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DEPARTMENT OF THE ARMY  
Office of the Chief, Chemical Corps  
Field Office  
Army Chemical Center, Md.

28 April 1949

CMLWR-En-2

SUBJECT: Facilities for RW Field Test Site at Dugway Proving Ground

TO: Director of Logistics  
General Staff, United States Army  
Washington 25, D. C.

1. In accordance with request stated in paragraph 2 of letter from your office dated 22 April 1949, Subject: Facilities at Dugway Proving Ground, an estimate of facilities and fund requirements for a Radiological Warfare Field Test Site at Dugway Proving Ground, to conduct the initial phase of the Chemical Corps RW Program, is submitted.

2. Responsibility for the development of means of dissemination of RW agents was assigned to the Chief, Chemical Corps by Memorandum dated 7 January 1949, Subject: Assignment of Research and Development Cognizance for RW from General Staff, USA to Chief, Chemical Corps. Accordingly, the Chemical Corps has organized a program for developing means of dissemination of RW agents.

3. A large field test site with suitable special facilities is necessary for the prosecution of the RW munition program. Such a field test site is not available to the Chemical Corps at any location within its own jurisdiction, or at that of other federal agencies or civilian sources.

4. A group of Army, Air Force, AFSWP and AEC representatives recently made a survey of proposed field test sites. This group recommended the Chemical Corps' Dugway Proving Ground, together with the adjoining Wendover Air Force Base area in Utah as being the most suitable and acceptable field test area for testing and proving munitions for the dissemination of RW agents.

5. The minimum RW program of the Chemical Corps, to be carried out between the present date and the end of Calendar Year 1950 for development and performing functioning tests of RW munitions, requires a field test site at Dugway immediately. The program includes, but is not limited to, the following:

No Defense Nuclear Agency Classified Information. Coordinate with ARMY Before Declassification.

Authority: ISTS *[Signature]* Date: 12/5/49

Declassified by DNA, Chief, ISTS and DA OAS R+RA Pome 7-1-25 SS. WTH 11/26/21

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CMLWR-En-2 - Facilities for RW Field Test Site at DPG - 28 Apr 49  
To Dir of Logistics, GSUSA

a. Immediate static tests will have to be conducted at Army Chemical Center, Maryland, since facilities are not now available elsewhere. However, only materials involving low level activity can be used in this area, and therefore, information of a very preliminary nature only can be obtained. For this reason, it can only serve as a limited purpose test area until Dugway is available for testing agents possessing greater activity.

b. Before the end of September 1949, drop tests from aircraft using inert munitions will be conducted for the determination of ballistic characteristics.

c. Following (b) above, prototype bombs will be dropped using candidate activated agents of low specific activity to show the performance and feasibility of the munition; also to permit individuals to enter the contaminated area in order to determine the degree or efficiency of dispersion, as well as the extent of contamination and the decontaminability of the area.

d. Following the work outlined in (b) and (c) above, late in 1949 or early in 1950 there will be dropped from aircraft several bombs or munitions of distinctly different types for the same functioning, performance, dispersion, efficiency, and evaluation tests.

e. Simultaneously, during the remainder of 1949 and throughout the Calendar Year 1950, the program includes development and testing to provide improved small munitions for the dissemination of RW by ejection from aircraft. These munitions will be designed to possess the advantages but not the disadvantages of current small munitions, such as special 20 millimeter shell.

6. There must be provided on the site at Dugway Proving Ground before the end of July 1949, facilities which will enable the initiation of the test phases of the outlined program. Progressively thereafter, construction must be accomplished to make all of the facilities listed below and described in detail on the inclosed Forms RDB4, rapidly available in order that the Chemical Corps may accomplish the 1949-1950 increment of its overall program in respect to RW munitions.

