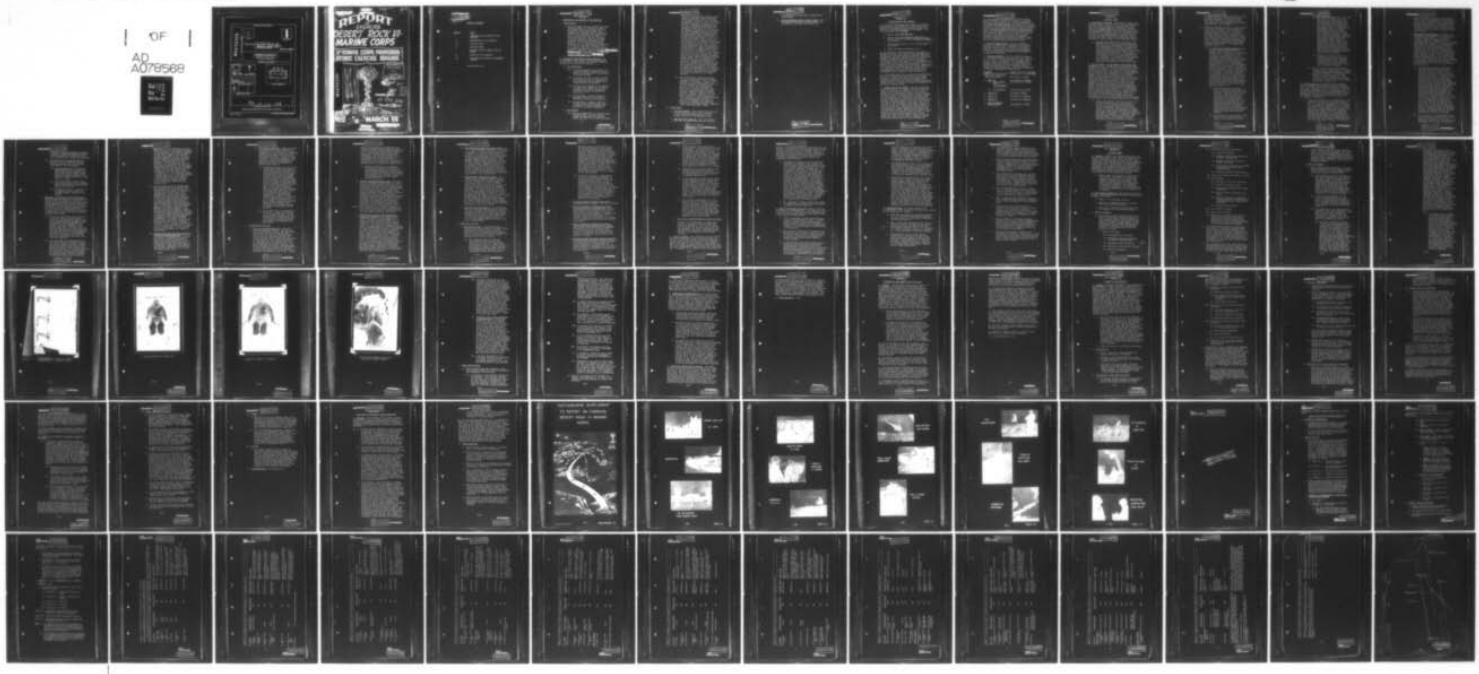
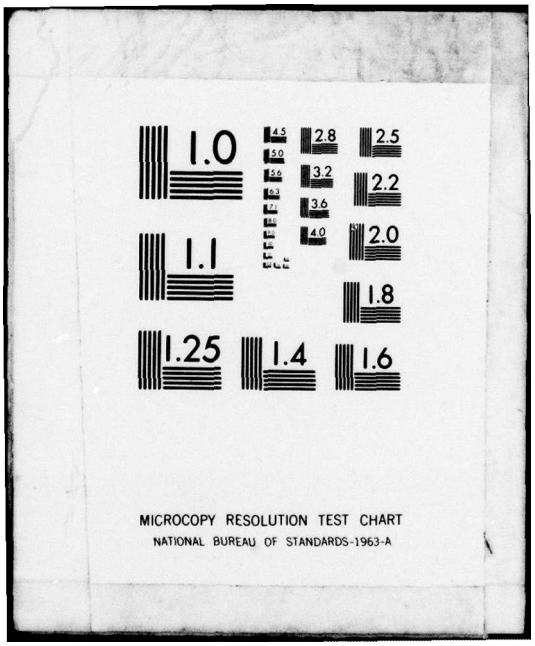
AD-A078 568 EXERCISE DESERT ROCK LAS VEGAS NV F/G 18/3
EXERCISE DESERT ROCK VI. MARINE CORPS. THIRD MARINE CORPS PROVI--ETC(U)
MAR 55

UNCLASSIFIED NL

1 OF 1
AD A078568



END
DATE FILMED
1-80
DDC


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

PHOTOGRAPH THIS SHEET

ADA078568

DTIC ACCESSION NUMBER

II

LEVEL

I

INVENTORY

Exercise DESERT ROCK VI
Marine Corps Report
March 1955

DOCUMENT IDENTIFICATION

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

DISTRIBUTION STATEMENT

ACCESSION FOR		
NTIS	GRA&I	X
DTIC	TAB	
UNANNOUNCED		
JUSTIFICATION		
Per ltr. on file		
BY		
DISTRIBUTION /		
AVAILABILITY CODES		
DIST	AVAIL AND/OR SPECIAL	
A		

DISTRIBUTION STAMP

DDC
RECEIVED
JAN 2 1980
D

DATE ACCESSIONED

79 12 18 367

DATE RECEIVED IN DTIC

PHOTOGRAPH THIS SHEET AND RETURN TO DTIC-DDA-2

DTIC FORM OCT 79 70A

DOCUMENT PROCESSING SHEET

Desert Rock

Copy #2

REPORT
OF
EXERCISE
DESERT ROCK VI-
MARINE CORPS

3d MARINE CORPS PROVISIONAL ATOMIC EXERCISE BRIGADE

ADA078568

NO RESTRICTED DATA OR FORMERLY RESTRICTED DATA.
DOE HAS NO OBJECTION TO ITS DECLASSIFICATION.
COORDINATION REQUIRED WITH DNA
Raymond A. Carpenter 1-31-78
AUTHORIZED BY DATE

Classification (Cancelled) (Changed to
by authority of DOE ltr Dated 2 Dec 77
Dai Nguyen

A/12441
TECHNICAL LIBRARY
of the
ARMED FORCES
SPECIAL WEAPONS PROJECT
11 May 55

#54
DOE
DNA
DC
DTIC
#2
68-009 206

Statement A
Approved for public release;
Distribution unlimited.

MARCH 55"

NAVY-BUPD 1160, SAN DIEGO, CALIF.

UNCLASSIFIED

UNCLASSIFIED

TABLE OF CONTENTS

SECTION	TITLE
I	INTRODUCTION AND CONCEPT OF THE EXERCISE
II	ORGANIZATION OF THE BRIGADE
III	PLANNING PHASE
IV	TRAINING PHASE
V	MOVEMENT TO CAMP DESERT ROCK AND RETURN
VI	CONDUCT OF THE EXERCISE
VII	CONCLUSION AND SUMMARY OF RECOMMENDATIONS

****

~~CONFIDENTIAL~~ UNCLASSIFIED

SECTION I

INTRODUCTION AND CONCEPT OF THE EXERCISE

1. Introduction.

a. Exercise Desert Rock VI - Marine Corps was conducted within the Nevada Test Site on 21-22 March 1955 in accordance with the instructions contained in CMC letter 003A31654 of 8 December 1954 as modified by CMC letter 003A755 of 28 January 1955. This is a report of that exercise; it covers the following phases: Planning; training; movement to Camp Desert Rock, Nevada and return; and Conduct of the Exercise. It contains two enclosures. Enclosure (1) is a photographic supplement of the entire exercise. Enclosure (2) is a report of the effects of the nuclear detonation concerned upon the displayed materiel. The basic report is ~~classified CONFIDENTIAL~~. Enclosure (1) is "UNCLASSIFIED". Enclosure (2) is ~~"SECRET RESTRICTED DATA"~~. UNCLASSIFIED UNCLASSIFIED

2. Objectives and Concept of the Exercise. In his directive of 28 January 1955, the Commandant of the Marine Corps stated the objectives and the concept of the exercise as follows:

a. The objectives:

"(1) To afford commanders and staffs realistic training in planning and conducting operations that are supported by atomic weapons.

