0	0	0	0	0	1716	12	0	0	12
Mask, Protective, Non-combat, K31HFS	0	0	0	0	0	20	0	1512	1716	3076	2617	2907	11519
Filter, Gas, 750PH, K36K1	0	0	0	0	0	0	0	0	193	0	0	0	193
Filter, Gas, 750PH, K37	0	0	0	0	0	0	0	0	193	0	0	0	193
Shell, Smoke, M, 120 mm, T16	0	0	0	0	0	0	0	0	0	0	0	0	25683
Shell, Smoke, M, 155 mm, M110	20000	20000	20000	22000	20000	20000	20000	20000	20000	20000	20000	25000	265708
Shell, Gas, 105 mm, Art, M360	71003	51030	64912	50011	15512	35528	37932	39288	22459	39528	40312	73944	557599
Shell, Gas, 155 mm, M123	0	0	0	0	0	0	0	0	0	1913	0	0	1913
Respirator, Paint Spray, M5	0	0	3000	5196	0	0	0	0	0	0	0	0	8196
Valve, Antisiphon, M1	0	0	1200	0	0	0	0	0	0	0	60	21	1250
Protector, Collective, 600 GPM, K28	60	60	60	60	60	72	2	1	0	60	60	0	466
App, Portable Flame Thrower, K32	0	0	0	25	275	0	0	0	0	0	0	0	300
Decon Apparatus, PD Trailer Mtd, 200 Gal, M15	0	0	0	0	0	0	0	0	0	0	0	0	53
Decon Apparatus, PD Trailer Mtd, 200 Gal, M15R1	0	0	0	0	0	0	0	0	36	0	0	0	36
Condenser, 105 mm, M1, HC	0	0	1048	53183	67950	73373	123456	229548	204460	122960	105246	72310	1079118
Cryptographic Pencil Destroyer, Incendi, T81	0	0	0	0	0	4676	226	0	0	0	0	0	4070
Document Destroyer, Incendi, M1	0	0	0	0	0	0	226	0	0	0	0	0	226
Mask, Gas, M2, M2	0	0	0	0	0	2900	3023	0	11257	11500	11559	12016	62059
Kit, Gas Agent Detector, M15	0	0	0	0	0	0	0	0	0	0	0	0	0
Pump, Spraying (Spray), H201A1	0	0	0	0	0	99060	95000	86100	15	0	400	298	280780
Breathing Apparatus, Supplied Air, M15	0	0	0	0	0	0	0	0	0	0	0	0	1133
Regulator, M1	0	0	0	0	0	0	310	0	0	0	0	0	310
Filter, Gas & Part 600 GPM, K25	0	0	0	0	0	0	0	0	0	0	0	0	54
Shell, Smoke, M, 90 mm, T92	0	0	0	0	0	0	0	0	0	0	0	0	150
Grenade, Hand, GN-14, E1/H1	0	0	0	0	0	0	501	6500	4684	1464	1074	0	11162
Carbide, Smoke, Red, 105 mm Shell, M2	0	0	0	0	0	0	0	0	0	0	0	0	43
Carbide, Smoke, Green, 105 mm Shell, M2	0	0	0	0	0	0	0	0	0	0	0	0	43
Citric Acid, Monohydrate Tech Crystalline	0	0	0	0	0	0	0	0	0	0	13198	Complete	13198
	0	0	0	0	0	0	0	0	0	0	0	11670	11670
	0	0	0	0	0	0	0	0	0	0	0	5993	5993

Source: Compiled from Monthly Summaries of Procurement Performance, Ft 57, Headquarters, Materiel Command, (CMM-PC-27) (Encl C 9).

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at 110 days. At the end of the year performance data including justification of every variation from the limit was being assembled in the Materiel Command headquarters. It was expected that this data would permit the establishment of realistic schedules which would in turn provide for better procurement processing and for better contractor performance evaluation.<sup>226</sup>

(U) A quantitative analysis of Chemical Corps procurement deliveries by item and month during FY 1957 appears in Table 5. This table again reflects the decline of procurement both in quantities and number of items.<sup>227</sup> Some of the items found on this table were of special importance or their production presented particular problems.

### M35 and M36 Incendiary Bomb Clusters<sup>228</sup>

(U) Production of the M36 incendiary bomb cluster at Pine Bluff Arsenal was completed in December 1956 although a few clusters were accepted during the second half of the year. The Air Force waived further drop tests after the initial series of tests proved consistently good.<sup>229</sup> Production of the M35 cluster at Rocky Mountain Arsenal was scheduled for completion during

226

(1) George-Abbruscato interv, 26 Jul 57. (2) Brinkman interv, 26 Jul 57. (3) Interv, Hist Off with Mr M. H. Ginnivan, Indus Div, MATCOM, 26 Jul 57.

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Compare Summary of Major Events and Problems, FY 56, Table 5, FY 55, Table 6.

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See Summary of Major Events and Problems, FY 56, pp. 166 - 67, for FY 56 information on this subject.

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Quart Hist Rpt, MATCOM, Jul - Sep 56.

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FY 1958 following the reduced schedule procedure inaugurated in FY 1956 of alternating the same shift between filling and clustering in alternate months. Some delay in delivery of both clusters resulted from a shortage of shipping guards, but the M1 wooden guard was substituted for the M3 metal guard in order to meet schedules. Production of the M3 guard was expected to be on schedule in the first month of FY 1957.<sup>230</sup>

M116A1 Fire Bombs<sup>231</sup>

(U) Production of the M116A1 fire bomb was on schedule during FY 1957 with Evans-Reamer Corporation as the sole supplier. No production problems developed and the contract was expected to be completed in the third quarter of FY 1958. The contracts of Diamond Building Products Company and the Aircraftman Corporation, former suppliers, were in the process of close out review by higher authority.<sup>232</sup>

Protective Masks<sup>233</sup>

M13 Field Protective Mask (C) The problems associated with the supply of field protective masks were considered by the Chemical Corps Program Advisory

230

George-Abbruscato interv, 26 Jul 57.

231

See Summary of Major Events and Problems, FY 56, pp. 167 - 68, for FY 56 information on this subject.

232

(1) Quart Hist Rpt, MATCOM, Apr - Jun 57. (2) Quart Hist Rpt, Log Pl Div, OCCm10, Apr - Jun 57. (3) Yeffman interv, 31 Jul 57.

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See Summary of Major Events and Problems, FY 56, pp. 168, 171, for FY 56 information on protective mask production.

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Council, and, at its 14 September 1956 meeting, this group took the position that, in spite of the risks involved in the continued reduction in the supply status of M9A1 field protective masks, an effort should be made to replace the standard M9A1 mask with the K13 mask. Although the M9A1 mask offers complete protection, the canisterless K13 is a superior mask from the point of view of size, convenience, weight, and wearability. Early standardization and production of the K13 was urged.<sup>234</sup> An ad hoc committee of the Program Advisory Council chaired by Dr. Thomas H. Whitehead of the University of Georgia was requested to make specific recommendations on plans for the K13 mask. The recommendations of the ad hoc committee were embodied in a three phase project drawn up by the Chemical Corps Commands. This project included: (1) a measure for development engineering study at a cost of \$50,000; (2) a measure for production engineering work at a cost of \$750,000; and (3) a measure for production at an initial cost of \$1,717,000.<sup>235</sup>

(C) In a personal letter to Lt. Gen. J. M. Gavin, Chief, Research and Development, Department of the Army, General Creasy, the Chief Chemical Officer, stated that he had instituted a crash program for the completion of development and production of the K13 mask. General Creasy indicated that the mask

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Minutes of Meeting of 14 Sep 56, CmlC Program Advisory Council, signed by Lt Col I. R. Mollen, Prog Coord Off, OCCmlO, n.d.

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(1) Memo, Report of Meeting, Ad Hoc Committee of Chemical Corps Advisory Council, 11 Jan 57. (2) Ltr, CCmlO to CG, HRCOM, et al., 5 Mar 57, sub: Development Schedule - Field Protective Mask, K13. (3) Memo, Lt Col W. G. Willmann, Asst to DCCmlO for SA for CCmlO, 12 Feb 57, sub: Development Schedule, K13 Protective Mask.

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could be ready for production in FY 1959 if the implementing procedures drawn up by his commands were approved.<sup>236</sup>

(C) The detailed plan was submitted to the Deputy Chief of Staff for Logistics in April. Only the initial development engineering measure was approved. This approval expired with the end of the fiscal year before funding procedures could be completed. At the end of the fiscal year it was planned to resubmit the entire program for fiscal years 1958 and 1959.<sup>237</sup>

ESIR15 Non-Combat Protective Mask<sup>238</sup> (U) Production of the non-combat mask for the Federal Civil Defense Administration was scheduled for November 1957, but a strike in the plant of the contractor, Firestone Industrial Products Company, delayed delivery until December. Minor production difficulties were expected to delay contract completion beyond scheduled termination in 1st Quarter, FY 1958.<sup>239</sup>

Navy Mark V Gas Mask (U) Production of the Navy gas mask by the General Tire and Rubber Company was resumed during the 2d Quarter, FY 1957, under a new

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Pers ltr, Maj Gen W. M. Creasy, CGM10, to Lt Gen J. M. Gavin, C of R&D, DA, 5 Mar 57, no sub.

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(1) DF, Maj Gen W. M. Creasy, CGM10, to DCSLOG, 19 Apr 57, sub: Industrial Preparedness Measures, Chemical Corps P&P, AM231 - FY 1957 and FY 1958, K13 Mask. Cmt 2, Col C. S. Hays, Actg C Proc Div, ODCSLOG, to CGM10, 28 May 57, sub: Industrial Preparedness Measures, K13 Mask, FY 1957. (2) Mullen-Van Sant-Katz interv, 31 Jul 57.

