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Smoke	Chemical agents	Chemical detection
Immunology	Demilitarization	Biological detection
Riot control	Vegetation control	Incapacitating munitions
		Decontamination
		Binary munitions
		Flame/incendiary
		Pollution abatement
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) (U) This briefing delineates Edgewood Arsenal's capabilities and its role as one of the Army's centers for science and technology. It presents a broad picture of the chemical commodity management center's mission and cites significant action areas.		

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FOREWORD

On 17 May 1973, COL John K. Stoner, Jr., Commander, Edgewood Arsenal, presented a briefing to GEN Creighton W. Abrams, US Army Chief of Staff, at the Pentagon. Also attending were members of GEN Abrams' staff. For information and reference, COL Stoner's presentation is published in this Special Publication.

The scope and content of the material provide a broad overview of the Edgewood Arsenal mission and significant action areas, including major thrust areas. It is intended to delineate Edgewood Arsenal's capabilities and its role as one of the Army's scientific and technological assets.

The material in this publication was developed by COL Stoner as part of a series of briefings presented to officials of various higher headquarters.

For the purpose of this report, all briefing illustrations that were presented in Vugraph form will be designated as charts and figures.

In conducting the research described in this publication, the investigators adhered to the "Guide for Laboratory Animal Facilities and Care," as established by the Committee on the Guide for Laboratory Animal Resources, National Academy of Sciences - National Research Council.

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(U) Briefing for: Chief of Staff, US Army, 17 May 1973

(U) Subject: Overview of the Army's Chemical and Biological Materiel Program

(U) General Abrams, Gentlemen: Our purpose today is to present an overview of the Army's Chemical and Biological Materiel Program. Our objective is to acquaint you broadly with the total program while placing it in perspective with national policy and with the nature of the threat. We hope to show that we have a systems approach designed to continue to provide the U.S., and particularly the Army, with the technical basis to deter chemical warfare attack, to withstand such attack, and to retaliate in kind in order to make the deterrence credible.

(U) Certain of my remarks will relate directly to the mission and functions of Edgewood Arsenal -- the Army's chemical commodity management center.

Chart I (U). MISSION OF EDGEWOOD ARSENAL

Operate the commodity center for life cycle materiel management of:

1. Lethal and incapacitating chemical agents and munitions
2. Chemical and biological defense equipment and systems
3. Combat support equipment and systems, including smoke, flame, incendiary, and riot control

(U) Our fundamental responsibility at Edgewood is the life cycle management of the traditional chemical warfare and biological defense systems represented by the first two entries on this chart. Additionally, we are responsible for a substantial program in conventional combat support. The most recent addition to this mission is the biological detection and warning system responsibility -- transferred to Edgewood following the President's renunciation of biological warfare.

(U) In November 1969, the President of the United States unilaterally renounced the use of biological warfare and confined our program to defensive measures. He directed destruction of the biological stockpile and we have complied with that directive.

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Chart II (U). PRESIDENTIAL POLICY STATEMENT
25 NOVEMBER 1969

Biological Research Program

- U.S. renounces use of all methods of biological warfare
- Biological research confined to defensive measures
- Disposal of stockpile except laboratory quantities
- Biological policy extended to toxins on 14 February 1970

Chemical Warfare Program

- U.S. reaffirms renunciation of first use of lethal weapons
- Extends this to first use of incapacitating chemicals

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(U) The extension of the policy to toxins involves the chemical poisons secreted by living organisms.

(U) It is less well understood that the President, at the same time, reiterated the historic position on lethal chemical warfare. The Geneva Protocol prohibiting first use of lethal chemical warfare has been indorsed by all Presidents since President Franklin Roosevelt. Testifying before Congress in 1967, Deputy Secretary of Defense Cyrus Vance crystallized this policy into a three-point program: To avoid technological surprise, to be able to live and fight in a toxic environment, and to deter the use of chemical warfare by threat of retaliation. President Nixon extended this policy to include incapacitating chemicals as well as lethal chemicals.

(U) The present U.S. National policy stands as shown here.

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Chart III (U). CURRENT US CW/BW NATIONAL POLICY

1. Objective is to deter enemy chemical attack, retaliate if deterrence fails
2. No first use of lethal or incapacitating chemical weapons
3. No use of any method of BW whatsoever, including toxins
4. Destroy biological stockpile
5. Biological program confined to R&D for defensive purposes
6. Provision for a semi-annual Congressional program review

(U) The extent of public and Congressional concern over chemical warfare led in 1970 to a requirement of the Congress (item 6, chart III) to report to them on the extent and nature of the program, and constraints upon both program and logistics I will discuss in a moment.

(U). Within this policy framework, what is the nature of the threat against which we are defending? For many years our intelligence was largely based upon so-called mirror image techniques: imputing to the potential enemy the capabilities we had ourselves. This was strengthened by continuous review of his scientific progress. Today we are more certain of his capabilities in the chemical area.

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(U) On a more mundane note we are beset with more than a fair share of political problems. For example, our programs are delayed and made more expensive by the constraints of Public Law 91-121 as amended by 91-441.

Chart VII (U). ABSTRACT OF PUBLIC LAWS 91-121 AND 91-441

Prohibits transportation, open-air testing or disposal of lethal agents unless:

- a. Approval by Secretary of Defense
- b. Coordination with Secretary of Health, Education and Welfare
- c. Notification of President of the Senate and Speaker of the House of Representatives
- d. Outside U.S., Secretary of State determined no violation of international law.

Prohibits the procurement of any delivery system or components thereof specifically designed to disseminate any lethal chemical agent unless the national security need is certified by the President.

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(U) Briefly stated, these laws prohibit expenditure of funds for the transportation, open-air testing or disposal of any lethal chemical in the U.S. unless the Secretary of Defense (1) has determined the necessity in the interest of national security; (2) has brought the particulars to the attention of the Secretary of HEW for a review with respect to any hazards to public health and safety; and (3) has notified the President of the Senate and the Speaker of the House of Representatives. These restrictions also apply outside the U.S. if the Secretary of State determines such actions violate international law. (Comment on procurement constraint.)

(U) In view of these restrictions, the probability of open-air testing of lethal, or even incapacitating, munitions appears remote.