#### Technical Facilities

##### Buildings

a. RW Technical Administration Building	\$ 14,000
b. RW Instrument Repair Shop	4,200
c. Radiochemical Laboratory	17,500
d. Hot Laboratory	250,000
e. Cold Machine Shop	31,000

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CMLWR-En-2 - Facilities for RW Field Test Site at DPG - 28 Apr 49  
To Dir of Logistics, GSUSA

f. Health Physics Building	16,800
g. Special Devices Laboratory	20,000
	<u>353,500</u>
<u>Utilities</u>	83,375
<u>Equipment</u>	921,000
TOTAL	<u>1,357,875</u>

7. The responsibility for biological and medical aspects of RW, including animal field work, has been given to the Atomic Energy Commission. Informal conferences between representatives of this office and representatives of the Atomic Energy Commission reveal that the effectiveness of RW contamination, as laid down by test munitions, will not be demonstrated unless test animals are exposed to radiation effects in the field. For this reason, an animal facility and laboratory must be provided concurrently with other facilities at the Dugway test site. The cost of a suitable animal facility as described on the attached Form RDB 4 is estimated at \$65,000.

8. The facility requirements outlined in the preceding paragraphs do not include any improvement which may be found necessary in roads or air strip; they represent the minimum requirement in technical facilities.

9. General administration is expected to be provided by the administration personnel presently located at Western Chemical Center, Utah.

10. It is estimated that 145 persons will be required for technical service at the Dugway Proving Ground Test Site. Of these, forty-one will be Scientific, sixty-two Technical, and forty-two for other type duties. Probably seventy per cent of this personnel will be married. Suitable accommodation for living is a prerequisite to the maintenance of personnel to accomplish the work required at Dugway Proving Ground Test Site.

11. The cost of installing satisfactory facilities is estimated to be as follows:

100 Family Units - normal type construction	\$ 1,350,000
45 Single Room space units	72,000
Total Housing	<u>1,422,000</u>
Educational and other Community Facilities	350,000
Total	<u>1,772,000</u>

12. The technical and housing facilities outlined in this letter do not constitute a building program sufficient to establish a permanent proving ground for continuance of work at Dugway. However, certain of the facilities may be suitable for retention in connection with the establishment of a permanent proving ground at that location.

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CMLWR-En-2 - Facilities for RW Field Test Site at DPG - 28 Apr 49  
To Dir of Logistics, GSUSA

13. The cost estimates in this letter, made by the Chemical Corps as the using agency, are based upon reasonable factors of cost. However, some contingent and other costs, such as transportation of materials, may become relatively greater than contemplated in the particular area and may, in the final analysis, increase the total facility estimate by perhaps twenty-five per cent of the indicated total.

14. The urgency of the requirement for the listed facilities justifies the submission of this letter as a request for the immediate provision of funds and construction authority. The particular nature of the materiel to be developed and tested is such that the facilities requested for this purpose will not duplicate those of any Technical Service or Department of the Armed Forces.

15. It is requested that any necessary coordination with the Department of the Navy and the Air Force be accomplished by your office.

16. Summary of total estimated funds required for:

Technical Facilities	\$ 1,357,875
Animal Facilities	65,000
Housing and Community Facilities	<u>1,772,000</u>
Total	3,194,875

It is requested that funds stated in the above summary be provided immediately for the described construction, and also that authority be granted for the establishment and construction of an RW proving ground at Dugway Proving Ground, Utah, in order that the Chemical Corps may accomplish the RW work for which it has the responsibility to complete prior to the end of Calendar Year 1950.

FOR THE CHIEF, CHEMICAL CORPS:

  
WILLIAM M. CREASY  
Colonel, CmlC  
Chief, Res & Eng Div

8 Incls. -  
Forms RDB4 (duplicate)

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DUGWAY PROVING GROUND

Department of the Army    Chemical Corps

LOCATION: Dugway Proving Ground, Utah

TYPE OF PROGRAM: RW Technical Administration

PLANT AREA (ACRES): Not Applicable

FLOOR SPACE (SQ. FT.):		TOTAL PERSONNEL	:	61
Office	: 2000 sq. ft.	MILITARY	:	1
Laboratory	:	CIVILIAN	:	
Shop	:	Scientific	:	20
Other	:	Technical	:	20
		Other	:	20

COST		Purchase or		ANNUAL RENT
LAND	Not applicable	Construction		Not Applicable
BUILDINGS	\$14,000	Construction		\$5,000
EQUIPMENT	\$10,000			
OTHER	Not applicable			

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GENERAL INFORMATION:

Mission: For technical administrative purposes including correlation of data. Location must be in a free area.