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Summary of Major Events and Problems, FY 56, p. 168.

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Quart Hist Rpts, MATCOM, Oct - Dec 56; Apr - Jun 57.

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contract. An additional contract was signed during the last quarter of the year which called for completion of a total of more than 166,000 masks under both contracts during FY 1958.<sup>240</sup>

Commercial Chemicals<sup>241</sup>

(U) Three years of Chemical Corps experience with the Army-wide responsibility for commercial chemicals led to further streamlining and simplification of operations in FY 1957 at considerable savings to the Government. The number of commercial chemicals was reduced from 510 to 485 of which only 159 were maintained in depot stocks. Continued emphasis was put upon local purchase and open-end contracting to eliminate or reduce storage and transportation expense and to secure the benefits of lower prices usually available with these types of procurement. At the end of the year fourteen open-end contracts were in effect and three more were in the process of negotiation. The dollar value of depot commercial chemical inventories declined by half a million during the year to \$3.2 million. In the same period nearly three million dollars worth of chemicals were issued.<sup>242</sup>

(U) An accomplishment was the further elimination of dispersed stocks of commercial chemicals inherited from the old system and left in depots of

240

(1) Summary of Major Events and Problems, FY 56, p. 171. (2) Quart Hist Rpts, MATCOM, Oct - Dec 56, Apr - Jun 57.

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Summary of Major Events and Problems, FY 56, pp. 168 - 70.

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Interv, Hist Off with Mr Martin Howard, Supply Div, MATCOM, 23 Aug 56.

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other technical services to be reduced by attrition. Dispersed stockage locations were reduced from twenty-eight to nineteen during FY 1957 without the expense of inter-depot shipment.<sup>243</sup>

Toxic Planning and Production

(C) On 1 July 1956 the Chemical Corps Phosphate Development Works (PDW) at Muscle Shoals, Alabama, was transferred from the Chemical Corps Engineering Command to the Chemical Corps Materiel Command.<sup>244</sup> PDW manufactured "dichloro" (formerly dichlor) the intermediate product for the manufacture of GB nerve gas by the dimethyl hydrogen phosphite (DMHP) process. Engineering Command assigned a project engineer to the supervision of the Phosphorus Oxychloride Reduction Facility where the only remaining principal production problem remained to be solved. This facility which reduced production step III by-product phosphorus oxychloride to step I raw material, phosphorus trichloride, had never been able to keep pace either with the amount of material requiring reduction or with the demands for raw material.<sup>245</sup>

(C) During FY 1957 optimum operating conditions for reduction furnaces using modified refractory furnace linings were established in the phosphorus oxychloride reduction facility. Data thus collected permitted calculation of

243

(1) Ibid. (2) Richardson interv, 19 Jul 57. (3) Interv, Hist Off with Lt Col D. W. Dick, Supply Div, MATCOM, 19 Jul 57.

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OCCMLO GO 15, 8 Jun 56.

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Summary of Major Events and Problems, FY 56, pp. 172 - 74.

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a predictable furnace run of 100 days at an average reduction rate of 50 tons per day which would support a 100 tons per day production rate of dichloro. Such maximum performance represented full operation of the plant without the necessity for sale of phosphorus oxychloride to private industry.<sup>246</sup>

(C) Other production accomplishments at PDW included the installation of a vacuum jet system to replace centrifugal vacuum pumps in step I and the operation of the entire plant on production capability runs at a rate exceeding mobilization objectives. The jet system allowed operation of step I at peak rates of 77 tons per day at qualities as high as 92.5 percent. The production capability runs demonstrated that dichloro production rates of 75 tons per day or better were possible in sustained production. A 45 ton per day rate was considered acceptable for round-out purposes.<sup>247</sup>

(S) Round-out of the facility at Rocky Mountain Arsenal where the last two steps of the agent production process take place was substantially complete in the first quarter of fiscal year 1957. There were no significant production difficulties although modification of equipment, major and minor repair work, and maintenance work proceeded throughout the year. Demands did not require agent production on a sustained basis, but production during the 2d and 3d Quarters was 6,055,877 pounds of agent at a yield of 88.03 percent for the

246

Annual Hist Rpt, US Army GnlC Phosphate Development Works (PDW), CY 56, pp. 7 - 8.

247

Ibid.

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2d Quarter and 91.17 percent for the third. During the 2d Quarter the plant operated 85.4 percent and during 3d Quarter 90.2 percent of the available time, notably exceeding the sustained run of fiscal year 1956 when the plant was inoperable 17.7 percent of available time. The average feed rate for the 2d Quarter was 170 percent and for the 3d Quarter 197.6 percent of the round-out schedule. Two peaks of 240 percent feed rate were attained; the sustained rates and the peaks were clear indication of high mobilization potential.<sup>248</sup>

Enlisted Scientific and Professional Personnel made significant contributions to production and operations accomplishments both at Muscle Shoals and at Rocky Mountain Arsenal.<sup>249</sup>

(C) The two waste disposal facilities planned at Rocky Mountain Arsenal in FY 1956 were put into operation during FY 1957, the evaporative waste disposal lake on 27 October and the chlorine plant reduction of by-product hydrochloric acid during the 2d Quarter production run. Both methods of disposal were successful although there was storm damage to the disposal lake during the year. As of the end of the year plans were being made to designate the chlorine plant as an operating adjunct of the GB plant.<sup>250</sup>

(S) Agent produced during fiscal year 1957 and that carried over from fiscal year 1956 was used to fill ton containers, M360 shells and M121 shells.

248

Quart Hist Rpts, US Army Cml Arsenal, Rocky Mountain, FY 57.

249

(1) Ibid. (2) Annual Hist Rpt, PDW, CY 56.

250

(1) Quart Hist Rpts, US Army Cml Arsenal, Rocky Mountain, Oct - Dec 56; Jan - Mar 57; Apr - Jun 57. (2) Quart Hist Rpts, MATCOM, Oct - Dec 56; Jan - to Mar 57; Apr - Jun 57.

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Production to meet total requirements for these purposes was near completion at the end of the fiscal year. An attempt to revise these requirements to provide for a larger mobilization agent stockpile was not successful. The principal problem was that there has been no agreement on a basic day-of-supply for toxic munitions. The Assistant Chief Chemical Officer for Planning and Doctrine was working to establish the criteria for a day-of-supply calculation at the end of the fiscal year, but, meanwhile, the Deputy Chief of Staff for Logistics ordered the cessation of agent production early in FY 1958 since Budget-Supported Force requirements would be met.<sup>251</sup>

(S) During FY 1957 a new agent was being considered for production. The Chief Chemical Officer, on the advice of a committee appointed to consider V-Agent production plans, directed that the target for operation of a continuous process ten ton per day V-Agent production plant be moved up from June 1962 to January 1960. Slightly more than \$36,000,000 was requested from higher authority for the accomplishment of this goal. As of the end of the fiscal year the Deputy Chief of Staff for Logistics had directed that \$29,900,000 of this sum, representing actual construction of a plant, be deferred from fiscal 1958 to fiscal 1959 programming. It was expected that a reconsideration of this decision would be requested early in fiscal 1958.<sup>252</sup>

<sup>251</sup>  
(1) Mullen-Van Sant-Katz interv, 31 Jul 57. (2) George-Abbruscato interv, 26 Jul 57.

<sup>252</sup>  
(1) Mullen-Van Sant-Katz interv, 31 Jul 57. (2) Readiness Position of Selected Chemical Corps Items, Log Fl Div, OCCmlO, 1 May 57, pp. 23 - 24. (3) Quart Rev, Class Sup p. 31, Apr - Jun 57.

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### Other Procurement and Production Forecasts

(U) Items scheduled for procurement in FY 1958 included: the M15 chemical agent detector kit; the M16 grenade; M3A3, M6, and M15R1 power driven decontaminating apparatus; and the M33R2 LOPAIR alarm. As of the end of the year production of M3A2 mechanized smoke generators was scheduled for FY 1959. A small quantity of M1 automatic field alarms was delivered in FY 1957. A contract was let for a larger quantity of M21R2 alarms for the Navy, but the contractor had made no deliveries as of the end of the year.<sup>253</sup>

### Industrial Mobilization Planning

(U) A principal Chemical Corps objective during fiscal year 1957, as indicated above, was to maintain and increase the materiel mobilization potential. Much of this work was carried on under current rather than strictly mobilization programs since it was a part of Chemical Corps Materiel Command policy to assume that maintaining current procurement, supply, and distribution capabilities was an essential factor in mobilization potential. Guidance from higher authority for the formal mobilization programs in the years prior to FY 1957 reflected a similar policy only in part since there were few measures for immediate preparedness for an emergency and many measures which assumed a long-range, and perhaps slow, development of mobilization potential. During FY 1957, however, the impact of new national strategic thinking which arose from recognition of some of the grimmer possibilities of nuclear warfare began

253

(1) Summary of Major Events and Problems, FY 56, p. 171. (2) Quart Hist Rpts, MATCOM, Oct - Dec 56; Jan - Mar 57; Apr - Jun 57.