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Chart VIII (U). EDGEWOOD ARSENAL RDTE PROGRAM

Priority

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Supporting

- Integrated total chemical warfare capability
- Conventional combat support

Before turning to a more detailed discussion of specific elements of the program, I would like to summarize briefly the AMC philosophy and approach to the mission.

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(U) These specific programs have been identified by General Miley as Major Thrust Areas and are receiving our concentrated efforts.

(U) Underlying these Major Thrusts are our efforts to integrate all systems into a total capability and the programs of conventional combat support fundamental to our mission.

(U) As a precursor to the remainder of my remarks, it would be helpful by the use of this Vugraph (figure 1) to review the significant elements of life-cycle management of materiel. The first broad category of effort is the RDTE program. Edgewood Arsenal is the heart of this program, supported by the testing activity at Dugway Proving Ground.

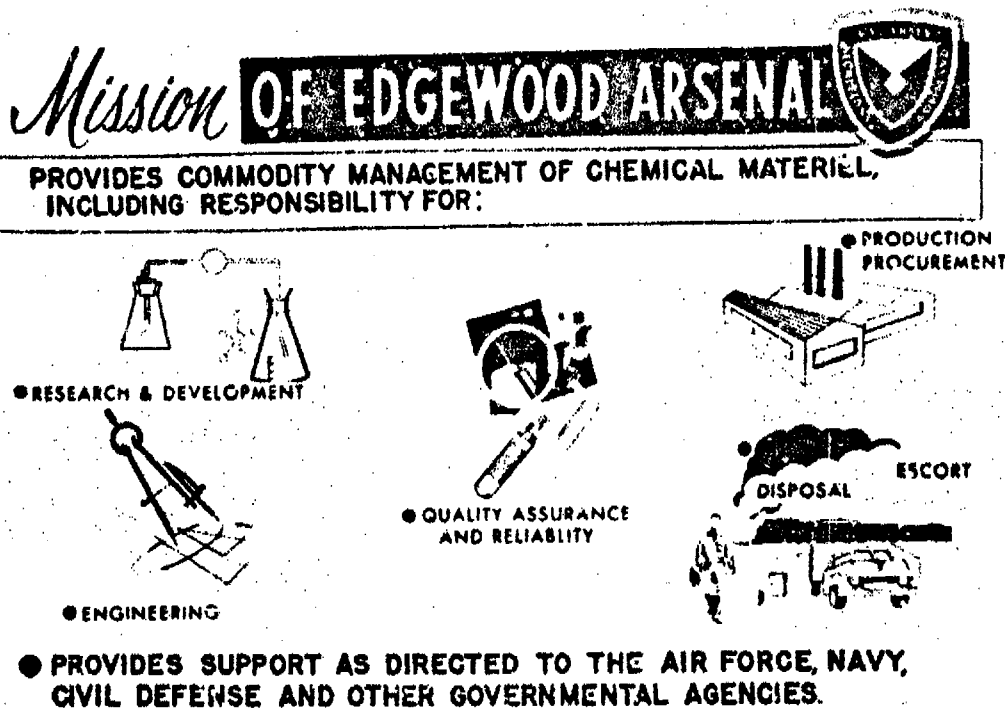


Figure 1 (U).

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The RDTE Mission Program is a comprehensive program that encompasses the development, testing, and evaluation of chemical warfare defense systems. The program is managed by the Chemical Warfare Defense Division, which is responsible for ensuring that the United States has the capability to defend against chemical warfare threats.

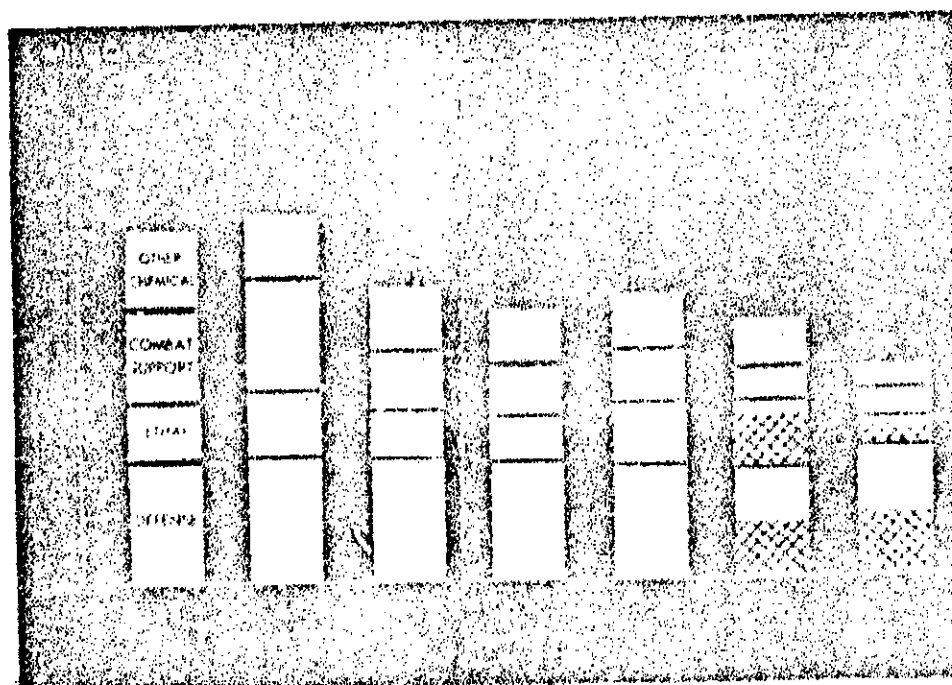
(U) (You will receive a separate briefing on the Army's chemical defense program from Colonel Bass in a few moments. Suffice it to say at this point that Edgewood Arsenal has the technical responsibility for development of demilitarization processes. The quality assurance function is inherent in all aspects of the program.)

(U) The total program is comprised of four major categories of effort.

- Defensive systems
- Lethal chemicals and systems
- Combat support
- Other

(U) Chart IX shows you the RDTE level of effort in these four groupings since 1968.