Programs: RW munition development and testing.

Location: Headquarters area at Dugway.

Completion Date: Earliest possible date.

Financing:

Justification: In order to properly administer the operations in the dispersion and decontaminability fields as well as to correlate data obtained and to prepare reports. Office space in a free area is required.

Description: Ten offices approximately 10' x 20' adequately ventilated and lighted either in a separate permanent-type structure or in a larger general office building.

Command Relationships: The proposed facility will be a component of Dugway Proving Ground, which is a Class II installation under the jurisdiction of the Chief, Chemical Corps.

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DUGWAY PROVING GROUND

Department of the Army      Chemical Corps

LOCATION: Dugway Proving Ground, Utah

TYPE OF PROGRAM: RW Instrument Repair Shop

PLANT AREA (ACRES): Not Applicable

FLOOR SPACE (SQ. FT.):		TOTAL PERSONNEL	:	4
Office	:	MILITARY	:	
Laboratory, Instrument:	600 sq. ft.	CIVILIAN	:	
Shop	:	Scientific	:	1
Other	:	Technical	:	3
		Other	:	

COST - Construction	Purchase or	
LAND - Not Applicable	Construction	ANNUAL RENT
BUILDINGS \$4,200	Construction	Not Applicable
EQUIPMENT \$10,000		
OTHER Not Applicable		

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GENERAL INFORMATION:

Mission: This laboratory structure will serve as a storage facility and a maintenance facility for all electronic, radiation detection and monitoring instruments used in connection with functioning tests on radiological warfare munition.

Programs: Air drops, static burst and other types of field testing, of prototype radiological warfare munitions to determine the relative effectiveness of the various munitions developed.

- 4-12-07-01 Methods, Materials, and Devices for Radiological Decontamination (decontaminability)
- 4-04-03-01 Airborne Munitions for RW Agents

Location: Technical area at Dugway Proving Ground, Utah, well away from any munition storage area or area of possible contamination.

Completion time: Earliest possible date.

Financing:

Justification: Electronic radiation detection and measuring instruments are an integral part and are essential to this program, where radioactive agents are used. These instruments are in general delicate, requiring frequent maintenance and calibration. In order to properly protect and maintain these instruments, a laboratory facility specifically designed for this service is required.

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Description: A small frame building, masonry building, or room in a larger building approximately 20' x 30' will be required. The interior should be finished and painted to keep the dust level low. It is desirable that construction is of a type which will prevent excessive transmission of external vibrations. The equipment housed is of such value and so difficult to replace that the building should be essentially fire proof.

The building should have normal laboratory lighting and ventilation. No fume hoods will be required but there should be a considerable number of closed storage cabinets for parts and instruments.

Utilities should include 110 V A.C. power with outlets at regular intervals such as every 2 feet, on walls, voltage fluctuation free 110 V A.C. power, gas, water and sewer.

The laboratory should be fitted with standard laboratory work tables on all walls and down the center with grounding leads and wooden tops on the tables.

Command Relationships: The proposed facility will be a component of Dugway Proving Ground, which is a Class II installation under the jurisdiction of Chief, Chemical Corps.