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to be felt in formal mobilization programs. The result was a heightened emphasis on essential survival measures and immediate reaction to any national emergency. This re-emphasis was made public in Defense Mobilization Order VII-7, issued in April 1957, by the Office of Defense Mobilization. Since this formal revision came late in the fiscal year, 1957 was a year of gradual rather than decisive change, but it was nevertheless a year in which reflections of changing policy were noted.<sup>254</sup>

(U) A reflection of changing emphasis as well as a reflection of the emphasis on economy was that original estimates for the Industrial Mobilization FY 1957 program were for about \$22 million whereas \$14,298,000 in new and re-programmed funds were made available. Actual obligations were \$13,000,000, and actual expenditures totaled \$16,909,000, 97 percent of the planned and scheduled figure.<sup>255</sup>

(U) The current necessity for economy raised some funding problems in industrial mobilization planning during the year. In previous years operations in this area depended largely upon surplus funds which were left over from other appropriations. For the 1957 program it was necessary to request appropriations specifically for industrial mobilization use, and, consequently, new methods

<sup>254</sup>

(1) Richardson interv, 19 Jul 57. (2) Interv, Hist Off with Lt Col A. H. Williams, IMP Div, MATCOM, 23 Jul 57. (3) Statement, Col C. J. Merrill, Deputy Cdr, MATCOM to a meeting of Chemical Corps Reserve Officer, 6 Oct 56, title: "Industrial Mobilization Planning Program."

<sup>255</sup>

(1) DCSLOG form 6, 1 Jul 56. (2) Quart Rev, Apr - Jun 57, p. 102.  
(3) Williams interv, 23 Jul 57.

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of review of all project requests and allocations were adopted. The new methods involved submission of projects to higher authority both before and after funding approval; this necessary process slowed operations. The fiscal year authority lapsed before six Chemical Corps projects could be obligated.<sup>256</sup>

(S) The new emphasis also had its impact upon planning and upon the status of mobilization in the Corps. Initial FY 1957 planning was done on the basis of the Army master plan, ASOP 58. This master plan foresaw a mobilization base of an eighty division army organized on conventional lines. Late in FY 1956 the Budget Supported Force (BSF) concept was adopted which reduced the planning base to an army half the size of the former plan and restricted procurement objectives to a six-month mobilization period. It was necessary to review the Chemical Corps production base and subsequently to cease maintenance on a considerable portion of the Chemical Corps plant which had been designated for mobilization purposes. By the end of the fiscal year planning was re-oriented to Army master plan ASOP 60 which envisioned a pentomic force in a limited war situation. It was expected that the Corps mobilization base would accordingly be restricted another 25 percent although there was a slight increase in some individual item requirements over the BSF plan. Such a mobilization base reduction added to the one for FY 1957, it was felt, would mean considerable time and money devoted to closing out mobilization facilities, lay-away of plants and industrial equipment, and care and preservation work.<sup>257</sup>

256

(1) Williams interv, 23 Jul 57. (2) Quart Rev, Apr - Jun 57, pp. 61 - 62.

257

(1) Williams interv, 23 Jul 57. (2) Quarterly Review and Analysis of Chemical Corps Program No. 8, IMP Div, MATCOM, 1 Jan - 31 Mar 57. (3) Interv, Hist Off with Mr G. I. Rhorer and Mr P. G. Bihlman, Log Pl Div, OCGMLO, 30 Jul 57. (4) See Summary of Major Events and Problems, FY 56, p. 179.

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(S) Immediate survival planning would also bring about a recasting of the preferential items system in the coming years. Preferential items will be those immediately needed upon mobilization for gas warfare defense and possible retaliation. The aim of new preferential plans is to stockpile the most essential items, but, with the decline in current procurement, stockpiling of reserve end items may be impossible. In such cases preferential planning will include complete and detailed assignments for every process in end item production. This detailing may go so far as to include procurement of groups of hard-to-procure or long-lead time components which can be stored in the vicinity of the specifically designated location where end item fabrication will take place.<sup>258</sup>

(U) Administratively, the industrial mobilization planning operation<sup>259</sup> smoothed out during FY 1957. There was, as in FY 1956, a shortage of skilled industrial mobilization engineers. Work within Materiel Command was therefore conducted on a project rather than a branch assignment basis to make the best use of available talents. Enlisted Scientific and Professional Personnel played an important role in accomplishing the work of Industrial Mobilization Planning Division. For example, Pvt. Robert Trivers designed a format for review and analysis of the entire program, and he also supervised the production of review and analysis reports.<sup>260</sup>

258

Williams interv, 23 Jul 57.

259

For quantitative details on industrial mobilization planning operations see Quart Rev, Apr - Jun 57, pp. 59 - 62.

260

Williams interv, 23 Jul 57

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### Requirements, Cataloging, and Standardization

(U) During FY 1957 the responsibility for materiel requirements computation was being transferred from the Office of the Chief Chemical Officer to the Chemical Corps Materiel Command.<sup>261</sup> The principal activity in requirements computation, however, remained in Logistics Planning Division, OCCm10, during the year. Accomplishments included adjusting requirements to new mobilization plans<sup>262</sup> and co-ordinating data for the new five-year procurement and production program.<sup>263</sup> Conversion of all Chemical Corps items into the federal cataloging system was accomplished on 31 March 1957.<sup>264</sup> As of that date 8,894 items were converted. The addition of new items made the year end total 12,990 of which 3,900 had been identified during the fiscal year. The complete coverage of chemical items, including about 2,500 pieces of inspection equipment and other non-supply equipment, greatly facilitated the standardization of supply and was expected to be a major assistance in the mechanization of supply operations.<sup>265</sup>

261

See above, pp. 122 - 24.

262

See above, p. 145.

263

Rhorer-Bihlman interv, 30 Jul 57.

264

See Summary of Major Events and Problems, FY 56, pp. 179 - 80, for description of the federal cataloging process.

265

(1) Intervs, Hist Off with Mr L. J. Arico, Log Pl Div, OCCm10, 31 Jul 57 and 14 Aug 57. (2) See Quart Rev, Apr - Jun 57, p. 58. (3) Quart Hist Rpts, Log Pl Div, OCCm10, Oct - Dec 56, Jan - Mar 57.

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(U) The Chemical Corps also took part in the Department of Defense Standardization Program which provides for: the study of categories of items to reduce variety and improve military effectiveness; the simplification of items or processes to provide for easier production, more economical production, easier operation, or interchangeability; and the analysis of supply items to provide savings in critical materials, increased mobilization availability, or a savings in distribution and maintenance costs. The Corps prepared two detailed plans in this field and reviewed thirty-six others. One technical analysis study was made, and four simplification studies were completed.<sup>266</sup> A continuing activity which was being made a part of the standardization program was the preparation of materiel specifications. During FY 1957, 70 new specifications were prepared and 563 were revised. Also, 521 materials standards were revised and 13 new purchase descriptions were written.<sup>267</sup>

(U) A few examples of standardization actions taken during FY 1957 show estimated savings of more than a million dollars on only a portion of the program. Studies proved that the AN M7 floating smoke pot could be protected from shipment and storage damage by packing in a fiberboard container; savings were estimated at \$477,000. In another case, an off-the-shelf rubber aspirator was substituted for an expensive plastic pump in the M15 and M28 chemical agent detector kits at a savings of \$7.50 per unit. An example for which a monetary

<sup>266</sup>

(1) Military Manual for Standardization, M201, Office of the Asst Sec of Defense (Supply and Logistics), 1 Aug 55, with App. A, DOD Directive 4120.3, 15 Oct 54. (2) Arico intervs, 31 Jul 57, 14 Aug 57.

<sup>267</sup>

Ibid.

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savings could not be assigned was the prolongation of storage life and improvement in function of the M18 colored smoke grenade by substituting fiber packing for the hermetically sealed can which, it was found, tended to increase corrosion. Wooden shipping guards for bomb clusters were treated with a wood preservative which lengthened life from three to twelve years at an estimated savings of \$500,000 over the twelve year period. The substitution of the less expensive 3S aluminum alloy for the more expensive 61S alloy in the M116A1 fire bomb resulted in an estimated savings of \$18,750 in current procurement.<sup>268</sup>

(U) The activity of FY 1956 in the production of equipment publications reduced the requirements in fiscal year 1957. Twenty-five new publications of all types were produced in contrast to forty-five in FY 1956. Among the new publications and revisions produced were: Technical Manuals, seven new and two revised; Technical Bulletins, three new; Lubrication Orders, one new; Modification Work Orders, two new; Supply Manuals, Management (Stock List) Type, nine new, fifty-two revised; Supply Manuals, Maintenance Type, three new, nine revised.<sup>269</sup>

### Supply

(U) The Chemical Corps supply, distribution, and maintenance program was allotted about \$4.6 million of new funds during FY 1957. Of this amount 99 percent was obligated during the year.<sup>270</sup>

268

(1) Interv. Hist Off with 1st Lt F. O. Fisher, ENCOM, 29 Jul 57.  
(2) Quart Hist Rpts, Log Fl Div, OCCml0, Jul - Sep 56; Oct - Dec 56. (3) Rpts of Significant Standardization Actions (RCS:LOG 23), CCml0 to DCSLOG, FY 57.

269

Arico intervts, 31 Jul and 14 Aug 57.

270

Quart Rev, Apr - Jun 57, p. 102.