(2) To further test and evaluate tactics and techniques for the execution of air-ground task force missions when atomic weapons are employed.

(3) To develop new tactics and techniques to exploit the effects of an atomic explosion when atomic weapons are employed in support of air-ground task force.

(4) To familiarize personnel with the phenomena incident to an atomic explosion, and the effects thereof.

(5) To familiarize personnel with the passive defense measures that serve to minimize or protect against the effects of an atomic explosion".

b. The concept:

"(1) Exercise DESERT ROCK VI - Marine Corps envisages that a coordinated air-ground exercise will be conducted during one shot of the series of atomic

~~CONFIDENTIAL~~ UNCLASSIFIED

tests and participation of Marine aircraft in additional shots to provide indoctrination for pilots, air crews, and airborne observers. The coordinated air-ground exercise is conceived as a maneuver commencing approximately at the time of detonation and continuing through a period of thirty (30) to thirty-six (36) hours, so as to provide the maximum opportunity to accomplish the above objectives within the limitations imposed by the requirement for no interference with the scientific tests of operation TEAPOT. In the conduct of the exercise all elements of the Brigade will be employed in as realistic a manner as practicable consistent with assigned maneuver areas and restrictions imposed upon troop maneuvers. As soon after the atomic explosion as is practicable, a combined arms assault will be made on an objective in the vicinity of the explosion. This assault will be followed by development of the situation to require further evolutions by the Brigade toward destruction of an assumed enemy force by simulated fire (both nuclear and conventional) and maneuver. Particular emphasis will be placed on testing or developing tactics and techniques to exploit the effects of atomic weapons support. Displayed demonstration equipment will be examined by members of the Brigade to familiarize personnel with the effects on such equipment when subjected to atomic attack".

(2) The restrictions imposed upon troop maneuvers within the Nevada Test Site necessarily precluded a fully realistic maneuver. Accordingly, a number of artificialities not normally present in a field exercise were introduced. However, it is noteworthy that the maneuver as actually conducted represents the most extensive air-ground maneuver permitted within the Nevada Test Site to date. Further, the nine hundred thirty-one (931) Marines who were encamped in selected positions within the Nevada Test Site during the night of 21-22 March represented the first time encampment by troops was permitted by the Atomic Energy Commission on the night preceding a shot.

3. Definitions:

a. Operation TEAPOT: The unclassified code name for the series of atomic tests conducted by the Atomic Energy Commission at the Nevada Test Site in the Spring of 1955.

b. Exercise Desert Rock VI: The unclassified code name of troop participation exercises

conducted by the Armed Forces during Operation TEAPOT.

c. Exercise Desert Rock VI - Marine Corps: The unclassified code name of Marine Corps participation in Exercise Desert Rock VI.

SECTION II

ORGANIZATION OF THE BRIGADE

1. To conduct the Marine Corps portion of Exercise Desert Rock VI, the Commandant of the Marine Corps directed the formation of the 3d Marine Corps Provisional Atomic Exercise Brigade (3d MCPAEB). The following units were provided:

a. Marine Corps Test Unit #1.

b. Marine Helicopter Transport Group 36 (-) (Total of 30 helicopters, including 22 HRS-2 and 8 HRS-3).

c. Marine Aircraft Group 15 (-) (Twenty-four (24) F9Fs).

d. Marine Air Support Squadron 3 (-).

2. In addition to the above units, a Helicopter Support Unit and a small Marine Camp Detachment were formed from within the personnel ceiling authorized the Brigade, and were included within the task organization. The Marine Camp Detachment deployed to Camp Desert Rock a short time prior to movement of the main body of the Brigade. It provided valuable services by assisting in the preparation of the Marine Corps area within Camp Desert Rock, by handling and emplacing the display materiel in the vicinity of ground zero, and by providing security, and discharging the major housekeeping functions for the Brigade while encamped at Camp Desert Rock.

3. Four R4Q aircraft were provided by the Commanding General, Aircraft, Fleet Marine Force, Atlantic. While not a part of the task organization, these aircraft supported the Brigade by conducting in conjunction with the Air Delivery Section, 1st Combat Service Group, an air-drop of simulated supplies on a pre-briefed mission basis.

4. Composition of the staff. The staff of Marine Corps Test Unit #1, to which a number of naval aviators are organic, was utilized in a dual role as staff, Marine Corps Test Unit #1, and as staff, 3d Marine Corps Provisional Atomic Exercise Brigade. The Brigade staff was augmented to a limited degree by the assignment of certain officers and men by the Commanding General, Aircraft, Fleet Marine Force, Pacific, Commanding General, Force Troops, Pacific, Commanding General, Marine Corps Base, Camp Pendleton, and by the Commandant of the Marine Corps, in order to provide the staff organization required by the mission and the circumstances involved in its accomplishment. Among those officers provided by the Commanding General, Aircraft, Fleet Marine Force, Pacific, was a helicopter operations officer. The Commanding Officer, Marine Corps Test Unit #1 served in a dual role as Chief of Staff, 3d Marine Corps Provisional Atomic Exercise Brigade, and as Commanding Officer, Marine Corps Test Unit #1.

5. For purposes of coordination with the Atomic Energy Commission during the exercise, the Brigade came under the control of two military commanders: The Deputy Exercise Director, who coordinated with the Test Director, Atomic Energy Commission, all military activities on the ground within the Nevada Test Site, and the Commander, Field Test Group 5 (Provisional), (FTG 5 (P), who coordinated with the Test Director, Atomic Energy Commission, all air activities within the Nevada Test Site and adjacent areas. This arrangement was unique among the four military services participating in Operation TEAPOT in that the other services were coordinated by only one of these two control agencies but not by both.

6. Command relationships. All the essential elements of command were exercised by the Brigade Commander over the units outlined in paragraph 7. below for this operation. It was an exceedingly desirable relationship which proved its validity in the expeditious and efficient accomplishment of the Brigade objectives.

7. Task Organization. For the execution phase, all elements of the task organization, less MAG 15 (-) were based at Camp Desert Rock, Nevada. MAG 15 (-) was based at the Marine Corps Auxiliary Air Station, Mojave, California. The strength of the Brigade totaled 299 officers and 1972 enlisted men of whom 185 officers and 1654 enlisted men were encamped at Camp Desert Rock. The task organization as finally established took this form:

3d MCPAEB	BrigGen Joseph W. EARNSHAW
H&SCo, 3d MCPAEB (Prov)(-)	Capt Oliver W. VAN DEN BERG
Marine Camp Detachment, Camp Desert Rock	Maj Philip E. BOOTH
a. MCTU #1	Col Edward N. RYDALCH
(1) 1stBn (Reinf)	LCol Stanley J. NELSON
1stBn	
75mm RecGunPlat	
4.2" MortPlat	
(2) 75mmPkHowBtry	Capt Edward A. KOSTER
b. MAG-36 (-)	Col Paul R. BYRUM
c. MAG-15 (-)	Col Rivers J. MORRELL
d. MASS-3 (-)	Capt Fred D. KUHLMANN
e. Brig Helicopter Support Unit	Capt Harry H. WARREN

CONFIDENTIAL UNCLASSIFIED

SECTION III

PLANNING PHASE

1. Preliminary Planning. Preliminary planning for Exercise Desert Rock VI - Marine Corps was initiated with the visit at Camp Horno, Marine Corps Base, Camp Pendleton, California of Brigadier General Thomas A. WORNHAM, USMC, Assistant Chief of Staff, G-3, Headquarters Marine Corps on 27 September 1954. At that time he outlined in broad terms the extent of Marine Corps participation in Exercise Desert Rock VI. He stated that Marine Corps Test Unit #1 would provide the ground troops and was to commence planning for that exercise in the immediate future.

a. The Air Force Special Weapons Center, Air Research and Development Command, Kirtland Air Force Base, Albuquerque, New Mexico had been designated to coordinate all military air participation in Operation TEAPOT. To carry out this mission it formed a provisional organization known as Field Test Group 5 (Provisional) (FTG 5 (P)). It was with the latter unit that the air participation of the Brigade was coordinated in both planning and execution. As a matter of interest, FTG 5 (P) was formed in July 1954 and commenced its planning at that early date.