Chart IX (U). RDTE MISSION PROGRAM TREND -- PROGRAM CATEGORIES



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(U) The FY74 program represents current guidance, reflecting a \$9.5 million decrement from the basic submission — a cut of 30%. The cross-hatched portion represents the concentration on General Miley's Major Thrust programs — specifically chemical and biological warning and detection and lethal binary systems. It is useful here to point out an important distinction. The classical CB program is represented essentially by the defense and lethal systems categories. The combat support category encompasses flame, smoke, riot control, incendiaries and, since 1971, vegetation control systems which are more properly looked upon as conventional rather than chemical warfare.

(U) The "Other Chemical" category includes basic research and supporting technology common to the entire program, as well as subjects such as safety, CAD-E, incapacitating weapons systems, and most recently environmental work.

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(U) The balance of the research and development mission statement is directed to meeting Army requirements. With the single exception of smoke, AMC has on-going programs which support every one of the Army mission objectives listed.

Chart X (U). R&D MISSION OBJECTIVES

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B. Army-wide

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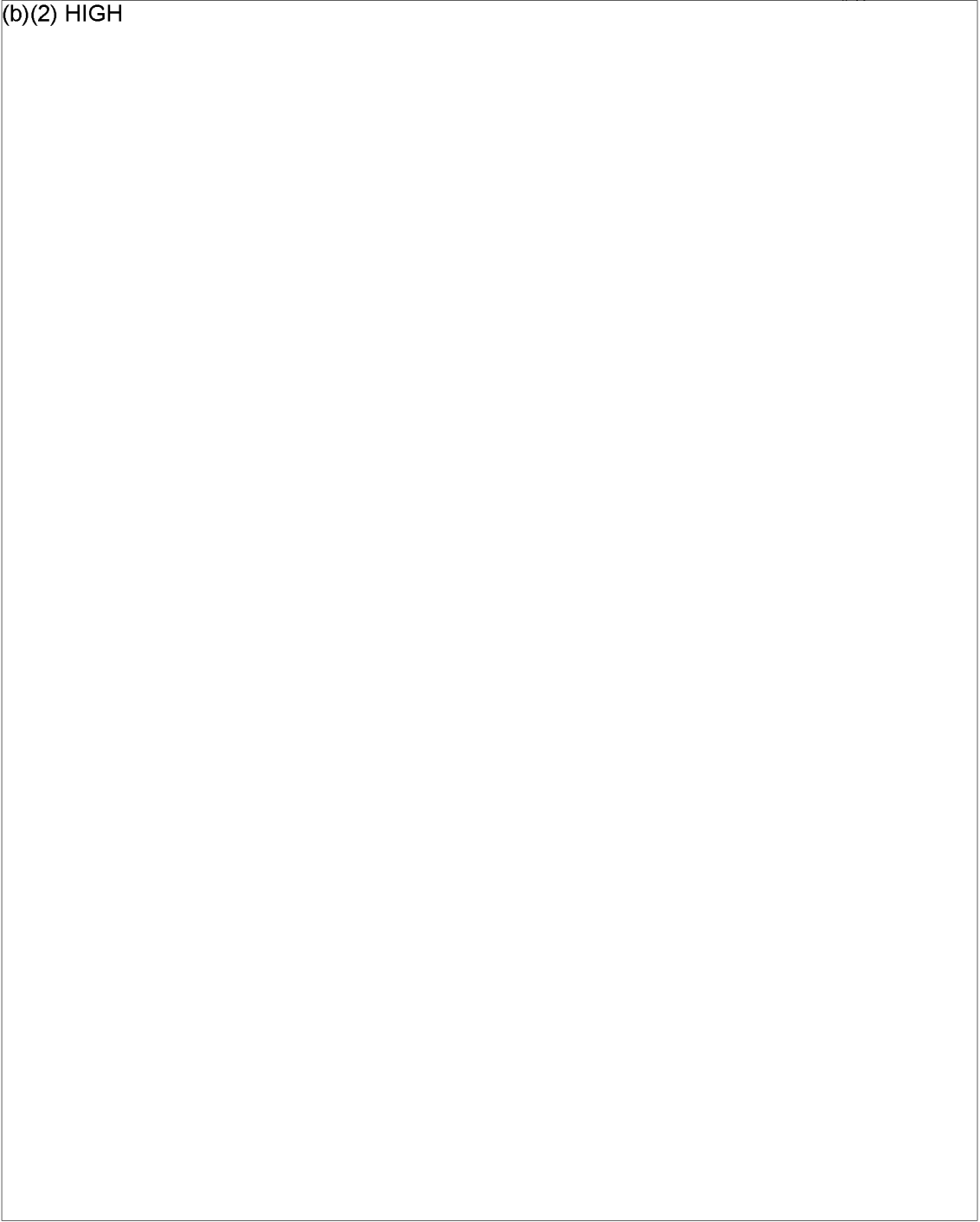