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(U) The Chemical Corps operated 10,867,000 square feet of storage space including 3,157,000 square feet in Ordnance branch depots in fiscal year 1957. Covered space, 3,947,000 square feet, was 77 percent occupied at the end of the year, and the remaining open space was 78 percent in use.<sup>271</sup>

(U) The total value of Chemical Corps stocks on hand at year's end was \$333.2 million as compared to \$349.3 million at the end of FY 1956. The value of all stock fund items was \$44.7 million on 30 June 1957, a decline of about two million dollars from the beginning of the year. Although there continued to be a small reduction in shelf stocks, the comparatively small decline demonstrated that a demand stock level had nearly been reached. The total tonnage handled in shipment and receipts approximately equalled the previous year's performance until the last quarter when a largely accounting transaction involving about 25,000 tons of industrial reserve components received raised the total by more than half. As was to be expected in a period of lower activity, shipments were small in FY 1957, the total amounting to only 5,625 tons including a large Military Aid Program shipment in the 4th Quarter. As in fiscal year 1956 Chemical Corps supply operations were carried on at two branch depots, one storage area, three chemical sections of general depots, and three Ordnance Corps branch depots.<sup>272</sup>

### Storage

(U) Emphasis in the storage operations during FY 1957 continued to be

271

(1) Quart Hist Rpt, MATCOM, Apr - Jun 57. (2) Compare Summary of Major Events and Problems, FY 56, pp. 181 - 82.

272

(1) Ibid. (2) Quart Rev, Apr - Jun 57, p. 64.

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placed on refinement of procedures. As noted above, stock control and accountability for end items were transferred from the field storage installations to the headquarters, Chemical Corps Materiel Command, in implementation of major refinement plans.<sup>273</sup>

(U) A project initiated by the Deputy Chief of Staff for Logistics to test the economy and efficiency of operations under the "single storage concept" was applied to Chemical Corps operations at two of the test installations, Utah and Memphis General Depots. The "single storage concept" is a part of the Depot Command Management System under which the depot commander assumes all storage and issue responsibilities for all of the tenant technical services. The chemical sections of both of the test general depots remained, but rather than supervising the whole range of depot chemical operations, their role was becoming one approximately equivalent to that of technical staff advisers both to the depot commander and to the commander of the Chemical Corps Materiel Command with varying operating responsibilities according to the depot pattern. The Chemical Corps is still responsible for setting up conditions of storage, stock levels, and surveillance levels. Phase I of the test operation, which applies only to the storage operations, records, services, and inventories, was put into effect in December 1956. Phase II which includes processing, packing, care and preservation, issue, receipt, and shipment was being implemented at year's end.<sup>274</sup>

273

(1) Summary of Major Events and Problems, FY 56, pp. 186 - 88. (2) See above, pp. 122 - 24. (3) Dick interv, 19 Jul 57.

274

(1) Dick interv, 19 Jul 57. (2) Interv, Hist Off with Mr Eugene P. Smith, Supply Div, MATCOM, 19 Jul 57. (3) McDaniel interv, 30 Jul 57. (4) DF, LOG/CL 72518, DCSLOG to Chs of Tech Servs, 3 Dec 56, sub: Single Storage Division for General Depots. (5) DF, LOG/CL, DCSLOG to Chs of Tech Servs, 1 May 57, sub: Single Storage Division for General Depots.

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(U) As a part of a DCSLOG test of controlled humidity storage the Chemical Corps contracted for the installation, during FY 1958, of dehumidification equipment to cover 24,000 square feet of space at U.S. Army Chemical Depot, Eastern. Since costs of dehumidification installation at other Chemical Corps storage locations are above present Department of the Army estimation limits, no further plans will be made until the equipment and storage conditions in the first installation have been thoroughly tested.<sup>275</sup>

(U) Chemical Corps personnel continued with Deputy Chief of Staff for Logistics task forces in the areas of planning depot operations. Task force recommendations were in the hands of the Deputy Chief of Staff at the end of the fiscal year.<sup>276</sup>

(S) Implementation of the Department of the Army plans for underground supply installations, in which the Chemical Corps participated in FY 1956, was held in abeyance during FY 1957 because of lack of funds.<sup>277</sup>

#### Repair Parts and Maintenance of Materiel

(U) In the field of repair parts, the twelve objectives for the control of inventories set up two years earlier were substantially realized in FY 1957. Repair parts problems continued to exist in connection with the

275

Smith interv, 19 Jul 57.

276

Patro interv, 22 Jul 57.

277

(1) Smith interv, 19 Aug 57. (2) See Summary of Major Events and Problems, FY 56, pp. 187 - 88 for Chemical Corps participation plans.

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computation of requirements for the supply of parts to support new end items entering the system and in connection with the co-ordination of repair parts supply with maintenance requirements for end items being phased out of the system. The principle of "management by exception" that is, the concentration of management on a small number of important items, was being expanded in the repair parts field in an attempt to control more effectively items in the medium and high dollar volume of issue range. Items with an issue volume greater than \$10,000 per year have caused many Chemical Corps repair parts problems. Improved utilization of Financial Inventory Accounting and Army Stock Fund techniques was realized by consolidating all repair parts into a single accounting category.<sup>278</sup>

(U) Chemical Corps maintenance performance in FY 1957 exceeded that of FY 1956. Total value of rebuild amounted to \$4,582,000 as opposed to \$3,296,000 in FY 1956. The ratio of cost to value of rebuild was slightly higher at 30 percent in the 1st Quarter, FY 1957, than in the last quarter peak (28 percent) in FY 1956, but the cost of rebuild steadily declined during the fiscal year to a low of sixteen percent in the final quarter of fiscal year 1957. Actual rebuild exceeded the program for general supplies but fell off 22 percent for ammunition and toxics because of the suspension of a large project near the end of the year.<sup>279</sup>

278

(1) DF, Gmt 2, C Log Pl Div, OCCm10 to C Admin Div, OCCm10, 9 Sep 57, sub: Annual Report "Summary of Major Events and Problems." (2) Interv, Hist Off with Mr Ritchie Buckingham, Supply Div, MATCOM, 19 Sep 57. (3) AR 710-45, 23 Jul 56.

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Quart Rev, Apr - Jun 57, pp. 69, 70, 126.

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(U) The field maintenance missions established during the two previous years in each of the Continental Army areas continued to operate during FY 1957 with considerable success in improving field maintenance. The regional maintenance representatives, who began to work out of the U.S. Army Chemical Depot, Eastern, the U.S. Army Chemical Depot, Midwest, and the Desert Depot Activity of Tooele Ordnance Depot during FY 1956, were able to improve considerably the condition of chemical stocks in the hands of users. A valuable adjunct to field maintenance activities was the maintenance float established during FY 1956 to provide rapid exchange for chemical equipment which could not be rapidly repaired or for which rapid repair was uneconomical.<sup>280</sup>

### Distribution

(U) The principal FY 1957 events in the distribution area are described above in the account of the transfer of supply and stock control responsibilities. A distribution accomplishment was the closing out of dispersed locations of commercial chemicals stocks.<sup>281</sup> Chemical Corps activity under Department of the Army project MASS (Modern Army Supply System) was small during FY 1957 but the procedures were highly effective and delivery schedules were good. The project MASS experience was basic to the proposals for the establishment of electronic communications and recording machinery within the

280

Interv, Hist Off with Mr Ralph Burnett, Supply Div, MATCOM, 27 Aug 57.

281

See above, pp. 122 - 26 and pp. 138 - 39.

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Chemical Corps Materiel Command.<sup>282</sup>

Table 6 — Property Disposal - FY 1957

Acquisition Cost of Property Sold or Donated:

	<u>Donated</u>	<u>Sold</u>
1st Quart	\$ 405,736	\$ 307,855
2nd Quart	140,119	1,083,020
3rd Quart	241,815	245,866
4th Quart	477,000	422,000
	<hr/>	<hr/>
	\$1,264,670	\$2,058,741

Acquisition Cost of Demilitarized Materiel (Mostly Munitions):

1st Quart	\$ 6,740,000
2nd Quart	7,908,000
3rd Quart	8,500,000
4th Quart	5,600,000
	<hr/>
	\$28,748,000

Strategic Material Recovered:

Cadmium - Magnesium	1,883,360 lbs.
Magnesium	4,179,847 lbs.

Sources: (1) Quart Hist Rpts, FY 57, Supply Division, MATCOM. (2) Quart Rev, 4th Quart, FY 57, p. 67.

Property Disposal

Table 6 reflects the quantitative performance with respect to each of the major property disposal procedures.<sup>283</sup> Two principal property disposal

<sup>282</sup>

(1) Patro interv, 22 Jul 57. (2) Summary of Major Events and Problems, FY 56, pp. 189 - 90. (3) See above, p. 124.

<sup>283</sup>

Compare, Summary of Major Events and Problems, FY 56, Table 6.

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accomplishments which cannot adequately be described quantitatively are the disposal of radioactive wastes and the disposal of obsolete GA toxic agent.

(U) The disposal procedures for radioactive wastes inaugurated last year have been successful. The wastes were accumulated at Army Chemical Center and at Dugway Proving Ground where the U.S. Army Chemical Corps Technical Escort Unit was responsible for handling. The wastes are packed in concrete containers which are turned over to the Navy for dumping at sea. About 5,000 tons (waste and pack) has been disposed of since the program began. No difficulties were encountered, and co-ordination with the Navy and among Chemical Corps elements was good.<sup>284</sup>

(U) Downwind toxicity data accumulated in FY 1956 disposal by burning of the obsolete toxic agent, GA, proved that disposal could safely be accomplished at lesser expense at Army Chemical Center than at Dugway Proving Ground. The Technical Escort Unit accordingly disposed of approximately 202,500 pounds during FY 1957.<sup>285</sup>

(U) Efforts to find a satisfactory purchaser for stocks of the obsolete toxic agent, lewisite, were not successful. Disposal by dumping at sea was the only acceptable alternative. Funds for this disposal method were not available during FY 1957.<sup>286</sup>

284

(1) Interv, Hist Off with Mr H. V. Hutton, Supply Div, MATCOM, 19 Jul 57. (2) Summary of Major Events and Problems, FY 56, p. 193.