DUGWAY PROVING GROUND

Department of the Army Chemical Corps

LOCATION: Dugway Proving Ground, Utah

TYPE OF PROGRAM: Radiochemical Laboratory

PLANT AREA (ACRES): Not Applicable

FLOOR SPACE (SQ. FT.):	TOTAL PERSONNEL:	24
Office :	MILITARY :	
Laboratory, radiochemical: 2500 sq. ft.	CIVILIAN :	
Shop :	Scientific :	12
Other :	Technical :	12
	Other :	

COST	Purchase or	
LAND Not Applicable	Construction	ANNUAL RENT
BUILDINGS \$17,500	Construction	Not Applicable
EQUIPMENT \$40,000		
OTHER Not Applicable		

GENERAL INFORMATION:

Mission: This laboratory will perform radiochemical work in conjunction with the development and test firing of RW munitions. It is planned to obtain the maximum possible information concerning the nature of contamination produced by a test munition as well as the difficulty of removing the contamination. Analyses will be made routinely to determine chemical and physical form of contaminant, following distribution. Decontaminability tests will be made on panels exposed during test firings; this latter work will supplement large scale field decontamination experiments following munition tests.

Programs: This laboratory will furnish radiochemical support in the RW munition development program and in the selection of the optimum chemical and physical form of RW agents. This work will be done under the following projects:

- 4-04-13-01 Airborne Munitions for RW Agents
- 4-12-07-01 Methods, Materials and Devices for Radiological Decontamination

Location: This laboratory should be located in the Technical area at Dugway Proving Ground.

Completion time: Earliest possible date.

Financing:

[REDACTED]

Justification: A major problem which must be answered before the feasibility of RW can be stated, is the development of RW agents which are not susceptible to practicable decontamination techniques. This laboratory will furnish the required data on the degree of decontaminability attained in munition trials.

Description: This facility should consist of a permanent type frame or masonry structure with six laboratories approximately twenty feet square. The construction of three of these laboratories should be standard chemical laboratory construction with steel furniture, gas, air, hot water, cold water, and 110/220 V A. C. power as services. These laboratories will be devoted to Spectographic, Microscopic, X ray and other special facilities. Each laboratory should have two radiochemical hoods and other specifically defined equipment.

The remaining three will be radiochemical laboratories. All should be of fire-proof construction for adequate protection of equipment difficult to replace. Also they may become radioactively contaminated. The entire building should be of such construction that it may be readily decontaminated.

Command Relationships: The proposed facility will be a component of Dugway Proving Ground, which is a Class II installation under the jurisdiction of the Chief, Chemical Corps.

DUGWAY PROVING GROUND

Department of the Army Chemical Corps

LOCATION: Dugway Proving Ground, Utah

TYPE OF PROGRAM: Hot Laboratory

PLANT AREA (ACRES): Not Applicable

FLOOR SPACE (SQ. FT.):

Office :

Laboratory :

Shop :

Other :

Munition Loading Unit: 7,000  
sq. ft.

TOTAL PERSONNEL : 24

MILITARY :

CIVILIAN :

Scientific : 4

Technical : 12

Other : 8

COST:

LAND Not Applicable

BUILDINGS \$250,000

EQUIPMENT \$800,000

OTHER

Purchase or  
Construction

Construction

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GENERAL INFORMATION:

Mission: The purpose of this facility is to load with radiological agents munitions constructed elsewhere. Some modification of munition components may be done at this facility as well as simple modifications of agent form and composition.

Programs: Testing of radiological munitions.

4-04-13-01 Airborne Munitions for RW Agents

Completion time: Earliest possible date.

Financing:

Justification: It is essential to have an adequate facility for loading and receiving radiological munitions at the site of the tests. To transport such completed munitions about the country is entirely too hazardous an undertaking for peacetime. It is also essential to be able to make limited changes in the form and construction of highly active RW agents.

Description: Building of permanent type construction, 35' x 200' inside dimensions. One side wall shall be constructed without openings of any kind and be of high density concrete to form a concrete shield four feet thick and ten feet high for a distance of 120' of the building length. This shield will be the only permanent shield in the construction and will form one side of shielding to be utilized in all operations. The necessary additional shielding will be constructed of lead brick as needed. The wall opposite to the shield shall be of reinforced concrete construction with windows at the 8 ft. level

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Description (Cont'd.):

and access doors every ten ft. At the end where the shield terminates there must be a loading platform of ten ton capacity and access doors to allow operation of a boom crane. The floor shall be of reinforced concrete capable of carrying a 500 ton load over each area 2' x 100' or 2.5 tons per square feet.