2. Air Planning. A preliminary air planning conference was held on 26-27 October 1954 at the headquarters of Commanding General, Field Command, Armed Forces Special Weapons Project, Sandia Base, Albuquerque, New Mexico. The purpose of the conference was to establish the preliminary air requirements of the Armed Forces for participation in Operation TEAPOT. Representing the Marine Corps at this conference were officers from Aircraft, Fleet Marine Force, Pacific, Marine Corps Test Unit #1, and one officer from Headquarters Marine Corps. It was conducted by the Director, Weapons Effects Tests (DWET), a command subordinate to Field Command, AFSWP. DWET was the military agency through which all of the armed forces participation in Operation TEAPOT, both air and ground, was to be coordinated with the Atomic Energy Commission. During the conduct of Operation TEAPOT, its field office was to be located at Camp Mercury, Nevada, base of the Test Director for the Atomic Energy Commission. Camp Mercury is located approximately two miles north of Camp Desert Rock, and within the Nevada Test Site.

a. During this initial conference, each of the thirteen scheduled shots was discussed and each of the services represented submitted requests for desired air participation. The Marine Corps requested participation for air crew indoctrination in five (5) shots, TURK, APPLE, MET, BEE and HORNET, and further requested a coordinated air-ground maneuver be conducted in conjunction with shot ZUCCHINI, a shot which at that time appeared to best suit the Marine Corps objectives for this exercise. In view of

UNCLASSIFIED CONFIDENTIAL

CONFIDENTIAL UNCLASSIFIED

the nature of air participation by the other services, which for the most part would be completed within a few minutes after shot time, prospects of gaining approval for conduct of an air-ground maneuver after any shot were very favorable.

b. Tentative approval was given at this initial conference for Marine Corps participation in the shots requested. The conference adjourned until 16 November to permit the Commander, FTG 5 (P) time to coordinate the requests made by the services in attendance and to schedule them in a three dimensional picture. During this conference and again at the final air planning conference held on 16 and 17 November, a most cordial working relationship was established with Commander, FTG 5 (P).

(1) The final air planning conference was held at Kirtland Air Force Base, Albuquerque, New Mexico on 16 and 17 November 1954. The purpose of the conference was to coordinate all air activities, ascertaining that all scientific programs and projects were satisfied, and to coordinate the logistic requirements of participating organizations. It was conducted by Commander, FTG 5 (P). Representing the Marine Corps were officers from Aircraft, Fleet Marine Force, Pacific and officers from Marine Corps Test Unit #1. This conference was broken down into three fields: Operations, logistics, and facilities. The Marine Corps participated in the operations portion of the conference only, since it was planned that participating Marine air units would provide their own logistics and facilities and would therefor require no support in these fields from Commander, FTG 5 (P).

(a) All shots in which the Marine Corps requested participation during the 26 October conference were approved. This approval was reflected in Commander, FTG 5 (P) Operation Plan 1-54 which was published on 20 December 1954, and received 5 January 1955. In summary it provided for air crew indoctrination participation in shots TURK, APPLE, MET, BEE and HORNET, and for a coordinated air-ground maneuver, utilizing both fixed and rotary wing Marine aircraft in conjunction with shot ZUCCHINI.

(b) While all shots were scheduled for specific dates during the test period, the tentative nature of

UNCLASSIFIED CONFIDENTIAL

CONFIDENTIAL UNCLASSIFIED

any planning schedule was emphasized The reason for this lay in the fact that all shots required exacting weather conditions, some more stringent than others, which if not present on the scheduled day might result in postponement. Subsequent events saw numerous rescheduling of shots effected, and concurrently imposed the requirement that all Brigade plans be exceedingly flexible. Furthermore, these considerations required the closest coordination with Commanding General, Aircraft, Fleet Marine Force, Pacific, and Commanding General, Marine Corps Base, Camp Pendleton, who would provide the aircraft and motor vehicles for the movement of the main body of the Brigade from home bases to Indian Springs Air Force Base, Nevada and return.

(c) Approval was received for the staging of troops to Camp Desert Rock through the Indian Springs Air Force Base, Nevada with the restriction that fixed wing aircraft remain on the ground for no more than thirty minutes.

(2) Based upon these air planning conferences, the final Brigade Air Plan (which included certain minor changes to previou ly approved plans) was prepared and presented to Commander, FTG 5 (P) who approved it on 8 January 1955. The air planning for Operation TEAPOT was completed. Ready date for shot ZUCCHINI was set for 1 April 1955.

3. Ground Planning. Immediately after Brigadier General WORNHAM's visit, Marine Corps Test Unit #1 made a map study of the Nevada Test Site. Based on that study a maneuver area was selected and the staff commenced development of the overall plans. The area immediately to the west of ground zero for shot ZUCCHINI was selected as the desired maneuver area. It afforded excellent terrain for the conduct of the maneuver envisioned.

a. In the development of the detailed plan, and subsequent to the final air planning conference, a ground reconnaissance of the Test Site was made on 26 November 1954, followed by an air-ground reconnaissance on 14 December 1954. In the latter reconnaissance, one HRS-2 and one HRS-3 helicopter provided by MAG-36 were employed. Several helicopter loading and landing zones, from which the maneuver could be supported, were selected. The lift capabilities of the helicopters in this area were determined at that time, using the following actual factors: Each heli-

UNCLASSIFIED CONFIDENTIAL

copter to utilize one pilot, 440 pounds of fuel (one hour's operation), and 70 pounds of oil. The capabilities were as follows: For the HRS-1 and HRS-2, 850 pounds; for the HRS-3, 1100 pounds. It was concluded that the plan envisioned was feasible and upon return from the 14 December reconnaissance, work was commenced toward completion of the final plans.

b. Activation of the Brigade. Meanwhile, on 13 December, the Commandant's directive for Exercise Desert Rock VI - Marine Corps was received. Brigadier General Joseph W. EARNSHAW, USMC, was designated as the Commanding General, 3d Marine Corps Provisional Atomic Exercise Brigade. The headquarters of the Brigade was activated at Camp Horno, Marine Corps Base, Camp Pendleton on 21 December 1954 when the Commanding Officer, Marine Corps Test Unit #1 and designated staff members were directed to report to the Commanding General for temporary additional duty as staff, 3d Marine Corps Provisional Atomic Exercise Brigade. Accordingly, the Brigade Commander was briefed on all liaison and planning completed to date by Marine Corps Test Unit #1. Thereafter all planning responsibilities were assumed and conducted by the Brigade.

(1) The Commanding General established liaison with the Exercise Director, Exercise Desert Rock VI, and the Commanding General, Special Weapons Command, Kirtland Air Force Base, New Mexico by dispatch on 21 December 1954. The Commanding General, Sixth U. S. Army, The Presidio, San Francisco, California had been designated Exercise Director, Exercise Desert Rock VI. By letter of 22 December, the Commanding General, 3d Marine Corps Provisional Atomic Exercise Brigade outlined to the Exercise Director the general concept of the Marine Corps exercise in conjunction with shot ZUCCHINI, the broad logistical requirements, and suggested a detailed briefing at an early date. On 28 December, a dispatch reply to that letter was received from the Deputy Exercise Director, then located at Fort Lewis, Washington, requesting that the briefing be given him at Camp Desert Rock, Nevada on 10 January and stating this arrangement had been coordinated with the Exercise Directr. The Deputy Exercise Director displaced his Command Post to Camp Desert Rock, Nevada on 6 January.

(2) On 21 December, the Commanding General sent a dispatch request to the Commanding General, Fleet Marine Force, Pacific, requesting that the designated air groups be directed to report for

liaison and planning purposes effective 3 January. Marine Helicopter Transport Group 36 and Marine Aircraft Group 15 were designated and reported as requested.

(3) Designated by the Commandant of the Marine Corps to support the Brigade for this exercise were the following major Marine Corps commanders:

(a) Commanding General, Fleet Marine Force, Pacific, who provided the marine air groups, certain logistic support and the military air lift for the main elements of the Brigade to Indian Springs Air Force Base and return.