285

(1) Quart Hist Rpt, MATCOM, Apr - Jun 57. (2) Summary of Major Events and Problems, FY 56, pp. 193 - 94.

286

(1) Hutton interv, 19 Jul 57. (2) Summary of Major Events and Problems, FY 56, p. 194. (3) Quart Hist Rpt, MATCOM, Apr - Jun 57.

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(U) The Chemical Corps Materiel Command also set up a plan for the disposal of surplus stocks of the toxic agent, phosgene, by sale of the agent as carbonyl chloride, a commercially useful chemical. As of the end of the year approval of this plan had been requested from the Department of Commerce through the Deputy Chief of Staff for Logistics.<sup>287</sup>

### Quality Assurance

#### Major Operational Developments

(U) In military procurement it is necessary to insure that all munitions meet military serviceability standards. In recent years the Chemical Corps has applied new scientific and statistical methods of quality control. Further development of these methods and their application is a problem which underlies all inspection activity as controlled and performed by the Chemical Corps Materiel Command Directorate for Quality Assurance and the Quality Assurance Technical Agency (QATA). During the fiscal year these organizations had to adjust to reduced levels of procurement and production under a Department of the Army policy which insisted on economy of operation.

(U) Chiefly, quality assurance activities were directed toward two distinct goals, (1) reducing the amount of inspection required for individual items, and (2) reducing the cost of inspection per dollar of procurement.<sup>288</sup>

<sup>287</sup>

Quart Hist Rpt, MATCOM, Apr - Jun 57.

<sup>288</sup>

(1) Gilbert interv, 10 Jul 57. (2) Summary of Major Events and Problems, FY 56, p. 196. (3) See above, p.118, for discussion of reorganization.

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These objectives were embodied in new regulations which had as their purpose the simplification of procedures and the reduction of costs.

(U) The program to reduce inspection implements the recently established Army Regulation 715-20, paragraph 5b, which provides that whenever the consistent performance and the effectiveness of the control and inspection system of a qualified contractor has been demonstrated, the technical service involved will accept delivery after performing only limited inspection. To establish a contractor's qualifications the uniform quality of his product and his methods of quality control must be examined during contract negotiations. A bid from any contractor whose work is substandard, can be refused. A procedure for reduced inspection was established and published.<sup>289</sup>

(U) To reduce inspection costs a new program was designed to place inspection in commercial laboratories whenever a savings will result. The only exceptions to this policy were for reasons of security, safety, support of Arsenal operations, and verification of contractor's certificates of compliance. In the past the Chemical Corps has often used commercial laboratories but under the new Army Regulation 715-60 increased emphasis was placed on the use of commercial facilities.<sup>290</sup> It was planned to maintain the present Quality Surety Laboratories at Pine Bluff Arsenal, Rocky Mountain Arsenal, and Quality Assurance Technical Agency as a mobilization potential. While operating on a reduced schedule, these laboratories will be fully

289

Dir QA, MATCOM, "Chemical Corps Reduced Inspection Procedure," 7 Jan 57.

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Interv, Hist Off with Pfc Harry Kraut, QATA, 25 Jul 57.

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equipped and maintained capable of operating as dispersed units.<sup>291</sup>

(U) With a view toward achieving greater efficiency and economy of operation and to meet Department of the Army and other reporting requirements, the development of a uniform system of cost reporting was initiated. Existing reporting systems were studied and dual reporting was eliminated. Under the Chemical Corps Command Management System, Quality Surety activities of Chemical Corps Procurement Districts were provided with activity reports by their respective comptrollers. These reports gave a complete picture of total effort by expense account designation. From this the cost of procurement inspection was computed. In developing the inspection cost reporting system it was planned to establish reporting requirements which will enable activities to report costs generated through existing accounting procedures. It was expected that this system would be implemented in the 1st Quarter of FY 1958.<sup>292</sup>

(U) As a result of these activities the cost of procurement inspection dropped from .036 of each procurement dollar to .024. These reductions resulted from improved accounting, reduced inspection, and the increased use of commercial laboratories. Future reduction in the cost of inspection may be difficult to achieve since the smaller quantity of procurement anticipated in FY 1958 will tend to raise the per item inspection cost.<sup>293</sup>

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291

Quart Rev, Apr - Jun 57, p. 59.

292

(1) Briefing for Gen Creasy, MATCOM, 2 Apr 57. (2) Interv, Hist Off with Capt Sylvia Jupiter, QATA, 12 Sep 57.

293

(1) Interv, Hist Off with Mr E. J. Van Arnhem, Log Pl Div, OCCm10, 30 Jul 57. (2) Quart Rev, Apr - Jun 57, p. 121.

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### Department of Defense and Department of the Army Programs

(U) During the year the Chemical Corps co-operated with outside agencies on a number of projects. In order to promote uniformity within the Department of the Army in the implementation of reduced inspection as provided by AR 715-20, The Deputy Chief of Staff for Logistics established a Task Group in April 1957. This Task Group was placed under the chairmanship of the Chemical Corps as represented by Mr. Norman C. Krause, Chemical Corps Materiel Command. Although all technical services were invited to attend task group meetings, the working group was composed of Ordnance, Signal, Quartermaster and Chemical Corps representatives. The work of the group was expected to be reflected in the next revision of AR 715-20.<sup>294</sup>

(U) In line with Logistics Directive No. 183 - 170, 4 Dec 56, which states, "Each Chief of Technical Service will explore the use of sampling techniques for performance of annual technical inspections of major items of equipment," a conference was held at the U.S. Army Maintenance Board, Fort Knox, Kentucky on 19 - 20 June 1957. Representatives of all technical services attended. Mr. George Hurwitz represented Materiel Command. The purpose of the conference was to discuss sampling procedures for the inspection of military equipment. The major objectives of the conference were: (1) to develop an Army-wide technical maintenance inspection policy using sampling techniques instead of 100 percent inspection, (2) to determine the over-all condition of items of materiel assigned to units and activities, (3) to determine the combat readiness of tactical units, and (4) to fix future maintenance and

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<sup>294</sup>  
Jupiter Interv, 12 Sep 57.

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replacement requirements.<sup>295</sup>

(U) In connection with an Office of the Deputy Chief of Staff for Logistics project on the "philosophy"<sup>296</sup> of inspection a task force was set up and Mr. Joseph Mandelson was appointed to represent the Chemical Corps. He met with Ordnance representatives in June 1957 at the Ordnance Ammunition Command at Joliet, Illinois.<sup>297</sup> A second meeting, held a month later at the Army Chemical Center, was attended by Mr. Charles Barron of Ordnance, Mr. Mandelson, and others from the Quality Assurance Technical Agency and the Signal Corps. At this meeting objectives of the study, the necessity for the careful definition of common terms, and the organization and methods of quality surety work in the Chemical Corps were discussed.<sup>298</sup> Plans called for the task force to report the results of future meetings to The Deputy Chief of Staff for Logistics.

(U) A similar effort was made to establish uniform standards with respect to the quality of material in storage and reserve. Under the Defense-Wide program to establish uniform surveillance standards<sup>299</sup> the Chemical Corps

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295

Quart Hist Rpt, MATCOM, Apr - Jun 57.

296

The work in the philosophy of inspection is an attempt to standardize concepts of quality for materiel procured throughout the Army and to establish a common method of arriving at quality.

297

Statement on philosophy of inspection meeting of 11 Jun 57 by Mr Joseph Mandelson, QATA.

298

Statement on philosophy of inspection meeting of 23 Jul 57 by Mr Joseph Mandelson, QATA.

299

Summary of Major Events and Problems, FY 56, p. 199.

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recommended to The Deputy Chief of Staff for Logistics that serviceability standards as described for Chemical items in Supply Bulletins be used as Joint Army, Navy, Air Force standards. This program was co-ordinated by Mr. Anthony Parici for the Director of Quality Assurance, Materiel Command. The Deputy Chief of Staff for Logistics approved the proposal and negotiations with the Navy and Air Force began. Mr. Thomas Neal of Quality Assurance Technical Agency assisted the Navy in writing a surveillance manual appropriate for use by naval personnel. In March 1957 it was agreed to try the manual. Orientation of naval personnel began in April, and later Chemical Corps quality assurance personnel visited seven Navy installations to determine results. Several revisions in the manual were found necessary. A similar preliminary agreement with the Air Force was written but had not received final approval by the end of the fiscal year.<sup>300</sup> In continuation of efforts to determine statistical standards for selection of optimum sample sizes which have been under way for several years,<sup>301</sup> Mr. Henry Ellner read a paper describing Chemical Corps statistical methods at the Army Science Conference at West Point.<sup>302</sup>

### Administrative Improvements and Technical Training

(U) A number of actions within the quality assurance area were taken to

300

Quart Hist Rpt, MATCOM, Jan - Mar 57.

301

Summary of Major Events and Problems, FY 56, p. 199.

302

Quart Hist Rpt, MATCOM, Jan - Mar 57.