An overhead travelling crane with remote and trolley controls of 20-ton capacity, with a 10-ton, ten-foot boom, and covering all floor areas of the building will be required.

110 Volt D.C. power will be required for servo mechanism motor operation. It may be rectified 220 3 phase A.C. which will also be required. Air, water, hot and cold sewer, air conditioning and high capacity exhaust fans will be required.

800 tons of lead cast into 4" x 4" x 8" bricks will be required.

In the unshielded end of the building a machine shop having the following machines as a minimum will be required. These machines to be used to construct and maintain required servo mechanism and to carry out any hot machining operations.

- 10" Geared head lathe
- 14" Geared head lathe
- 18" Geared head lathe
- 10" Toolroom lathe
- 20" x 20' gap lathe
- Universal milling machine
- 14' bed milling machine
- 8' radial drill
- Drill presses, Floor and precision sensitive
- 12" Shaper
- 6" Shaper
- All types of welding and brazing equipment including Atomic hydrogen
- 2 profiling machines
- Grinders, benches with hydraulic vises
- Power saws
- Adequately stocked tool crib

Command Relationships: Proposed facility will be a component of Dugway Proving Ground which is a Class II installation under jurisdiction of Chief, Chemical Corps.

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DUGWAY PROVING GROUND

Department of the Army Chemical Corps

LOCATION: Dugway Proving Ground, Utah

TYPE OF PROGRAM: Cold Machine Shop

PLANT AREA (ACRES): Not Applicable

FLOOR SPACE (SQ. FT.):		TOTAL PERSONNEL	: 15
Office	:	MILITARY	:
Laboratory	:	CIVILIAN	:
Shop	: 2500 sq. ft.	Scientific	:
Other	:	Technical	: 7
		Other	: 8

COST		Purchase or	
LAND	Not Applicable	Construction	ANNUAL RENT
BUILDINGS	\$31,000	Construction	Not Applicable
EQUIPMENT	\$50,000		
OTHER			

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GENERAL INFORMATION:

Mission: Modification and fabrication of experimental munitions and test devices.

Programs:

- 4-04-13-01 Airborne Munitions for RW Agents
- 4-04-13-02 Projectors for RW Munitions
- 4-12-07-01 Methods, Materials, and Devices for Radiological Decontamination

Location: The "cold" shop should be located in the Technical area at Dugway Proving Ground.

Completion time: Earliest possible date.

Financing:

Justification: In order to carry out an effective program on munition development for radiological warfare, it is necessary that adequate shop facilities be available for making test devices and munitions.

Description: The shop should consist of a permanent type building containing three rooms about 30' x 25' with wash rooms, latrines, and other utilities. One of the rooms should be equipped as a carpenter shop with adequate pattern and model machinery. A second room should be equipped as a machine shop with machine tools such as benches, lathes, drill presses, milling machine, and

[REDACTED]

Description (Cont'd.):

profiling machine. This shop can not become radioactively contaminated. It must be segregated from other machine shops. The third room will be used for assembly of items and painting test panels and should have large doors so that a 2-1/2 ton truck could back into the room for special outfitting.

COMMAND RELATIONSHIPS: The proposed facility will be a component of Dugway Proving Ground, which is a Class II installation under the jurisdiction of the Chief, Chemical Corps.

[REDACTED]

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DUGWAY PROVING GROUND

Department of the Army      Chemical Corps

LOCATION: Dugway Proving Ground, Tooele, Utah

TYPE OF PROGRAM: Health Physics Building

PLANT AREA (ACRES): Not Applicable

FLOOR SPACE (SQ. FT.):		TOTAL PERSONNEL :	3
Office :		MILITARY :	0
Laboratory :		CIVILIAN :	3
Shop :		Scientific :	1
Other :	Health Physics	Technical :	2
	Installations 2240 sq. ft.	Other :	

COST	Purchase or	ANNUAL RENT
LAND	Construction	
BUILDINGS \$16,800		
EQUIPMENT \$ 8,000		
OTHER		

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GENERAL INFORMATION:

Mission: Is responsible for all preventive measures necessary to safeguard all personnel working with or near radioactive materials from the harmful effects of radioactive emanations.