(b) Commanding General, Marine Corps Base, Camp Pendleton, who provided certain logistic and administrative support as requested.

(c) Commanding General, Department of the Pacific, Marine Corps, who provided logistic support as requested.

c. Briefing of the Deputy Exercise Director. Planning had progressed to a point where the Brigade staff was prepared to present in detail the comprehensive plan of Marine Corps participation in Exercise Desert Rock VI to the Deputy Exercise Director on 10 January. It should be recalled that Commander, FTG 5 (P) had approved the Brigade Air Plan on 8 January and that at that date no firm shot assignment had yet been received from Headquarters Marine Corps.

(1) Prior to departure for the briefing at Camp Desert Rock, information was received from Headquarters Marine Corps which indicated the U. S. Army desired to conduct a field exercise in conjunction with shot ZUCCHINI, to the possible exclusion of Marine Corps participation with that shot. However, with the Brigade air plan approved, and a ground plan which was fully integrated with that air plan for shot ZUCCHINI, the Brigade Commander and his staff arrived at Camp Desert Rock the afternoon of 10 January.

(2) Upon reporting to the Headquarters of the Deputy Exercise Director, a briefing for the Exercise Director, Commanding General, Sixth U. S. Army, by the Deputy Exercise Director's staff was about to commence. The Brigade Commander was invited to attend. In presenting the proposed shot assignment schedule, the Deputy Exercise Director's staff indicated the Marine Corps air-ground

UNCLASSIFIED

maneuver was to be scheduled with shot TURK, the first of the series, scheduled for 15 February. The Brigade Commander voiced his objection to the assignment of shot TURK, based on the detailed planning conducted to date, the short period remaining before the scheduled date for TURK, and the Marine Corps desire for participation in shot ZUCCHINI. In the discussion that ensued, it was agreed that the firm shot assignment must come from the Washington level. The exercise Director was then invited to attend the Marine Corps briefing for Exercise Desert Rock VI, but was unable to do so because of other scheduled commitments which required his immediate departure. This meeting then adjourned to another building where the Deputy Exercise Director and his staff were briefed by the Brigade staff.

(3) The presentation by the Brigade staff was well received by the Deputy Exercise Director who stated he was impressed with the amount and quality of detailed planning which had been accomplished. As a result, on the morning of 11 January, the Deputy Exercise Director released a dispatch to the Chief, Army Field Forces outlining the extent of Marine Corps planning and Marine Corps desires for shot ZUCCHINI, and requesting steps be taken to establish a firm shot assignment at the earliest possible date. Meanwhile, principal members of the Brigade staff had established liaison with their opposite numbers on the staff of the Deputy Exercise Director and had exchanged valuable planning information in connection with the forthcoming encampment of the Brigade at Camp Desert Rock. The desire of the Deputy Exercise Director to be of maximum assistance to the Brigade was manifest from the outset, and resulted in a most cordial relationship of inter-service cooperation throughout all phases of the exercise.

(4) <u>Firm decision for Marine Corps participation in shot BEE received</u>. On 14 January, the Brigade Chief of Staff was ordered to Headquarters Marine Corps to represent the Brigade at a conference on 17 January for the purpose of determining the final shot assignments. This conference resulted in the firm assignment of shot BEE to the Brigade. The ready date for this shot was 18 March 1955.

UNCLASSIFIED CONFIDENTIAL

(5) Final plans completed. Since all previous planning had been conducted in anticipation of participation in shot ZUCCHINI, it was necessary to coordinate appropriate changes in the Air Plan with Commander, FTG 5 (P) who was most considerate in making a change at that late date. This was accomplished by a staff visit to his headquarters at Kirtland Air Force Base, during the period 25-27 January.

(a) Appropriate changes were also made in the ground plan and presented during the period 25-27 January to the Deputy Exercise Director, who approved them. However, Brigade plans for the maneuver required certain elements of the Brigade to occupy selected positions within the Test Site on D-minus-1-Day. Since the Atomic Energy Commission had not heretofor permitted encampment of troops within the Test Site on the night preceding a shot, the Deputy Exercise Director expressed doubt that that portion of the Brigade plan would be approved by the Test Director. Accordingly, a Brigade staff officer was invited to present the entire Brigade plan to Doctor T. C. CLARK, Test Director of the Atomic Energy Commission, who was based at Camp Mercury. The invitation was arranged through the DWET representative at Camp Mercury.

(b) The Brigade plan was presented to Doctor T. C. CLARK who approved all aspects of the plan. He was assured strict control would be maintained at all times, and that all regulations within the Test Site would be scrupulously complied with.

4. Intelligence Planning.

a. Maps and Aerial Photographs. Maps and Aerial Photographs of the Nevada Test Site were not available locally. The AMS Series V796, Scale 1:50,000, Topographic Map, Nevada, was the only map available during the initial planning which covered the Nevada Test Site area. Sufficient quantities of these maps were subsequently obtained via Headquarters, U. S. Marine Corps from the Army Map Service, Washington, D. C. by cross-servicing procedures. Although this map was adequate for broad planning purposes, a larger scale map covering the immediate objective area within the test site was required for operations in the field. Accord-

ingly, the maneuver area within the test site was photographically enlarged and reproduced from the aforementioned topographic map by the Eleventh Naval District Publications and Printing Office, San Diego, California. This project resulted in a satisfactory two (2) sheet tactical map of the maneuver area (Nevada Test Site, Tactical Map, Scale 1:25,000) and sufficient quantities were reproduced to permit distribution down to platoon and section level.

(1) Limited quantities of aeronautical charts were procured on a non-cost basis through the Air Navigation Office, Eleventh Naval District. Operational aerial photograph coverage of the Nevada Test Site was not available because of restrictions imposed by the Atomic Energy Commission.

b. Weather and Climatoligical Data. The data used in planning for Desert Rock VI - Marine Corps was averaged from weather and climatoligical records of the Las Vegas Weather Office over the past sixteen years and other information supplied by Nellis Air Force Base, Las Vegas, Nevada. Although these sources provided a valuable cross section of information, it was not sufficiently detailed or specific for detailed operational planning with the accuracy estimated to be required. The data was prepared for the Las Vegas area, which is approximately sixty (60) miles southeast of the Nevada Test Site and also several hundred feet lower in elevation. This data did not include timely information as to surface winds and temperature variances in the immediate test site area which would have been valuable in planning daily helicopter operations.

c. AEC Security Clearance Requirement for Badging of Personnel. The Atomic Energy Commission requires that Department of Defense personnel desiring badges for entrance into the Nevada Test Site on an individual basis possess a "final" SECRET clearance in the case of officers and enlisted personnel, and that enlisted personnel holding a CONFIDENTIAL clearance and officers or enlisted personnel having an "interim" clearance status must be processed for an Atomic Energy Commission "P" Clearance before a badge will be issued by the Atomic Energy Commission Badge Office. This procedure caused numerous delays during the stay of the Brigade at Camp Desert Rock. Few of the Atomic Energy Commission security and badging requirements are published in writing. Based on daily experience with the Atomic Energy Commission, the Deputy Exercise Director published in writing the regulations currently in effect as extracted from this daily experience.

d. Security Liaison Officer, Marine Corps. In view of the procedures outlined in Paragraph 4. c. above, a Liaison Officer to represent the Brigade in all security matters was assigned. The duties of this staff officer consisted of maintaining close liaison with the S-2, Camp Desert Rock and the Atomic Energy Commission Security Office, Camp Mercury. This liaison enabled the Brigade to keep apprised of modifications of existing Atomic Energy Commission security regulations, enhanced the motor and helicopter movement of exercise personnel in and out of the Nevada Test Site, and aided in the expeditious processing of personnel to be badged by the Atomic Energy Commission Badge Office, Camp Desert Rock.

e. Photographers' Security Clearance. The Atomic Energy Commission requires that all official photographers possess a minimum security clearance of "final" SECRET and that Headquarters, U. S. Marine Corps certify that such personnel have a "need to know" basis with respect to all SECRET Restricted Data film exposed at the Nevada Test Site. A further requirement of the Atomic Energy Commission was that the "need to know" certification originated by the Commandant of the Marine Corps be accomplished in accordance with Section 143 of the Atomic Energy Act, 1954 and Chapter 2318 of the Atomic Energy Commission Manual 2000. The above requirements were learned approximately three (3) weeks prior to the Brigade's departure for Camp Desert Rock.

f. Security Clearance Rosters. In accordance with the Deputy Exercise Director's standing operating procedure for handling personnel, a Brigade personnel roster was prepared and submitted upon arrival at Camp Desert Rock. Certification was made on the roster that all personnel listed thereon are U. S. citizens and possess minimum security clearance of CONFIDENTIAL.