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improve general efficiency. As a result of greater emphasis on mobilization potential and the lessening of procurement it was possible to proceed with the development of an accurate listing of single requirements for quality assurance aids. The first of a five volume series was completed and it replaced existing gage lists and aids requirements data sheets. These lists were compiled for each chemical item according to individual need. Lacking any single compilation of all aids requirements, it was inevitable that duplicate gages and other aids previously had been retained unnecessarily. The single requirements list generated combined comprehensive requirements for aids needed to inspect all Chemical Corps items, and facilitated elimination of obsolete aids.<sup>303</sup>

(U) Technical assistance in the quality assurance area was furnished to overseas commands by the Director for Quality Assurance. Mr. George Hurwitz, representing the Director for Quality Assurance, Chemical Corps Materiel Command, visited chemical storage areas in France, Germany, and Italy. It was found that inspection sections were adequately staffed but lacked equipment to conduct surveillance tests other than the determination of burning times on smoke pots and grenades. The Chemical Corps endeavored to supply the necessary equipment from available stocks. Similar visits to the Far East were planned.

(U) One problem in overseas surveillance that was solved during the year was that chemical materiel at the Southern European Task Force (SETAF) Depot had not been subject to full surveillance for about three years because the Italian government would not accept the risk of destructive testing. In

303

Quart Hist Rpt, MATCOM, Jan - Mar 57.

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February 1957 permission was finally obtained to test munitions near Verona and Livorno, Italy. Tests progressed as rapidly as possible. While SMTAF can now depend more on its chemical supplies, a greater workload in the Quality Assurance Technical Agency was anticipated because of the need to analyze and record test results. In other overseas areas inspections demonstrated that surveillance was adequate.<sup>304</sup>

(U) In order to co-ordinate and standardize training, the Technical Training Office of the Quality Assurance Technical Agency asked field commanders to submit data on employee training, course outlines, and advice on further technical training needs. Replies indicated that considerable training was given. Sixteen course outlines were received and it was reported that sixty-three different courses were conducted during the past year. These data were being reviewed and sample course outlines and material will be developed in the field. Eventually it was planned to standardize existing and newly developed courses into a single program.

(U) Training of new employees and training in new methods proceeded satisfactorily. As a means of developing improved executive capacity the Director for Quality Assurance initiated a plan to provide regular speakers on various topics concerned with executive development.<sup>305</sup> In consideration of the wide application of executive development instruction, this series

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<sup>04</sup> Ibid.

<sup>05</sup> Gilbert interv, 10 Jul 57.

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was continued under the auspices of Headquarters, Army Chemical Center and Chemical Corps Materiel Command.

(U) Also intended to help standardize procedure was the Quality Assurance Handbook, which had been under preparation prior to FY 1957.<sup>306</sup> Extensive alterations were required because of newly developed procedures. When complete the handbook should prove to be a valuable source of consolidated information on quality assurance available in loose-leaf format. By the end of the fiscal year three of ten sections were finished.

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<sup>306</sup>

Summary of Major Events and Problems, FY 56, p. 197.

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## Abbreviations

mlc Army Chemical Center  
SI Assistant Chief of Staff for Intelligence, Department  
of the Army  
min Div Administration Division, Office of the Chief Chemical  
Officer  
Army Regulation  
CP 58 Army Strategic Operational Plan (for) 1958  
FA Atomic Type Field Army

Budget Supported Force  
Bulletin  
Biological Warfare

U.S. Army Chemical Corps Board  
U.S. Army Chemical Corps Field Requirements Agency  
U.S. Army Chemical Corps Intelligence Agency  
Chief Chemical Officer  
Chemical Corps Technical Committee  
Combat Developments Division, Office of the Assistant  
Chief Chemical Officer for Planning and Doctrine  
Combat Developments Objectives Guide  
Circular  
Classified Supplement  
Comment  
Chloracetophenone  
Chief of Ordnance  
Comptroller  
Continental Army Command  
Continental United States  
Command Post Exercise  
Chemical Warfare Technical Committee

Department of the Army  
Cm10 for SA Deputy Chief Chemical Officer for Scientific Activities  
SLOG Deputy Chief of Staff for Logistics, Department of the  
Army  
SOPS Deputy Chief of Staff for Operations, Department of the  
Army  
SPER Deputy Chief of Staff for Personnel, Department of the  
Army  
Disposition Form  
Adamsite  
r QA, MATCOM Director for Quality Assurance, U.S. Army Chemical Center  
and Chemical Corps Materiel Command

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Dir S&P, MATCOM	Director for Supply and Procurement, U.S. Army Chemical Center and Chemical Corps Materiel Command
Div	Division
DCD	Department of Defense
EA	Edgewood Arsenal
ENCOM	U.S. Army Chemical Corps Engineering Command
ESPP	Enlisted Scientific and Professional Personnel
ETF	Edgewood Technical Files, Technical Library, Chemical Warfare Laboratories, AChLC, Md.
FS	Sulfur trioxide--chlorosulfonic acid solution (a smoke)
GB	Designation for standard nerve gas
GMS	General Military Science
GO	General Order
GS	General Staff
ED	Distilled Mustard Gas
HHD	Headquarters and Headquarters Detachment
Hist Off	U.S. Army Chemical Corps Historical Office
ICC	Interstate Commerce Commission
IMP Div	Industrial Mobilization Planning Division, MATCOM
Indus Div	Industrial Division, MATCOM
Log Pl Div	Logistics Planning Division, Office of the Chief Chemical Officer
LOPAIR	Long Path Infrared (gas identification device)
MATCOM	U.S. Army Chemical Center and Chemical Corps Materiel Command (materiel activities)
MCA	Military Construction, Army
NIS	National Intelligence Survey
OACCMIO for P&D	Office of the Assistant Chief Chemical Officer for Planning and Doctrine
OCCMIO	Office of the Chief Chemical Officer
ODM	Office of Defense Mobilization
Off	Office
PDM	Phosphate Development Works
PIO	Public Information Office
Pl and Prog Off	Plans and Program Office
P&P, A	Production and Procurement, Army
PPFF	Provision of Production Facilities Funds

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Procurement Division, Office, Deputy Chief of Staff for  
Logistics  
Program Coordinating Office, Office of the Chief Chemical  
Officer  
Project Report

Quality Assurance Technical Agency  
Quarterly Historical Report  
Quarterly Review of Chemical Corps Programs

Research and development  
U.S. Army Chemical Corps Research and Development Command  
Reorganization of the Armored Division  
Reorganization of the Infantry Division  
Reorganization of the Airborne Division

Southern European Task Force  
Strategic Intelligence School  
Special Order

Table of Allowances  
Training Circular  
Table of Distribution  
Technical Library, Chemical Warfare Laboratories, ACmlC, Md.  
Technical Service  
Training Film  
Technical Intelligence  
Technical Manual  
U.S. Army Chemical Corps Training Command  
Table of Organization and Equipment

Hqs, U.S. Army Chemical Center and Chemical Corps Materiel  
Command (administrative and installation activities)

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## APPENDIX A

DEPARTMENT OF THE ARMY  
OFFICE OF THE CHIEF CHEMICAL OFFICER  
KEY ASSIGNMENTS  
15 July 1957

Supplied by: Career Management Div., OCmlO

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## OFFICE OF THE CHIEF CHEMICAL OFFICER

Chief Chemical Officer - Major General William M. Creasy

Deputy Chief Chemical Officer - Colonel William E. R. Sullivan

Deputy Chief Chemical Officer for Scientific Activities - Dr. Per K. Frolich

Executive Director - Edgar A. Crumb

Assistant Chief Chemical Officer for Planning and Doctrine - Brigadier General  
William R. Currie

Executive Officer - Colonel Joseph C. Boyer

Assistant Executive Officer - Major Paul H. McConnell

Chief, Administration Division - Colonel Melvin W. Reed

Chief, Career Management Division - Colonel Frank M. Arthur

Chief, Logistics Planning Division - Colonel Gilbert P. Gibbons

Comptroller of the Chemical Corps - Colonel Charles W. Nussbaum

Legal Adviser - Colonel Frederick C. Lough

Chief, Program Coordinating Office - Lt Colonel Irving R. Mollen

### OCCMLO ACTIVITIES LOCATED AT ARMY CHEMICAL CENTER, MD.

Chemical Corps Inspector General - Colonel Gervaise Chittick

Chemical Corps Provost Marshal - Lt Colonel Andreo C. Wiklund

Traffic Consultant - Colonel Basil A. Harkins

Industrial Security

Chief - Major Winifred E. Ham

Chemical Corps Advisory Council

Executive Director - Dr. C. B. Marquand

U. S. Army Chemical Corps Historical Office

Chief - Dr. Leo P. Brophy

Chemical Corps Technical Committee

Executive Secretary - Dr. T. S. Eckert

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## FIELD ACTIVITIES

S. Army Chemical Corps Intelligence Agency, Washington, D. C.

Commanding Officer - Lt Colonel Leon A. Kief

S. Army Chemical Corps Board, Army Chemical Center, Md.

President - Colonel Fred J. Dalmore

S. Army Chemical Corps Field Requirements Agency, Fort McClellan, Ala.

Commander - Colonel Rubert D. Chapman

S. Army Chemical Corps Operation Research Group, Army Chemical Center, Md.

Director - Lt Colonel Jack F. Lane

Chemical Corps Liaison Office, Air Force Armament, Eglin Air Force Base, Fla.

CmlC Liaison Officer - Lt Colonel John P. McEvoy

Chemical Corps Liaison Office, Naval Rad Defense Lab, San Francisco, Calif.

CmlC Liaison Officer - Major William M. Home

Chemical Corps Liaison Office, White Sands Proving Ground, Las Cruces, N. M.

