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(35e)

# SUMMARY OF MAJOR EVENTS AND PROBLEMS

## United States Army Chemical Corps

*Excerpt*

Fiscal Year 1956



310-242-86-8

With the exception of

November 1956

SECRET/RESTRICTED DATA material downgraded unclassified

EXCLUDED FROM AUTOMATIC REGRADING. DOD DIR 5200.10 DOES NOT APPLY.

Authority: DAMO-SWC letter of 8 JAN 40 signed by COL A.D. Robb Chemical Corps Historical Office for MG Del Rosso

Excluded from General Declassification Schedule

secret/Restricted Data declassified by DNA and CBDCOM Security Classification Review Board, 24 Aug 95

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~~RESTRICTED DATA~~  
~~ATOMIC ENERGY ACT OF 1954~~

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In the development of the V-agents there were a number of technical problems requiring solution. One of the most important of these was the tendency of the compounds to decompose during storage. During the year considerable progress was made studying the factors that cause decomposition. The problem is still under investigation.<sup>190</sup> Efforts were also continued to find a material which would be practical in decontaminating surfaces touched by V-agents. A large number of compounds were tested, and some found to destroy certain agents rapidly.<sup>191</sup>

G-Agents

Early in the fiscal year a detailed study of the various processes used to produce GB and its intermediates was completed and submitted to the Office of the Chief, the Research and Development Command, and the Materiel Command. This report evaluated in detail the advantages and disadvantages of each process so that higher authority could use the report as a basis for determining any future expansion program.<sup>192</sup>

G-agents are currently being produced by the so-called DMHP (dimethyl hydrogen phosphite) process. Two other processes are feasible, the Salt and the HTM (high temperature methane). The Corps is interested in these two processes because they may prove to be less expensive and more efficient and practical than the present method. During the fiscal year the Chemical

<sup>190</sup>

Interv, Hist Off with Dr Fer K. Frolich, 6 Aug 56.

<sup>191</sup>

Cml C Annual Research and Development Report, 31 Dec 55.

<sup>192</sup>

GB Expansion Program (TOP SECRET report).

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Warfare Laboratories, the Engineering Command and a contractor, the Food Machinery and Chemical Corporation, carried on further planning of the unit plant design for the HTM process. The contract consisted of two parts; phase 1 for development of the pilot plant, and phase 2 for the design of a semi-works plant. Considerable work was done by the laboratories and the contractor on phase 1, with engineers from the Engineering Command on hand to familiarize themselves with the operation and thus expedite the later work on phase 2.<sup>193</sup>

The evaluation of the Salt Process was carried out in conjunction with the Olin Mathieson Chemical Corporation. During the first half of 1956 the completion date of the contract was extended, owing to personnel turnover of the contractor, but by the end of the fiscal year the contract was practically completed. The technical work, including the writing and publication of manuals, was completed, leaving only the administrative details to be concluded.<sup>194</sup>

During the year, chemical engineering studies at the Phosphate Development Works led to two improvements, both of which should save considerable amounts of money in the production of GB. First, the heat exchangers

193

(1) Summary of Major Events and Problems, FY 55, pp. 49 - 50. (2) Contract No. DA-8-108-CML-5725, in the amount of \$773,590, with the Food Machinery and Chemical Corporation. (3) Cml C Annual Research and Development Report, 31 Dec 55. (4) Quart Hist Rpt, Cml C Engineering Cmd, Jan-Mar 56; Apr-Jun 56.

194

(1) Contract No. DA 11-021-CML-488, in the amount of \$426,556, with the Olin Mathieson Chemical Corporation. (2) Quart Hist Rpts, Cml C Engineering Cmd, Jan-Mar 56; Apr-Jun 56.

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and condensor coils were replaced by equipment constructed of nickel and special alloys. The saving in maintenance costs amounted to \$100,000.

Secondly, the process was modified, resulting in a gain of 5 percent in the yield, and the purity was increased, allowing the elimination of expensive redistillation. At the rates of production that would be carried on under full mobilization, it was estimated that the savings would approach three-quarters of a million dollars annually.<sup>195</sup>

LOPAIR G-agent alarm

It is difficult for humans to detect the presence of G-agents by the senses alone. For this reason the Corps has been endeavoring to develop an automatic device which would sound an alarm when a G-agent was in its vicinity. Such a device could be used to scan the atmosphere continuously in advance of troops, and give warning when G-agents were spotted.

In 1954 the Corps began development of a small, simple alarm commonly called LOPAIR (long-path infrared). The principle behind this device is that the G-agents absorb certain portions of the infrared spectrum. The first prototype, E33, was constructed in co-operation with the Armor Research Foundation and the Farrand Optical Company. It performed satisfactorily, having a range of 300 yards, but it was too heavy (250 pounds) and consumed too much electrical power (250 watts).