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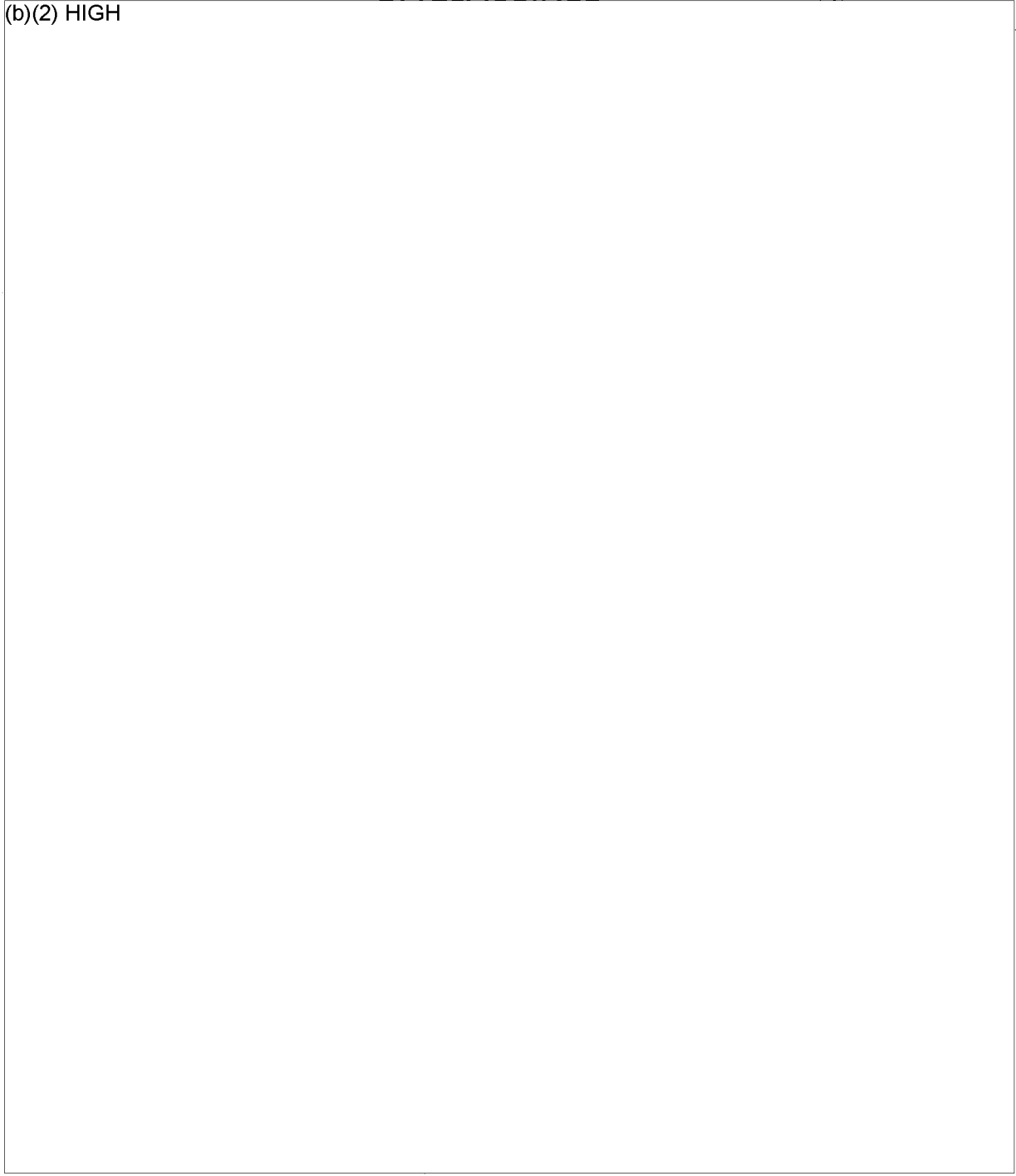


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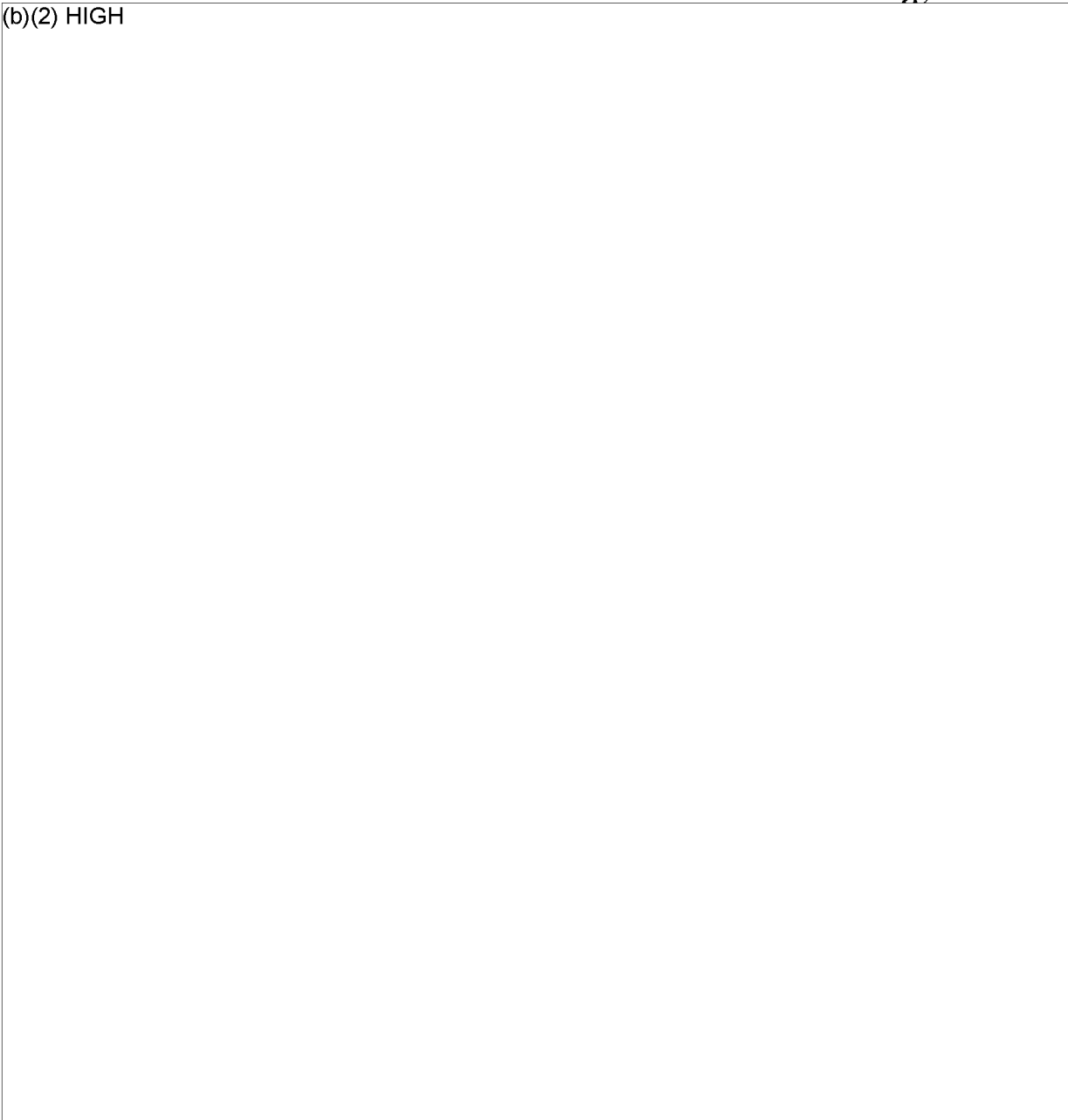