5. Logistics Planning.

a. Military Air Lift. Commanding General, Fleet Marine Force, Pacific, by letter serial 0052254 of 27 December 1954, directed Commanding General, Aircraft, Fleet Marine Force, Pacific, to provide the necessary air lift for the Brigade to and from Indian Springs Air Force Base, Nevada.

(1) The Commanding General, Aircraft, Fleet Marine Force, Pacific, was advised of the air lift requirements of the Brigade as soon as they were determined. Initially, only approximate dates could be given, because of the ever-changing shot schedule. However, continuous liaison was maintained.

UNCLASSIFIED

CONFIDENTIAL

Movement dates to the exercise area were finally firmed in early March. In the interim, since the transport aircraft assigned to Commanding General, Aircraft, Fleet Marine Force, Pacific, were not under his operational control, numerous dispatches were sent among Commanding General, Aircraft, Fleet Marine Force, Pacific, Commander, Fleet Logistic Air Wing, Pacific, Commander, Western Sea Frontier, Commanding General, Fleet Marine Force, Pacific, and Commander in Chief, Pacific Fleet before operational control was given Commanding General, Aircraft, Fleet Marine Force, Pacific, for the conduct of the air movement.

(2) As soon as liaison was established between this Brigade and MAG 25, it was found that the R5D aircraft, as modified during overhaul, could not accomodate loading ramps for the loading of vehicular type equipment. This resulted in reevaluation of air lift requirements wherein only personnel, their baggage, crew-served weapons and a limited amount of helicopter maintenance equipment and spare parts were to be moved by fixed wing aircraft. The remainder of personnel, cargo and equipment were moved overland by surface transportation.

b. Support provided by Commanding General, Department of the Pacific. None was requested.

c. Support provided by Commanding General, Marine Corps Base, Camp Pendleton. This support consisted in the main of providing augmentation transportation, troop and cargo carriers for movement of personnel and equipment from Camp Pendleton to El Toro and Camp Desert Rock and return. In addition, excellent cooperation was received in the expeditious processing of all supply requisitions.

d. Support provided by Commanding General, Force Troops, Fleet Marine Force, Pacific. This support was in the form of augmenting transportation and the services of the Air Delivery Section, 1st Combat Service Group, which prepared and assisted in the delivery of simulated supplies during the maneuver on D-Day.

e. Support provided by Deputy Exercise Director. The Commandant's directive stated that the Army would provide certain logistic support to the Brigade at Camp Desert Rock to include billeting, transportation and subsistence stores. The Brigade was to provide its own field mess equipment and food service personnel.

UNCLASSIFIED

CONFIDENTIAL

UNCLASSIFIED

(1) Initial liaison with the Army was established on 14 December 1954 at Camp Desert Rock. Purpose of the visit was to determine what facilities were available to the Brigade. At that time the Army planned to assign the Brigade an undeveloped area adjacent to existing facilities. This area required an extensive build-up before it could be used. As a result of this initial visit, detailed logistic requirements were drawn up for submission to the Deputy Exercise Director on 10 January.

(2) During the 10-11 January visit to Camp Desert Rock, the Deputy Exercise Director modified his plans to furnish the Brigade the use of facilities in an already prepared area.

(3) During subsequent liaison and planning visits, logistic support for the Brigade, reimbursable to the Army, was reduced from an estimate of $43,880.00 to approximately $30,000.00. It included a $3000.00 item for the preparation of a helicopter landing site which was necessary because of the excessive dust extant in the Desert Rock area. It did not include rations consumed while at Desert Rock or aviation fuel and oil.

(4) Due to other commitments, the U. S. Army was unable to fulfill all of the support requested. Strong backing, decking and erecting tents in the Brigade headquarters and helicopter landing site areas was completed by the Marine Camp Detachment personnel with some assistance by the Army engineers. All work was not completed until after the arrival of the main body of the Brigade at Camp Desert Rock.

f. The Brigade Helicopter Support Unit is formed.

This Unit was established as a task organization, utilizing personnel within the Brigade as augmented. Due to the limited time available for training and for obtaining equipment, the Unit's organization and equipment was necessarily patterned for the support of the Brigade in this specific exercise.

6. Supply Planning. The indefinite date for Desert Rock VI - Marine Corps which prevailed during the early planning phase and the anticipated increase in supply work load due to activation of the Brigade made it necessary to accelerate the procurement and issue of initial equipment for Marine Corps Test Unit #1. Most equipment and supplies had been requisitioned by 1 December 1954. However, many items were not

UNCLASSIFIED

available from supply sources at Camp Pendleton, and in order to assure proper outfitting of Marine Corps Test Unit #1 in time for the training phase of the operation it was necessary to initiate immediate and vigorous follow-up action on many requisitions. Such action produced the desired results, and by 1 February 1955 Marine Corps Test Unit #1 was practically 100% equipped.

a. Planning for procurement of equipment and supplies for 3d Marine Corps Provisional Atomic Exercise Brigade (less Marine Corps Test Unit #1) became increasingly difficult due to short lead time allowed. The Commandant's directive of 8 December 1954 required that a quantity of demonstration materiel be procured for use during the exercise. This materiel was procured and delivered to Camp Desert Rock by normal administrative procedures. On 27 January 1955 and 12 February 1955 letters were received which directed the procurement of numerous items of equipment and services for a provisional public information unit which was organic to the Brigade. Many of these items are not stocked by the Marine Corps and had to be procured commercially. The short notice given on these requirements precluded procurement by normal procedures and required special handling. All items listed in the CMC letter and commercial services for processing the color film were procured by the required date.

b. The equipping of Brigade provisional units and augmentation personnel was accomplished by Marine Corps Test Unit #1.

7. Public Information planning commenced with the activation of the Brigade Public Information Section on 10 February and culminated in the publishing of a detailed Photography and Public Information Annex to the Brigade Operation Plan.

a. Prior to departure for Camp Desert Rock a total of sixteen hundred thirty-two (1632) individual pictures with stories, three hundred fifty-one (351) tape recordings and eighteen (18) 35mm films were prepared and forwarded to the Fleet Home Town News Center for processing.

b. The pre-shot requirement for sound-on-film interviews was completed on 35mm due to the fact that no Navy or Marine Corps activity on the West Coast has the capability for producing 16mm sound-on-film composite release prints.

c. A large amount of time was consumed in procuring the specified film and in making arrangements for processing film at an Atomic Energy Commission approved laboratory. Additional time was spent in conferences to iron out difficulties relative to security clearances for photographers, clearances of photographs, registration of photo groups

and film issuing and storage point certificates. It should be noted that while the public information directive from Headquarter Marine Corps stated that a CONFIDENTIAL clearance would suffice, the Atomic Energy Commission required a SECRET clearance, as well as a certificate by the Commandant for access to Restricted Data for all photographers and film handlers.

d. The requirement for still color layouts was thoroughly examined and it was determined that it would take three (3) months before the delivery of transparancies could be assured by an approved laboratory. It was concluded that the most effective color coverage could be obtained from blow-ups of 35mm color negative motion picture film.

e. Difficulty was experienced in the effort to carry out the verbal directive from Headquarters Marine Corps as relayed by the Liaison Officer from the Division of Information, who reported to the Brigade at Camp Horno on 4 March, concerning a one minute sound on film interview (16mm black and white reversal) with the Commanding General of the Brigade on shot day. The camera and film were obtained on this short notice from the Pacific Fleet Combat Camera Group, North Island, San Diego, California. When the camera was delivered to Camp Desert Rock it was discovered the sound track was not properly modulated due to a low power supply. Materials to correct this defect could not be obtained by D-Day and thus the pictures taken were of an inferior quality.