CmlC Liaison Officer - Major William H. Deboy

HQ, U. S. ARMY CHEMICAL CENTER AND CHEMICAL CORPS MATERIEL COMMAND

U. S. Army Chemical Center and Chemical Corps Materiel Command, Army Chemical Center, Md.

Commanding General - Brigadier General Marshall Stubbs (Reasgd Jul 57)

Commanding Officer - Colonel Harold Walmsley

Deputy Post Commander - Colonel Eugene G. Bennett

Deputy Commander (MATCOM) - Colonel Clarence B. Drennon, Jr.

S. Army Chemical Center Procurement Agency, Army Chemical Center, Md.

Commanding Officer - Lt Colonel James R. Chapman

### Procurement Districts

U. S. Army Chemical Procurement District, Atlanta

Commanding Officer - Lt Colonel Robert D. Trathen

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HQ, U. S. ARMY CHEMICAL CENTER AND CHEMICAL CORPS MATERIEL COMMAND (CONT'D)

## Procurement Districts (Cont'd)

Boston Sub-Office, U. S. Army Chemical Procurement District, New York  
290 Broadway, New York 7, New York

OIC - Major Robert C. Braden

U. S. Army Chemical Procurement District, Chicago

Commanding Officer - Lt Colonel Melvin F. Skinner

U. S. Army Chemical Procurement District, Dallas

Commanding Officer - Major Eugene F. Lennon, Jr.

U. S. Army Chemical Procurement District, New York

Commanding Officer - Colonel Harold Walmsley (Reasgd Jul 57)

U. S. Army Chemical Procurement District, San Francisco

Commanding Officer - Lt Colonel Vincent J. Kosebutzki

## Arsenals

U. S. Army Chemical Arsenal, Edgewood, Army Chemical Center, Md.

Commanding Officer - Lt Colonel Robert C. Hinckley

U. S. Army Chemical Arsenal, Pine Bluff Arsenal

Commanding Officer - Colonel Russell W. Dodds

U. S. Army Chemical Arsenal, Rocky Mountain Arsenal

Commanding Officer - Colonel Ronald L. Martin (Asgd Aug 57)

Commanding Officer - Colonel Donald C. Grothaus (Reasgd Aug 57)

## Depots

U. S. Army Chemical Depot, Eastern, Army Chemical Center, Md.

Commanding Officer - Lt Colonel James N. Grenade, Jr.

U. S. Army Chemical Arsenal, Pine Bluff Arsenal, Arsenal, Arkansas  
ATTN: Director of Depot Operations

Director of Depot Operations - Major Claude B. Dykes

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HQ, U. S. ARMY CHEMICAL CENTER AND CHEMICAL CORPS MATERIEL COMMAND (CONT'D)

ots (Cont'd)

U. S. Army Chemical Depot, Far East, APO 43, San Francisco, Calif.

Commanding Officer - Lt Colonel Truett K. Grant

7813 U. S. Army Chemical Depot, Sompigny, APO 122, New York, New York

Commanding Officer - Lt Colonel Cecil D. Miller

U. S. Army General Depot, Memphis General Depot, Memphis, Tenn.

Chemical Supply Officer - Colonel Willis G. Robbins

U. S. Army General Depot, New Cumberland General Depot, Pa.

Chemical Supply Officer - Major Clair L. George

U. S. Army Utah General Depot, Ogden, Utah

Chemical Supply Officer - Major William E. Johnson

7814 U. S. Army Chemical Depot, Bussac, APO 215, New York, New York

Chemical Supply Officer - Lt Colonel William T. Dozier

8216 U. S. Army Chemical Depot, Korea, APO 971, San Francisco, Calif.

Depot Commander - 1st Lieutenant Thomas R. Roark

S. Army Chemical Corps Technical Escort Unit, Army Chemical Center, Md.

Commanding Officer - Major Vernon E. Dehner

Commanding Officer - Lt Colonel Albert B. DeMonte (Aug 57)

S. Army Chemical Corps Quality Assurance Technical Agency, Army Chemical Center, Md.

Commanding Officer - Lt Colonel Harry C. Gilbert

Commanding Officer - Colonel Pyueng S. Pyeun (Asgd Aug 57)

S. Army Chemical Corps Phosphate Development Works, Post Office Box 608, Sheffield, Ala.

Commanding Officer - Lt Colonel Serge Tonetti

## CHEMICAL CORPS RESEARCH AND DEVELOPMENT COMMAND

S. Army Chemical Corps Research and Development Command, Washington, D. C.

Commanding General - Brigadier General Jacquard H. Rothschild

Deputy Commander for Scientific Activities - Dr. John L. Schwab

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## U. S. ARMY CHEMICAL CORPS RESEARCH AND DEVELOPMENT COMMAND (CONT'D)

### U. S. Army Biological Warfare Labs, Fort Detrick, Frederick, Md.

Commanding Officer - Colonel John J. Hayes (Reasgd Aug 57)

Commanding Officer - Colonel Donald G. Grothaus (Asgd Aug 57)

### U. S. Army Chemical Warfare Labs, Army Chemical Center, Md.

Commander - Colonel Lloyd E. Fellent

### U. S. Army Chemical Corps Proving Ground, Dugway Proving Ground

Post Commander - Colonel David Armitage

## U. S. ARMY CHEMICAL CORPS ENGINEERING COMMAND

### U. S. Army Chemical Corps Engineering Command, Army Chemical Center, Md.

Commanding Officer - Colonel William J. Allen, Jr.

Deputy for Engineering - Mr. Louis E. Garono

## U. S. ARMY CHEMICAL CORPS TRAINING COMMAND

### U. S. Army Chemical Corps Training Command, Ft. McClellan, Ala.

Commanding Officer - Colonel John M. Palmer

Deputy Commander - Colonel Samuel J. Boyles

### U. S. Army Chemical Corps School

Commandant - Colonel Carl V. Burke

### U. S. Army 1st Radiological Safety Support Unit

Commanding Officer - Major Fred E. Rosell

### U. S. Army Chemical Corps Special Troops

Commanding Officer - Major Luke H. West

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## OVERSEAS THEATER CHEMICAL OFFICERS

Hq, USAFEUR, APO 403, New York, N. Y.

Chemical Officer - Colonel Donald D. Bode'

7140 Hq, USARCAMIE, APO 834, New Orleans, La.

Chemical Officer - Colonel Joseph F. Escude'

8285 Hq, USARPAC, APO 958, San Francisco, Calif.

Chemical Officer - Lt Colonel Richard O. Gordon

Chemical Officer - Colonel Maurice A. Peerenboom (Asgd Aug 57)

8367 Hq, USARAL, APO 949, Seattle, Wash.

Chemical Officer - Lt Colonel Olaf G. Miller

7675 Hq, U. S. Army Southern European Task Force, APO 168, New York, N. Y.

Chemical Officer - Major Thomas B. Flynn

8115 HYIS, U. S. Army Chemical Detachment, AFCE, APO 331, San Francisco, Calif.

Chemical Officer - Major Albert Gilbert

## ARMY CHEMICAL OFFICERS

Hq, FIRST U. S. ARMY, Governors Island, New York

Chemical Officer - Colonel Theodore P. Gahan

Hq, SECOND U. S. ARMY, Fort George G. Meade, Md.

Chemical Officer - Colonel William H. B. Howard

Hq, THIRD U. S. ARMY, Fort McPherson, GA.

Chemical Officer - Colonel John D. Tolman

Hq, FOURTH U. S. ARMY, Fort Sam Houston, Tex.

Chemical Officer - Colonel R. Beverly Caldwell

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## ARMY CHEMICAL OFFICERS (CONT'D)

### Hq, FIFTE U. S. ARMY, Chicago, Ill.

Chemical Officer - Colonel Walter W. Kuehler (Asgd Aug 57)

### Hq, SIXTH U. S. ARMY, Presidio of San Francisco, Calif.

Chemical Officer - Colonel Vincent F. LaPiana

### Hq, MILITARY DISTRICT OF WASHINGTON, U. S. ARMY

Chemical Officer - Colonel Thomas H. Yagness, Jr.

### Hq, SEVENTH U. S. ARMY, USAREUR, APO 46, New York, New York

Chemical Officer - Colonel Sam Efnor

### Hq, EIGHTH U. S. ARMY, USAFFE, APO 301, San Francisco, Calif.

Chemical Officer - Colonel William W. Campbell

## CORPS CHEMICAL OFFICERS

### Hq, I Corps, USAFFE, APO 358, San Francisco, Calif.

Chemical Officer - Colonel George W. Dorn

### Hq, III Corps, Fort Hood, Texas

Chemical Officer - Major Francis A. Bader (Reasgd Aug 57)

Chemical Officer - Major David P. Smith (Asgd Nov 57)

### Hq, V Corps, USAREUR, APO 79, New York, N. Y.

Chemical Officer - Lt Colonel Jack R. Whitley

### Hq, VII Corps, USAREUR, APO 107, New York, N. Y.

Chemical Officer - Colonel Walter W. Kuehler (Reasgd Aug 57)

### Hq, XVIII Airborne Corps, Fort Bragg, N. C.

Chemical Officer - Lt Colonel Edward V. R. Needels

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## DIVISION CHEMICAL OFFICERS

1st Armored Division, Fort Polk, La.

Chemical Officer - Major Thomas E. McKeever

1st Cavalry Division, USAFFE, APO 201, San Francisco, Calif.

Chemical Officer - Major George Kontra

1st Infantry Division, Ft Riley, Kans.

Chemical Officer - Major William L. Phillips

2d Armored Division, USAREUR, APO 42, New York, N. Y.