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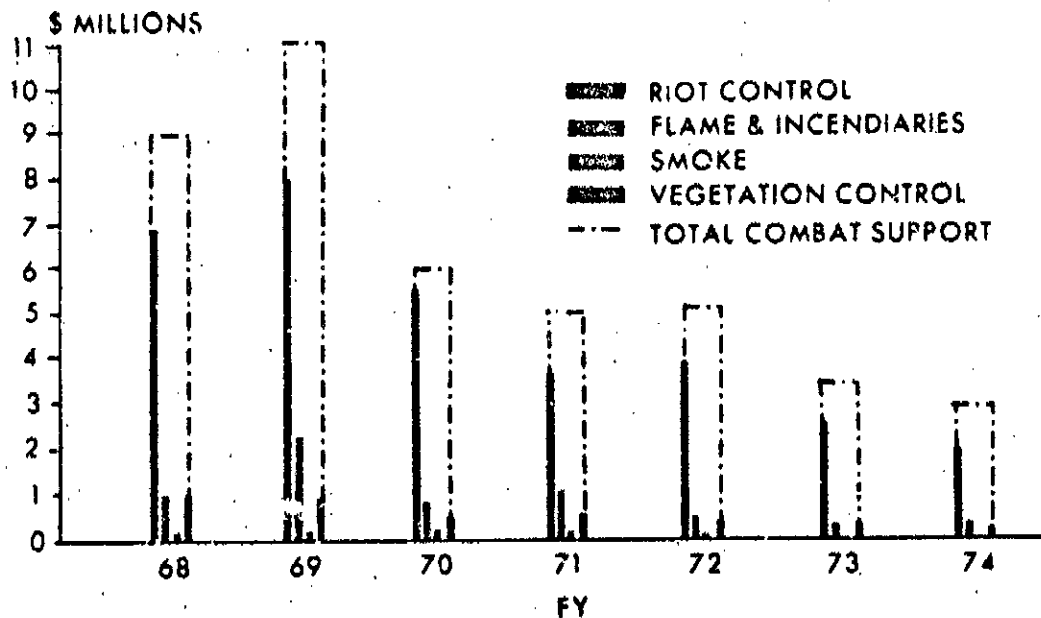


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Chart XIV (U). COMBAT SUPPORT RDTE FUNDING



(U) The large expenditures in riot control during 68-69 include ENSURE requirements for agent CS and supporting munitions for Vietnam. The large expenditure for flame in FY69 includes a \$1.5 million ENSURE requirement for munitions for Vietnam. The FY73 and FY74 program totals are 25% to 30% lower than the level of the FY72 program.

(U) A recent achievement in flame R&D was the development of a multi-shot portable launcher (figure 6) which eliminates the undesirable characteristics of previous flame systems - long logistic tails, dedicated mixing equipment inefficient fuel usage, and battlefield signature.

(U) This multi-shot launcher and its flame rocket enables the soldier to engage point targets out to 250 meters and area targets out to 700 meters. This system was the first to use a new encapsulated fuel, which delivers the total payload to the target. The launcher was used effectively in Vietnam and was introduced into the inventory in FY72. Its wide acceptance led to requirements for other agent fills for the rocket and we are working on them under other program elements.

(U) We have developed a rubber-bodied grenade (figure 7) to replace the old "beer can" configuration. It is less hazardous and has the added feature of skittering around the ground while functioning, thereby minimizing the probability of throw-back.

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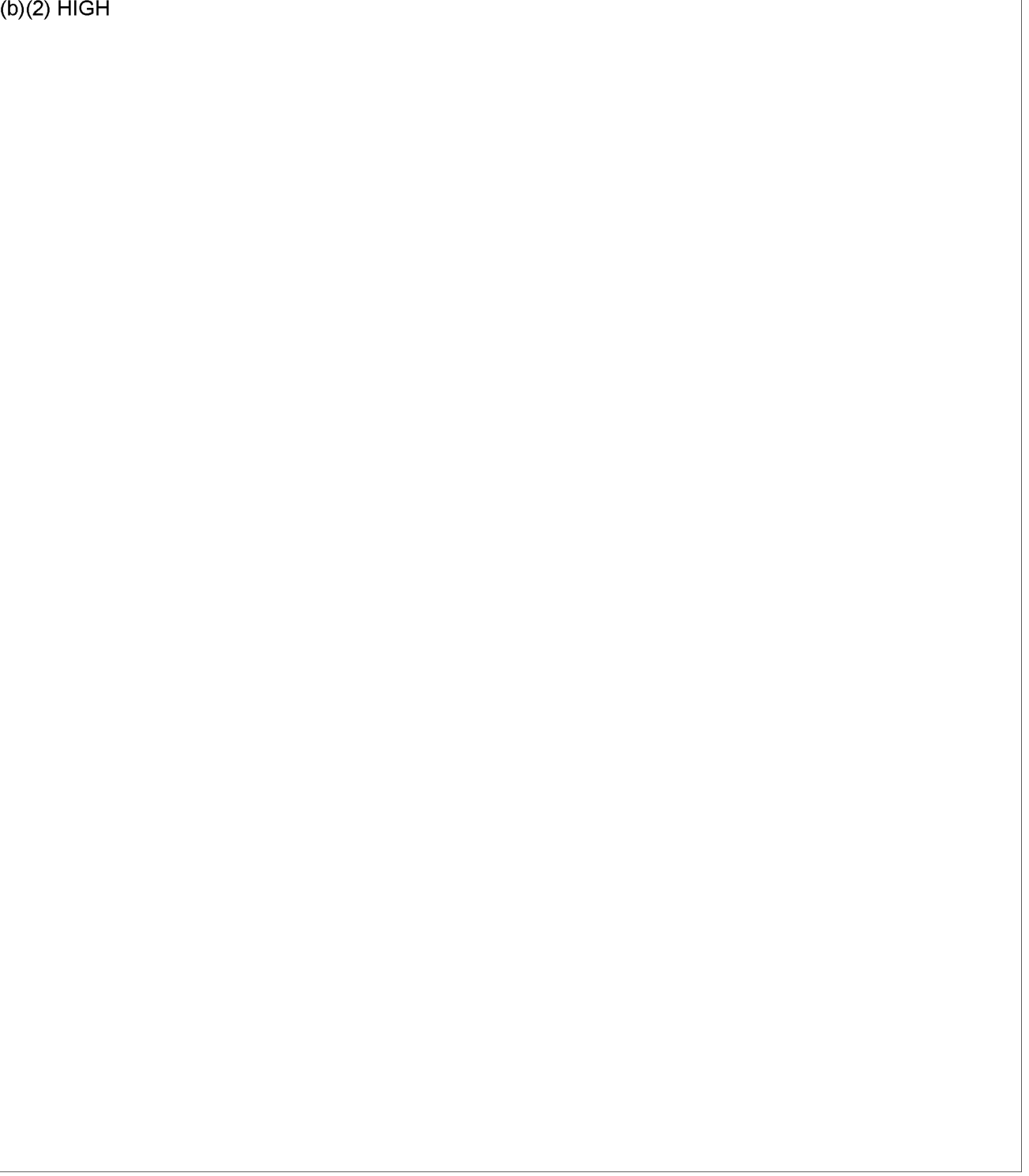