8. RECOMMENDATIONS. For future Marine Corps participation in the Desert Rock exercises the following recommendations are made:

a. That action be taken by Headquarters Marine Corps to establish a firm shot assignment at least four (4) months prior to the date of scheduled detonation.

b. That a large scale tactical map be utilized whenever tactical employment of troops is anticipated within the Nevada Test Site. Photographic negative plates of the maneuver area utilized in this exercise are currently on file with Marine Corps Test Unit #1.

c. That permission of the Atomic Energy Commission be obtained to procure large scale serial photographic coverage of the proposed tactical maneuver area within the Test Site. Existing maps do not include all of the complex road network within the Test Site and many geographical features are not easily discernable.

CONFIDENTIAL UNCLASSIFIED

d. That weather and climatoligical data be derived by direct liaison with the Atomic Energy Commission weather facilities at Camp Mercury, Nevada. This source provides more accurate and specific local data which is needed for daily operational planning.

e. That continuous liaison in security matters with the Deputy Exercise Director be maintained, commencing early in the planning phase, to insure that all currently effective security regulations, whether officially published or not, are ascertained in sufficient time to permit appropriate and timely action.

f. That early in the planning phase intelligence personnel become familiar with the forms and procedures required to process individuals for Atomic Energy Commission "P" clearances. In this connection it is desireable that a fingerprint set be taken and at least two members of the section be qualified to take fingerprints.

g. That a security liaison officer of field grade be assigned and located at the S-2 office, Camp Desert Rock. He should report at least one (1) week prior to the arrival of the participating exercise unit.

h. That all official photographers possess a final SECRET security clearance certificate, prior to their departure for the exercise area.

i. That all personnel rosters contain a certification as to the security clearance status of each individual and also a certification that all personnel are United States citizens. In addition, all rosters should be compiled in alphabetical order regardless of rank.

j. That an officer be provided the Public Information section to handle administrative details, act as liaison officer with the Atomic Energy Commission and Department of Defense officials to facilitate fast declassification and clearance of releases, and to act as a film courier.

k. That the Atomic Energy Commission and Department of Defense be requested to provide facilities for play-back on radio tapes, as well as screen facilities for motion picture film to insure fast declassification and release to news media.

UNCLASSIFIED CONFIDENTIAL

CONFIDENTIAL UNCLASSIFIED

SECTION IV

TRAINING PHASE

1. General. Early in the planning phase the need for the achievement of the utmost precision and the closest coordination between the air (both helicopters and close support aircraft) and the ground troops was clearly recognized. This requirement was established as one of the primary objectives for this phase. The achievement of this objective was attested to in the first rehearsal conducted in the Camp Horno-Camp Talega area of Marine Corps Base, Camp Pendleton, which was executed with excellence on the basis of an oral order and overlay.

   a. Marine Corps Test Unit #1 was activated on 1 July 1954. It received a substantial number of its troops on 14 November and commenced training on 15 November. The initial training mission was to achieve a high state of readiness in conventional tactics and techniques. This was completed on 28 January and the Unit undertook to train for preparation of the Exercise on 31 January.

2. The training program was divided into three progressive phases encompassing the period 31 January to 19 March as follows:

   a. Phase I -- Preliminary training.

   b. Phase II -- Advanced training, including unit training and rehearsals.

   c. Phase III -- Training at Camp Desert Rock and rehearsal at the Nevada Test Site.

3. Phase I training.

   a. This training phase, extending from 31 January to 18 February, commenced with helicopter mock-up training for heliteams and progressed through the utilization of helicopters by tactical organizations. It included fixed-wing training, ABC training, Cold Weather training, and air defense training. It was generally divided into periods as follows:

      (1) Mock-up training.

         (a) Organization of heliteams.

         (b) Slinging of arms and equipment, to include external loads.

         (c) Embarkation and debarkation.

         (d) Helicopter support unit training.

         (e) Safety precautions.

UNCLASSIFIED CONFIDENTIAL

(2) Helicopter training (Advanced).

(a) Safety precautions.

(b) Loading, launching and landing by tactical organization.

(c) Assault on hastily prepared defensive positions.

(d) Landing and employment of infantry supporting arms and command installations.

(e) Helicopter support unit training.

(3) Fixed wing training for ground elements.

(4) ABC training.

(a) Principles of atomic explosions.

(b) Effects of atomic weapons.

(c) Individual protection from atomic explosions.

(d) Medical aspects of nuclear radiation.

(e) Nuclear radiation and radiation detection (radiac) instruments and decontamination of personnel and equipment.

(f) Monitor team training.

(5) Cold Weather training.

(6) Air defense training.

(7) Briefing of certain officers and key NCOs of all elements of the task organization on the mission of the Brigade, the detailed tactical plan, sequence of events, safety instructions and instructions for rehearsals.

b. This training was conducted at Camp Horno except for the fixed wing training which was conducted at the Camp Pendleton airfield. Only five days was allotted for the latter, and proved adequate. Training means which contributed to this training were three mock-ups of the HRS type helicopters constructed to the exact dimensions by the 7th Engineer Battalion, and a relief map of the exercise area.

c. The keen motivation of the troops toward participation in this exercise showed itself in this training phase while training with helicopters. They approached and embarked in the helicopters with such speed that on

UNCLASSIFIED

three occasions 60mm mortar men punctured a hole in the helicopter decks. Corrective action was taken by emphasizing more care and precision in embarking, and by placing a piece of plywood of the dimensions four feet square and three eighths of an inch thick on the deck of the helicopter. There were no further incidents.

4. Phase II training.

a. This training phase, commencing on 14 February, dovetailed into the Phase I training. It was completed on 4 March. During this period the following was conducted:

(1) Unit training for ground elements of the task organization, 14-18 February. The purpose was to familiarize each individual with the tactical plan on ground resembling the actual maneuver area, and to insure that each individual knew his specific duty, the route of his movement, and all aspects of his part in Exercise Desert Rock VI - Marine Corps. Units were thus prepared for the rehearsals to be conducted the following two weeks.

(2) A security indoctrination of one hour's duration was given for the purpose of instructing all Marines as to the security aspects of the exercise. The basis for this instruction was a brochure prepared by this headquarters.

(3) Two rehearsals of the maneuver were conducted in the Camp Horno-Camp Talega area; the first was conducted on 23-24 February and the second was conducted on 1-2 March. The area selected was similar to the maneuver area in the Nevada Test Site.

(a) The first rehearsal, as stated previously, was conducted from an oral order and overlay and was executed in an excellent manner. It proved the validity of the concept of the operation and the soundness of the planning that had gone into it. However, a number of items developed during the rehearsal which needed correction Chief among these problems was the wide range of times it took for the heliteams to embark in the helicopters. In some instances up to 60 seconds were taken to embark. The average embarkation time for this rehearsal was 35 seconds. This was an unexpected development in view of the time