Programs: Radiological Munitions testing. Studies to be carried out in conjunction with the tests require proper health physics protection in order to prosecute the program.

Location: The monitoring laboratory, the dark room, the change house, and the laundry should all be in the technical area preferable in the vicinity of the instrument laboratory.

Completion time: Before any tests involving radioactive materials are attempted.

Financing:

Justification: Health Physics installations are integral with and essential to all radiological work for the purposes of protecting the health of the individuals performing the work, protecting the health of persons living in adjacent areas, and protecting the government from any claims concerning alleged over-exposures to radiation.

Description: These facilities will consist of: one change house (or change rooms) about 72 feet long by 20 feet wide equipped with showers and contaminated and uncontaminated locker rooms. This building should be located on the edge of the camp site, between the camp and the major testing areas. It should be of permanent type construction capable of being decontaminated.

████████████████████

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Description (Cont'd.):

A laundry building (or room) of permanent type construction approximately 20 ft. square to be used for placing facilities to launder radioactively contaminated clothing. The clothing of at least 30 people will have to be so laundered when it has become contaminated. This building should be placed somewhere in the immediate vicinity of the change house.

Health Physics monitoring building (or room) of permanent type construction approximately 20 ft. square, equipped with an air conditioned, controlled humidity room suitable for use as a dark room. The dark room should have approximately 100 sq. ft. of floor space. There should be two other rooms in this building; an office of about 200 sq. ft. floor space, and a small laboratory of approximately 100 sq. ft. floor space which is situated as far from the dark room as is physically possible. Regulation laboratory services will be required in this facility.

Command Relationships: The proposed facility will be a component of Dugway Proving Ground, which is a Class II, installation under the jurisdiction of the Chief, Chemical Corps.



DUGWAY PROVING GROUND

Department of the Army, Chemical Corps

LOCATION: Dugway Proving Ground, Utah

TYPE OF PROGRAM: Radiological Munition Testing  
Airborne Munitions for RW Agents - Special Devices Laboratory

PLANT AREA (ACRES): Not applicable

FLOOR SPACE (SQ. FT.):		TOTAL PERSONNEL	:	14
Office	:	MILITARY	:	
Laboratory	:)	CIVILIAN	:	
Shop	:)	Scientific	:	
Other	:	Technical	:	10
		Other	:	4

COST		Purchase or		
LAND	Not Applicable	Construction	ANNUAL RENT	
BUILDINGS	\$20,000	Construction		
EQUIPMENT	\$ 3,000			
OTHER	Not Applicable			

GENERAL INFORMATION:

Mission: Will serve as a maintenance and storage and modification facility for clustering munitions, developed for dissemination of RW by BW dissemination methods.

Program: A comprehensive program of tests is planned.

Location: Technical area, Dugway Proving Ground, Utah.

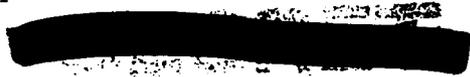
Completion Date:

Financing:

Justification: Primary responsibility of one specific phase of the Chemical Corps' RW Munitions Program is concerned with dissemination by air craft over large area, utilizing methods adapted for similar dissemination of BW. An area at least ten miles each side, as provided by the salt flats in the immediate Dugway vicinity is required. A Mechanical Laboratory for assembly and possible alteration of BW dispersion devices, the storage and maintenance of special tools and equipment is a requirement, to support this work.

Description: A Special Devices Laboratory approximately 20' x 50', permanent type structure, adequately ventilated, lighted and equipped with suitable utilities, assembly equipment and work benches.

Command Relationships: The proposed facility will be a component of Dugway Proving Ground, which is a Class II Installation under the jurisdiction of the Chief, Chemical Corps.





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Command Relationships: The proposed facility will be a component of Dugway Proving Ground, which is a Class II installation under the jurisdiction of the Chief, Chemical Corps.