Figure 6 (U) PORTABLE FLAME ROCKET LAUNCHER AND
(IN INSET) CLIP OF ROUNDS

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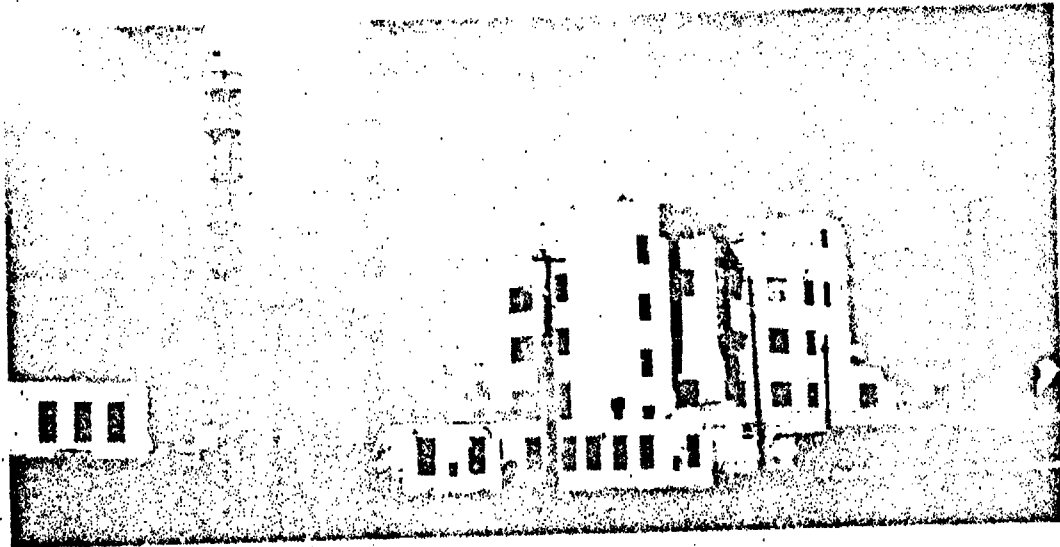


Figure 10 (U). CHEMICAL PROCESS PILOT PLANT

(U) There is also a mechanical engineering component of process development at Edgewood. In this effort, a combination of Edgewood Arsenal, Pine Bluff Arsenal and industry are used in the development of facilities for filling the munition and loading its explosive components.

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(U) In the life cycle scheme of this presentation, this brings us to the end of our discussion of the research and development phase.

(U) The next phase is that effort relative to the PEMA program (PEMA: Procurement of Equipment and Missiles, Army). The PEMA program involves both the procurement of the end items and the production base support associated with the establishment of production facilities.

(U) This chart (chart XVI) illustrates the chemical procurement program since FY 1968. These totals include PEMA as well as procurement actions for the Army Stock Fund and for other customers. The FY74 level is a projection based on known Army programs and will likely increase as unprogrammed Army requirements and other customer requirements become established.

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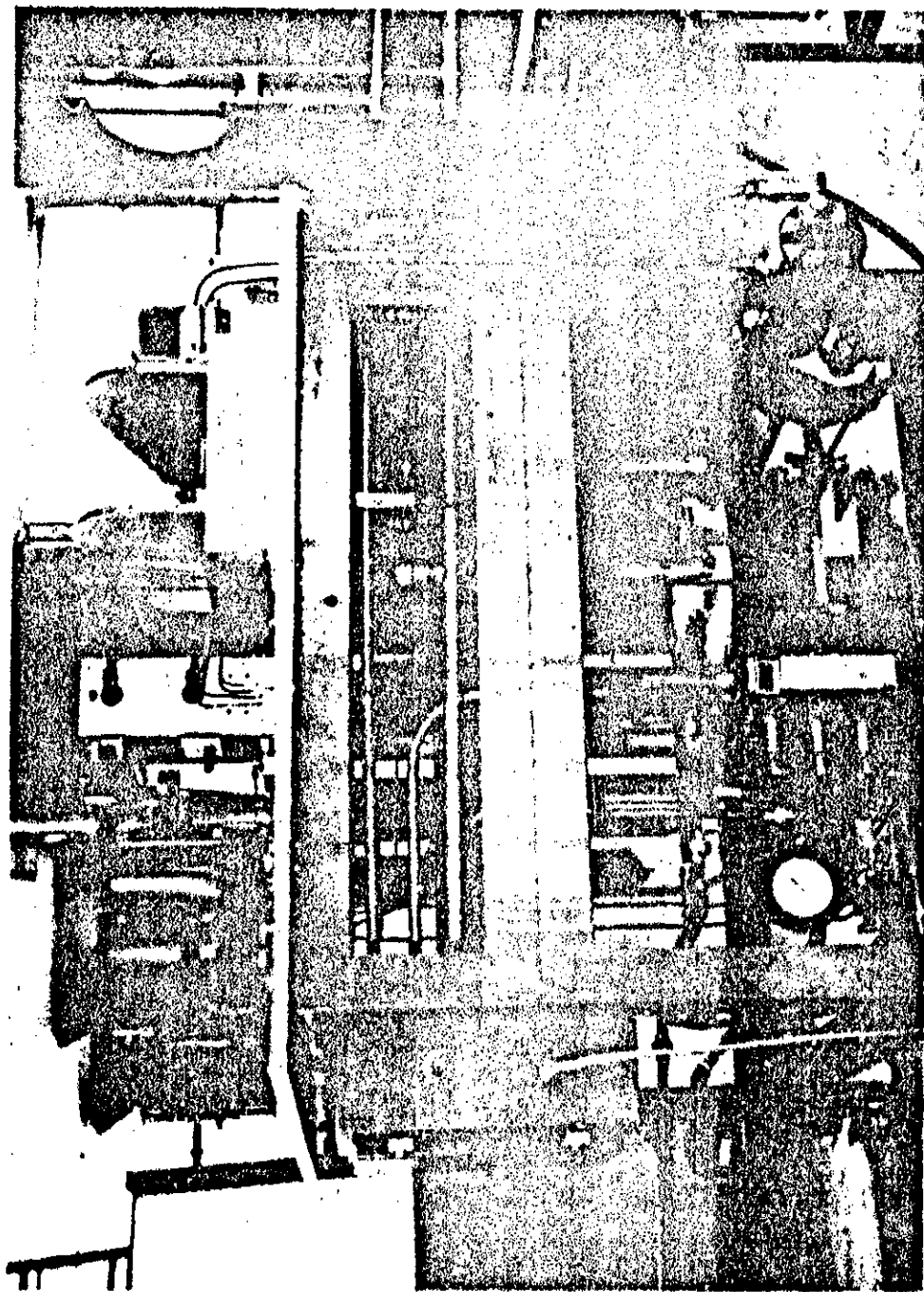