UNCLASSIFIED

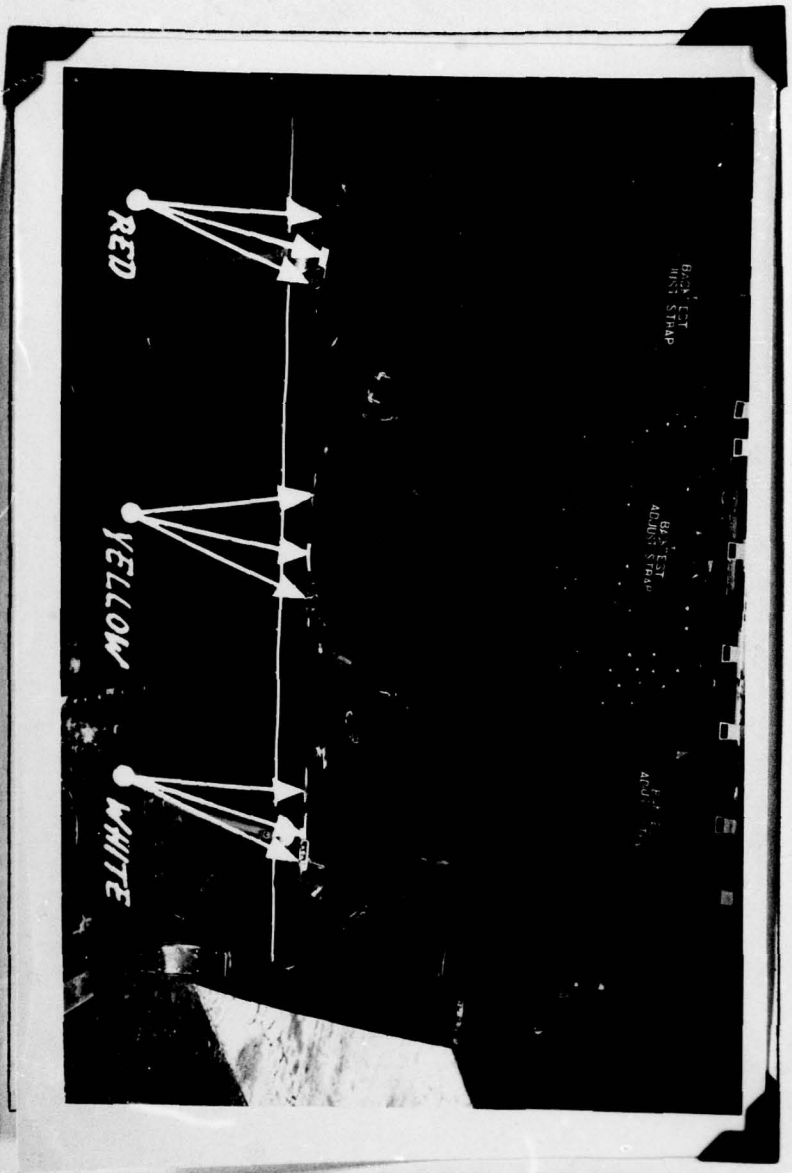
CONFIDENTIAL UNCLASSIFIED

the troops had spent in the helicopter mock-ups, and in heli-team training with the helicopters. The difficulty was traced to the need for additional helicopter pilot familiarity with troop procedures and the undue time taken by the troops in finding and fastening their safety belts. A short pilot indoctrination corrected the first discrepancy. To correct the second discrepancy, the safety belts and seats were painted in matching colors as shown in the photographs attached to this page. To further assist the troops in finding their belts, elastic webbing, sometimes referred to as "bungee", was used. One end of the elastic webbing was looped around the belt and the other end was secured to the forward edge of the seat. Thus, when the safety belt was released it snapped into a convenient position on the seat as shown on the attached photographs. By this corrective action, the average embarkation time for a four-man heliteam was reduced to 16 seconds, from time of touch-down to take-off during the conduct of the maneuver at the Nevada Test Site. An average debarkation time of four and one half seconds, achieved during the rehearsals at Camp Pendleton, was maintained during the maneuver at the Nevada Test Site.

(1') The tactical plan required two radiac monitor teams to monitor the landing zones for radiological safety before the initial wave of helicopters was permitted to land. For the first rehearsal, one helicopter, bearing the monitor teams for the two landing zones, was launched two minutes before the initial wave to perform this function. This proved unsatisfactory. The plan was then modified to utilize two helicopters, each bearing one monitor team for each designated landing zone, and with both helicopters preceding the main body of the initial wave by three minutes. This plan proved to be satisfactory.

CONFIDENTIAL UNCLASSIFIED

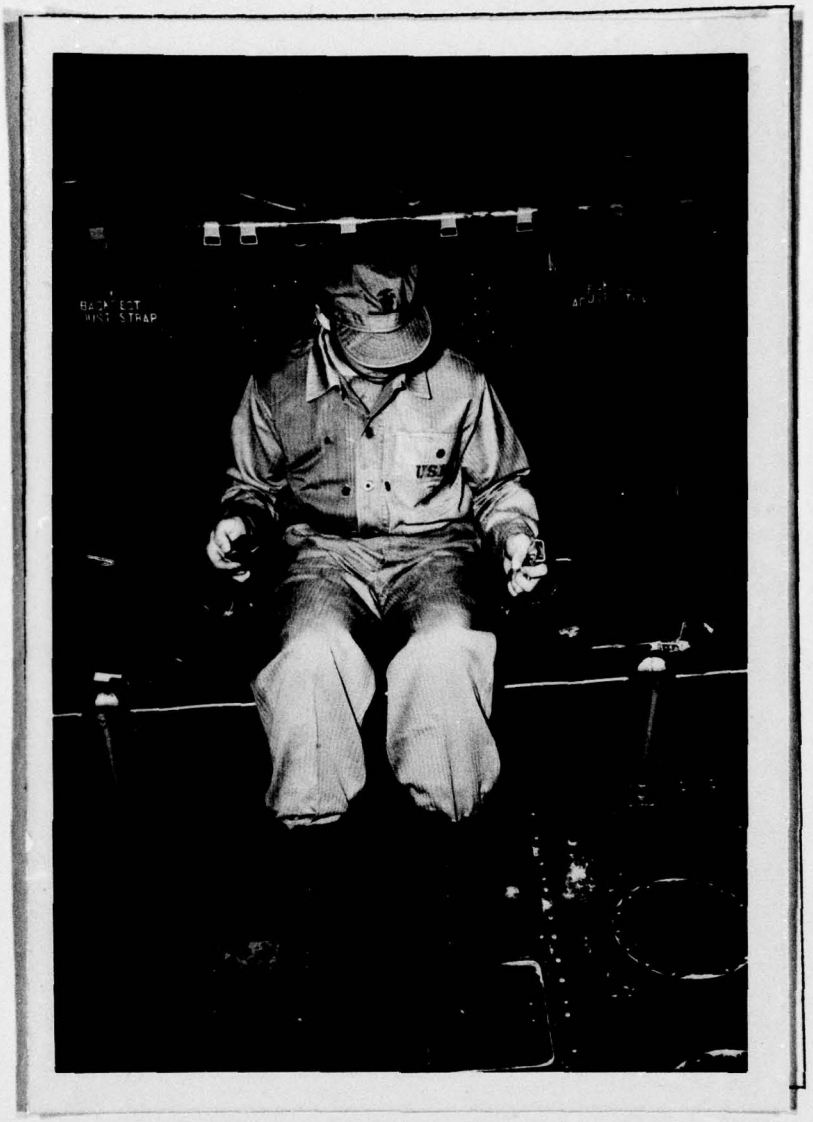
CONFIDENTIAL UNCLASSIFIED



NORMAL POSITION OF SAFETY BELT WHEN
ELASTIC WEBBING IS ATTACHED AS SHOWN

UNCLASSIFIED CONFIDENTIAL

[redacted] UNCLASSIFIED



MARINE FASTENING THE SAFETY BELT

[redacted] UNCLASSIFIED

CONFIDENTIAL UNCLASSIFIED

SAFETY BELT FASTENED IN POSITION

CONFIDENTIAL UNCLASSIFIED

CONFIDENTIAL UNCLASSIFIED

SIDE VIEW OF FASTENED SAFETY BELT
SHOWING THE ELASTIC WEBBING

CONFIDENTIAL UNCLASSIFIED

(b) The second rehearsal was well executed, except for the lack of desired coordination of the close support aircraft with the initial wave of helicopters. The tactical plan demanded the first pre-briefed strike of close support aircraft be conducted commencing at precisely one minutes and thirty seconds before the main elements of the initial wave of helicopters with embarked troops were to land. The requirement was met by setting the time on target to the close support aircraft after the main elements of the helicopters had passed a selected check point on the ground exactly five minutes flying time from the landing zones. This precision was achieved on D-Day after two rehearsals within the Nevada Test Site.

(c) Creation of the Brigade Tactical-Logistical Group. During the conduct of the first rehearsal in the Camp Horno-Camp Talega area, it appeared that there was a need for a staff agency other than the Helicopter Direction Center which would furnish up to the minute detailed information of the progress of the loading and landing of the assault troops, equipment, weapons, and supplies as prescribed in the Landing Plan. From the information thus available intelligent and timely adjustments in the Landing Plan could be made if necessary. Accordingly, the Brigade Tactical-Logistical Group was formed from within personnel authorized the Brigade in time to function effectively one week later in the second rehearsal in the Camp Horno-Camp Talega area.