To overcome the objections to the E33, a revised model, the E33R1,

<sup>195</sup>

Gml C Research and Development Command, CW Labs, Outstanding Accomplishments FY 56.

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Production planning was done in fiscal year 1956 on several potential production items including a massive 750 pound bomb, a 500 pound low-drag Navy bomb, and two anti-crop and one anti-personnel BW bombs.<sup>272</sup>

Toxic Planning and Production<sup>273</sup>

Site "A", the Phosphate Development Works at Muscle Shoals, Alabama, was operated throughout fiscal year 1956 to provide dichlor, the intermediate product for production of GB nerve gas. With the Chemical Corps reorganization, supervision of Site "A" passed from Research and Engineering Command to the new Engineering Command. Transfer of supervision to Materiel Command was delayed from the scheduled date of 1 January 1956 to 1 July 1956 to permit final round-out of the facility. This round-out was completed with an increase of capacity to 45 tons of dichlor per day per cascade. The major problem remaining at the year-end transfer from Engineering Command to Materiel Command was the reduction of by-product phosphorus oxychloride to the useful principal raw material, phosphorus trichloride. The reduction facility was unable to support the entire plant in full operation. Engineering Command was to retain responsibility for the reduction facility pending the solution of this problem. Other by-product problems were solved during fiscal year 1956. Materiel Command laid plans during fiscal year 1956 to operate the entire plant by moving one crew from

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<sup>272</sup> Cohen interv, 30 Oct 56.

<sup>273</sup> Summary of Major Events and Problems, FY 55, pp. 138 - 43.



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step to step, thus insuring economy, efficiency of operation, and the maintenance of a well-trained crew.<sup>274</sup>

The round-out program for the final two production steps at Rocky Mountain Arsenal, Site "B", also made significant progress. Yields were increased and at the same time it was discovered that equipment could be modified and simplified. On 5 February 1956 Steps IV and V were combined in a single operation with an increase in efficiency. This combination and round-out capacity were tested in a 70-day "sustained run" of the entire plant during April, May, and June 1956. It was found that it was possible to operate during 77.8 percent of the period, and that twenty shut-down periods were required for repair and maintenance. Yield was good at an average of 88.63 percent of product against input. Quality was generally good with a lot rejection rate of 14.5 percent. Feed rates varied from 150 percent to 240 percent of design, and the integration of the two steps proved feasible.<sup>275</sup>

( ) Problems remaining at Site "B" included the perpetual problem of the clogging of various parts of the system by solids, and the disposal of wastes and by-products. Considerable progress was made in the solids problem by modifying equipment, providing better valves and control methods, and by improving cleaning procedures. More progress along the same lines was expected

274

(1) Interv, Hist Off with Mr Joseph J. Marcus, Industrial Div, CmC MATCOM, 3 Oct 56. (2) See below, pp. 194 - 95.

275

(1) ~~Marcus~~ interv, 3 Oct 56. (2) Quart Hist Rpts, Classified Appendixes, 1st, 2nd, 3rd, and 4th Quarts, FY 56, Rocky Mountain Arsenal.

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in fiscal year 1957. The waste problem was expected to be solved with the completion of the new disposal lake.<sup>276</sup> A solution to the problem of disposal of by-product hydrochloric acid was being worked out at the end of the fiscal year. Studies demonstrated that this by-product could be reprocessed into usable chlorine and caustic in the chlorine plant already available at Rocky Mountain Arsenal. Commercial operation of the chlorine plant under lease has not proved economically feasible, but analysis indicated that the contemplated by-product operation would be both economical and efficient.<sup>277</sup>

#### Industrial Mobilization Planning

(U) Funds amounting to \$15,073,000 were made available for Chemical Corps Industrial Mobilization Planning in fiscal year 1956. A total of \$14,514,000 obligated represented 97 percent of funds available and 100 percent of the obligation schedule. Total funds available for expenditure during fiscal year 1956 under this program were \$24,927,000 of which it was planned to expend \$12,155,000. Actual expenditure exceeded the plan by 3 percent.<sup>278</sup>

(U) Industrial Mobilization planning covers; (1) rehabilitation, modernization, and expansion of reserve plants; (2) lay-away of industrial plants;

<sup>276</sup>

See above, pp. 70 - 71.

<sup>277</sup>

(1) Marcus interv. (2) Interv, Hist Off with Mr John L. Traub; Directorate for Supply and Procurement, CmlC MATCOM, 24 Oct 56.

<sup>278</sup>

(1) Summary of Major Events and Problems, FY 55, pp. 143 - 46. (2) Quart Rev, 4th Quart, FY 56, pp. 17, 19.

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