Figure 11 (U). FILLING MACHINE WITH FLUIDIC CONTROLS

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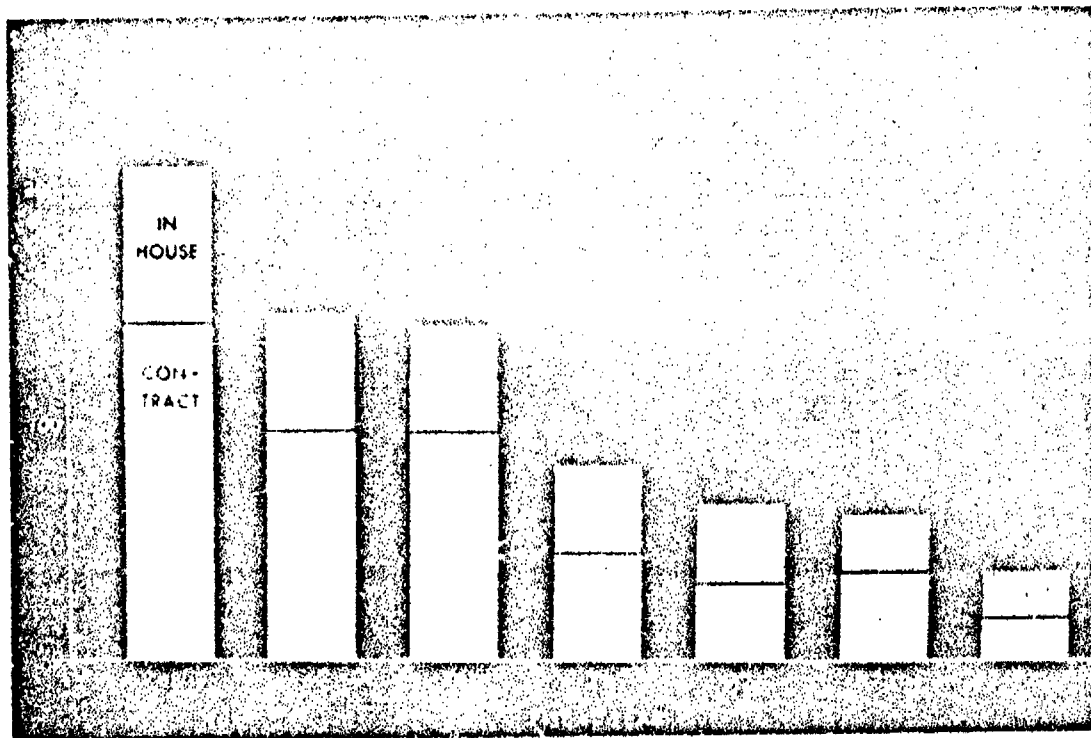
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Chart XVI (U). PROCUREMENT PROGRAM - INHOUSE VERSUS CONTRACT
(PEMA and Army Stock Fund)



(U) Several observations about this data are appropriate. First, the combat support program reflects the widespread use of our materiel in Southeast Asia, and the effect of the subsequent wind-down. Second, the lethal program has been virtually dormant.

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(U) It is appropriate to mention the ENSURE program and its effect on this picture. Of the 418 Army ENSURE requests for materiel, 46 were in the area of chemical combat support.

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(U) A number of these items have since been standardized and have entered the Army inventory for world-wide use. (The most prominent of these is the M202 multi-shot flame launcher described earlier.) Throughout the life of the ENSURE program approximately \$26 million of RDTE money and \$88 million of PEMA funds were spent by Edgewood Arsenal in support of Southeast Asia. Returning to the chart (XVI), included in the other category are the PEMA dollars expended by Edgewood Arsenal in the chemical demilitarization programs for procurement of systems for disposal that are consistent with the severe environmental standards in existence today.

(U) There remains one additional topic to complete the PEMA program picture – a brief review of our inhouse facilities and their use (figure 12).