Chemical Officer - Major Walter G. Kander

2d Infantry Division, USARAL, APO 949, Seattle, Wash.

Chemical Officer - Major Samuel T. Bonds

3d Armored Division, USAREUR, APO 39, New York, N. Y.

Chemical Officer - Major Clinton D. Harvey

3d Infantry Division, Ft Benning, Ga.

Chemical Officer - Major Alois L. Steinbach

4th Armored Division, Ft Hood, Tex.

Chemical Officer - Major Louis B. Stephens

4th Infantry Division, Ft Lewis, Wash.

Chemical Officer - Major David D. Bogan

7th Infantry Division, USAFFE, APO 7, San Francisco, Calif.

Chemical Officer - 1st Lieutenant Lewis A. Welzel

8th Infantry Division, USAREUR, APO 111, New York, N. Y.

Chemical Officer - Lt Colonel Fred E. Mitchell

9th Infantry Division, Ft Carson, Colo.

Chemical Officer - Lt Colonel Rex E. Selk

10th Infantry Division, USAREUR, APO 36, New York, N. Y.

Chemical Officer - Captain Aubrey A. Davis

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## DIVISION CHEMICAL OFFICERS (CONT'D)

11th Airborne Division, USAREUR, APO 112, New York, N. Y.

Chemical Officer - Major Eugene I. Humphrey

24th Infantry Division, USAFFE, APO 24, San Francisco, Calif

Chemical Officer - Lt Colonel Jose A. Andino

25th Infantry Division, USARPAC, APO 25, San Francisco, Calif.

Chemical Officer - Lt Colonel Clifford P. Holm (To retire Aug 57)

Chemical Officer - Major John Moran

82nd Airborne Division, Ft Bragg, N. C.

Chemical Officer - Lt Colonel William S. Wiley, Jr.

101st Airborne Division, Ft Campbell, Ky.

Chemical Officer - Lt Colonel John L. Carson

## CONTINENTAL ARMY COMMAND

Hq. CONARC (7100), Ft Monroe, Va.

Colonel Roy W. Muth

Lt Colonel Joe Fishback

Lt Colonel Robert N. Ladson

Lt Colonel Floyd B. Mitman, Jr.

Major William J. McDermott

Major Charles C. Pelham

Captain Duane L. Emerson (w/sta Ft Bliss, Tex.)

Captain Charles Forsthoff (w/sta Ft Bliss, Tex.)

U. S. Army Armor Board, Ft Knox, Ky.

Captain George F. Carroll

Captain William V. Ford

U. S. Army Infantry Board, Ft Benning, Ga.

Major William B. Strough

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APP. A

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## LOGISTICAL COMMAND

Hq, 1st Logistical Command, Fort Bragg, N. C.

Commanding General - Brigadier General Marshall Stubbs (Asgd Aug)

Chemical Officer - Colonel Nelson I. Decker

Hq, 2d Logistical Command, Fort Polk, La.

2d Lieutenant Floyd R. Kendrick

### SPECIAL WEAPONS PROJECT

Hq, Armed Forces Special Weapons Project (8451), Washington, D. C.

Captain William D. Sheehan

Special Weapons Training Group (8452), Sandia Base, Albuquerque, N. M.

Major John M. Wilson

Hq, Special Weapons Command (8452), Sandia Base, Albuquerque, N. M.

Lt Colonel Clyde W. Bankes

Lt Colonel Edward G. Halligan

Hq, USA Gar, Sp Wpn Comp, AFSWP, Killeen Base, Texas

Captain James B. Speer, Jr.

### CHEMICAL CORPS UNITS

#### Groups

81st Chemical Group, Ft Bragg, N. C.

Commanding Officer - Colonel Charles H. McNary

100th Chemical Group (Com Z), Ft McClellan, Ala.

Commanding Officer - Colonel Marvin A. Middlebrooks

#### Battalions

1st Chemical Battalion (Svc), Ft McClellan, Ala.

Commanding Officer - (To be announced)

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CHEMICAL CORPS UNITS (Cont'd)

Battalions (Cont'd)

2d Chemical Weapons Battalion, Dugway Proving Ground, Dugway Utah

Commanding Officer - Lt Colonel Frank L. Schaf, Jr.

3d Chemical Battalion (Svc), Ft Bragg, N. C.

Commanding Officer - Major Walter T. Atkinson, Jr.

4th Chemical Battalion (SG), APO 166, USAREUR

Commanding Officer - Lt Colonel Louis R. Ruiz (reasgd Aug 57)

5th Chemical Battalion (SG), Ft Bragg, N. C.

Commanding Officer - Lt Colonel Louis T. Lazzarini

83d Chemical Battalion (Svc) Ft McClellan, Alabama

Commanding Officer - Lt Colonel Sterling R. Horton

218th Chemical Battalion (SG), Ft McClellan, Alabama

Commanding Officer - Lt Colonel James E. Pinney

85th Chemical Battalion (Svc) USAREUR, APO 69, New York, N. Y.

Commanding Officer - Lt Colonel David C. Smith

**ROTC INSTRUCTORS**

Massachusetts Institute of Technology (1122), Cambridge, Massachusetts

Lt Colonel LaMonte A. Tucker EDCSA; Aug 57

Captain Peter E. Hexner

Canisius College, (1242), Buffalo, New York

Captain Bernard M. Fillinich

St. Peter's College (1243), Jersey City, New Jersey

Captain Victor L. Saynisch

Ohio State University (2306), Columbus, Ohio

Captain William I. Fox

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ROTC INSTRUCTORS (Cont'd)

Bucknell University (2332), Lewisburg, Pa.

Captain William S. Cranford

University of Delaware (2327), Newark, Del.

Major Theodore L. Enteles

Georgia Institute of Technology (3340), Atlanta, Ga.

Major Robert K. Bradford

Captain James E. McKenzie

Texas A&M College (4365), College Station, Tex.

Captain Leroy J. Eckes

University of Oklahoma, (4357), Norman, Oklahoma

Captain William C. Yiles

Purdue University (5103), Lafayette, Ind.

Captain Harold W. Shear

Loyola University, New Orleans, La.

Captain Dallas Mathewson

Michigan State University (5106), East Lansing, Michigan

Captain Joseph R. Pirkel

Idaho State College (6511), Pocatello, Idaho

Captain Gerald A. Corwin

University of California (6513), Los Angeles, Calif.

Major Carl R. Duncan

**INSTRUCTORS AT NON-CHEMICAL SERVICE SCHOOLS**

2128 US Army Armor School, Frankfort, Ky.

Lt Colonel Claude W. White

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### 3440 The Infantry School, Infantry Ctr, Ga.

Lt Colonel Walter L. Miller

Major John A. Cassidy

### 4054 AAA & GM School, AAA GM Ctr, Texas

Major George C. Nowers

### 5025 Command and General Staff College, Fort Leavenworth, Kans.

Colonel Carl E. Grant

Lt Colonel Martin L. Denlinger

Lt Colonel John C. Finchie

Lt Colonel Charles G. Micheau

Lt Colonel Louis R. Ruiz (Asgd Aug 57)

### 8696 Naval Damage Control School, Treasure Island, San Francisco, Calif.

Major Earl R. Shappell

### 8697 ARWAF Detachment, Maxwell Air Force Base, Ala.

Lt Colonel Woodrow W. Reagan

### 8656 Industrial College of the Armed Forces, Fort Lesley J. McNair, Wash., D. C.

Colonel Victor C. Searle

### 8660 United States Military Academy, West Point, N. Y.

Major Robert S. Day

Major Donald G. MacWilliams

Captain Delbert S. Barth

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4050 Arty GM School, Arty GM Ctr, Okla.

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Major William R. Strantz

1119 US Army Advisor Group, Providence, R. I.

Major Jack Montgomery

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Office of the Secretary of Defense (8475), Washington, D. C.

Colonel James E. McHugh

Colonel Vincent L. Ruwet

Army Element, Office, Joint Chiefs of Staff, (8485) Washington, D. C.

Colonel Robert W. Breaks

Office, Secretary of the Army (8500), Washington, D. C.

Lt Colonel Truman F. Cook

Office of the Comptroller of the Army (8528), Washington, D. C.

Lt Colonel Roy I. Olson

Office of the Chief of Information (8629), Washington, D. C.

Captain George F. Townsend, Jr.

U. S. Army Standardization Group, UK (8670), FPO 100, New York, N. Y.

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Support Group (8706), The Pentagon, Washington, D. C.

Colonel Alexander Batlin

Department of Health, Education & Welfare (8730), Washington, D. C.

Colonel Walter A. Guild

Office of Selective Service (8755), Providence, R. I.

Lt Colonel Wilfred Intlehouse

RA Officer Augmentation Detachment (8936), Washington, D. C.

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Lt Colonel John D. Servis

US Army Standardization Group (8669), Ottawa, Canada

R&D Coordinator - Lt Colonel Michael R. DeCarlo

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QM Food & Container Institute for the Armed Forces (9111-01), Chicago, Ill.

Lt Colonel George E. Donald

QM Radiation Planning Agency (9111-03) w/sta Army Reactors Br, Reactor Development Division, AEC, Washington, D. C.

Lt Colonel Belmont S. Evans

Office Asst Chief of Staff, Intelligence (8533), Washington, D. C.

Lt Colonel Richard C. Burn

Captain Charles F. Lear (Asgd Aug 57)

Captain Don S. McClelland

Office, Deputy Chief of Staff for Military Operations (8534), Wash, D. C.

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Lt Colonel Harvey E. Sheppard

Lt Colonel William W. Stone

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