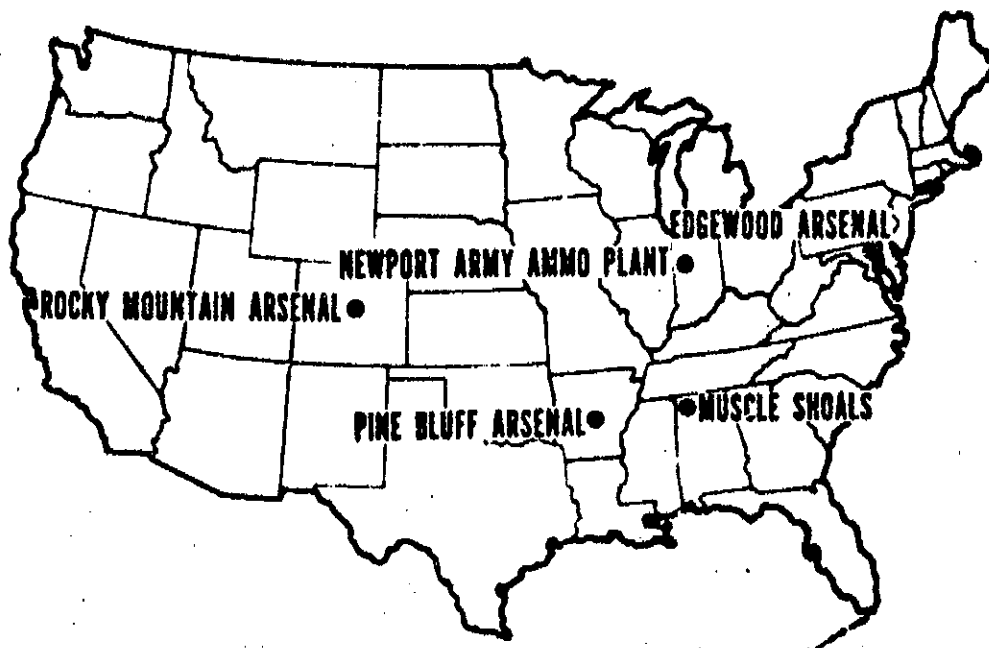


Figure 12 (U). GOVERNMENT OWNED CHEMICAL FACILITIES

(U) To meet the expanded requirements for smoke, incendiary, flame, and chemical weapons required to meet World War II needs, the facilities at Edgewood Arsenal were expanded by the establishment of Pine Bluff Arsenal (November 1941) and Rocky Mountain Arsenal (May 1942).

(U) The original mission assigned to Pine Bluff Arsenal was related to incendiary bomb manufacture; later it was expanded to include manufacture of chemical agents and munitions and incendiary and smoke munitions.

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(U) Rocky Mountain Arsenal's original mission was to manufacture chemical agents and munitions and incendiary munitions. During the Korean emergency a new major facility was constructed there and placed into operation for manufacture of nerve agent GB and for filling of munitions with this agent.

(U) To provide chemical intermediates for the manufacture of GB agent, manufacturing facilities were also established at Muscle Shoals, Alabama.

(U) In 1959 authorization was received to establish a chemical agent (VX) manufacturing plant and munition filling facility at Newport Army Ammunition Plant.

(U) With the meeting of stockpile objectives for chemical agents and munitions and with changes in national policies corresponding changes were made in the manufacturing sites just described. Muscle Shoals and Newport are now in standby status. Rocky Mountain Arsenal's mission is essentially that of a demilitarization/disposal center for surplus or obsolete chemical agents and munitions.

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(U) Both Pine Bluff Arsenal and Edgewood Arsenal are assigned mobilization responsibilities for selected items.

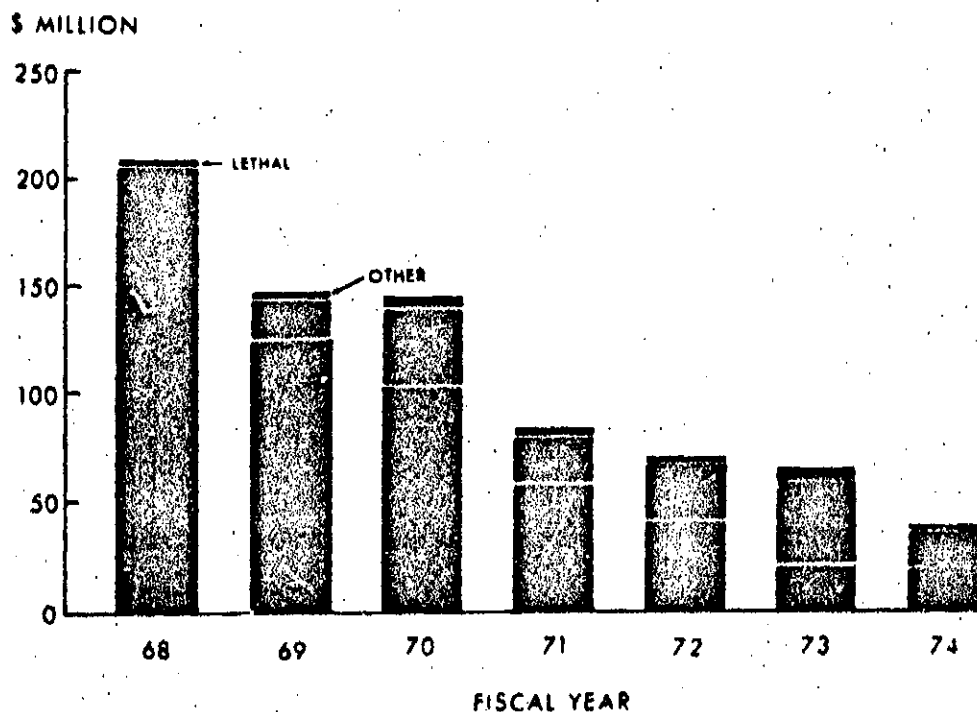
(U) As mentioned, the testing program in support of the R&D effort is conducted for the most part at Dugway Proving Ground, in Utah.

(U) You might be interested in noting how the earlier PEMA chart (chart XVI) looks if structured to reflect the inhouse/industry distribution of program (chart XVII). This presentation (chart XVII) includes both the procurement for supply effort and the production base modernization and support effort. For example, a new \$5. million load, assembly, and pack facility for white phosphorus munitions was placed in operation at Pine Bluff Arsenal in FY71. Our current 12-year production base modernization program calls for the investment of \$37 million in PEMA at Pine Bluff Arsenal through FY81.

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Chart XVII (U). PROCUREMENT PROGRAM -- PROGRAM CATEGORY
(PEMA and Army Stock Fund)



(U) SUMMARY STATEMENT

General Abrams, in this brief time I have provided a broad overview of the Army's chemical and biological materiel program and its responsiveness and sensitivity to national policies, priorities, and constraints. I believe that this program will in time provide the Army with the means to deter, defend, and retaliate. It is a complex program, generally not well understood and heavily constrained in national policy and public law. Notwithstanding, the program is viable and the technological need great.

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