(d) A detailed inspection of all troops and equipment was conducted on 5 March to ascertain the individual readiness of all units for participation in the exercise.

5. Phase III training.

a. This training phase was conducted in the exercise area during the period 14-23 March, and encompassed the following:

(1) A rehearsal of the tactical portion of the exercise in the Nevada Test Site on 17 March. This rehearsal proved to be most valuable in checking out time and space factors. Furthermore, it gave the helicopter pilots an appreciation of the wind and dust conditions

CONFIDENTIAL UNCLASSIFIED

within the test site. The latter was particularly valuable from the view point of the safety of troops in relation to determining the approach patterns of the helicopters into the loading zones for the embarkation of troops. It was during this rehearsal that the check point referred to in Paragraph 4. (b) above was selected and steps were taken to achieve the desired coordination between the close support aircraft and the initial wave of helicopters.

(2) A second rehearsal was conducted within the Nevada Test Site utilizing six close support aircraft, four helicopters, and appropriate communications to exercise control. As a result of this rehearsal, the desired degree of coordination was achieved.

(3) On 16 March, a radiological safety orientation of one hour's duration was given all troops by an officer from the staff of the Deputy Exercise Director. The latter had been assigned this responsibility by higher authority.

(4) A one-hour's presentation on weapons effects was given all troops by two representatives of the office of the Chief, Armed Forces Special Weapons Project, Washington, D.C.

(5) A live monitoring exercise was conducted on 20 March in the area of ground zero for shot TURK, which had been detonated previously. This training was exceedingly interesting and valuable.

(6) On 23 March, six officers and four enlisted men observed the detonation of an underground burst.

(7) On 12 March a relatively small number of Brigade personnel, principally officers, observed the detonation of shot HORNET.

(8) Arrangements were made for 305 Brigade personnel to observe shot APPLE. This shot was postponed at H-minus-1-Hour two successive days and after the troops had reported to the assigned positions within the Test Site. It was finally detonated subsequent to the Brigade's return to its home bases in California.

b. With the completion of the 19 March rehearsal, (see paragraph a. (2) above), the Brigade was fully prepared to conduct the exercise.

CONFIDENTIAL UNCLASSIFIED

UNCLASSIFIED

6. Briefings on Exercise Desert Rock VI - Marine Corps at Camp Desert Rock were presented by members of the Brigade staff to Marine Corps troop observers on 19 March and to troop observers from all the other services on 21 March. The briefing given Marine Corps officers was in somewhat more detail than that presented to officers of the other services.

7. Functioning of TAC-LOG Group. As stated above the TAC-LOG Group was formed in time to participate in the second rehearsal in the Camp Horno-Camp Talega area. The group was composed of officer and enlisted personnel from the Command Post group on an additional duty basis. It included a Tactical Analysis Officer, a Logistical Analysis Officer, an officer from the Helicopter Director Center, an officer-in-charge and the enlisted assistants required to monitor communication nets and log data on previously prepared plotting charts.

a. Information concerning airborne times and landing times for each heliteam and cargo load was fed by wire and radio into the TAC-LOG Group by HSU control personnel operating from the loading and landing zones.

b. By means of wire and radio communication with the various loading and landing zones, and by posting loading and landing times on prepared progress charts, the TAC-LOG Group was able to maintain up-to-the-minute information on the status of the helicopter lift of tactical units, movement of unit equipment and location and status of supplies. (The wire circuits represented radio nets.)

c. The number of lifts (both personnel and supplies) from each loading zone was prescribed in the Landing Plan. The availability of current information on the status of outloading from each zone was beneficial in determining when to divert helicopters from one zone to another without loss of pay loads; determining the status of supply of assault units and as a secondary source of information as to the status of movement of assault units. Much valuable information relating to the problems of control was gained, and will be the subject of more extensive effort by Marine Corps Test Unit #1 in the accomplishment of its primary mission.

8. Helicopter Support Unit training. This Unit was made up for the most part of personnel provided by the Commanding General, Marine Corps Base, Camp Pendleton. Most of its personnel reported to Camp Horno after the training period was under way. Accordingly, an intensified training program utilizing helicopters was inaugurated in order that this Unit might function effectively during rehearsals at Camp Pendleton. This Unit had a number of organizational "growing pains" which were corrected before the Brigade departed for the exercise area.

UNCLASSIFIED

It provided the means and the personnel to control the embarkation and debarkation of troops, supplies, weapons, and equipment at the loading and landing zones. It is considered that this Unit functioned efficiently in the accomplishment of its mission. The basic concepts proved sound, but it is considered that much has yet to be learned about this highly important Unit in the all-helicopter assault. This Unit's functions, organization, and equipment are being studied further by Marine Corps Test Unit #1.

9. Recommendations. None.

CONFIDENTIAL UNCLASSIFIED

SECTION V

MOVEMENT TO CAMP DESERT ROCK AND RETURN

1. General. The movement of the main elements of the Brigade to Camp Desert Rock and return was accomplished by military air lift provided by the Commanding General, Fleet Marine Force, Pacific. The 30 helicopters moved independently as directed. MAG 15 (-) deployed to Marine Corps Auxiliary Air Station, Mojave, California independently in accordance with Brigade orders. The remainder of the Brigade moved by surface convoy. It was planned and conducted as an administrative move to a forward staging area. Troops to be air lifted, embarked in aircraft at the Marine Corps Air Station, El Toro, with troops from Camp Pendleton being moved overland to El Toro by vehicular convoy provided by the Commanding General, Marine Corps Base, Camp Pendleton.

a. The nearest airfield to Camp Desert Rock is the Indian Springs Air Force Base, (ISAFB) located some twenty three miles to the east. Upon arrival at this field the troops were shuttled overland by vehicular convoy provided by the Deputy Exercise Director.

b. A further requirement for flexibility in planning was introduced in connection with the use of the Indian Springs Air Force Base when it was announced that the field would be closed from noon on the day before a scheduled shot until noon of shot day. Alternate plans were made for the troops to land or embark as appropriate at Nellis Air Force Base, Las Vegas, Nevada, sixty five miles to the east, if necessary. Furthermore, all Brigade plans had to be flexible due to almost daily changes in shot schedules.

2. The air movement of the main elements of the Brigade to the exercise area via Indian Springs Air Force Base commenced on 10 March with all units closing Camp Desert Rock on 11 March. During this two-day period, thirty nine R5D aircraft loads were utilized to move fourteen hundred (1400) personnel and 101,000 pounds of baggage, cargo, and crew-served weapons.

3. The advance echelon of MAG 15 (-) deployed to Marine Corps Auxiliary Air Station, Mojave, California on 9 March, the surface echelon on 10 March, and the air echelon on 11 March. No problems were encountered in this movement.

4. The Camp Detachment preceded the main body by air and surface convoy on 25 February. One hundred forty (140) personnel and 8000 pounds of baggage were moved by four (4) R5D aircraft. Twenty eight (28) Marines and 115,000 pounds of cargo were moved in a convoy of fifteen vehicles. The Camp Detachment closed Camp Desert Rock on 26 February.

5. The surface convoy conducted its movement on 8 and 9 March. The convoy was started at Camp Horno, Marine Corps Base, Camp Pendleton and joined the

UNCLASSIFIED CONFIDENTIAL

CONFIDENTIAL UNCLASSIFIED

MASS 3 serial at El Toro. The convoy spent the night at the Marine Corps Supply Depot, Barstow, California. MAG-36 surface elements proceeded separately and bivouacked in the desert. No significant difficulties were experienced during this movement.

6. The helicopter airlift, consisting of thirty (30) aircraft and flight crews, departed Marine Corps Air Facility, Santa Ana, California in two (2) fifteen (15) plane flights by squadrons. A refueling stop was made at George Air Force Base, Victorville, California in accordance with prior arrangements. The helicopters carried only crews, fuel, tie-down equipment, and personal baggage because of gross weight limitations imposed by altitude restrictions. Both flights arrived with all aircraft. No incidents occurred enroute, except for a broken hydraulic seal on one aircraft at George Air Force Base.

7. The return to home bases from Camp Desert Rock was accomplished generally in reverse of the movement to Camp Desert Rock except that ten (10) R5D aircraft were required to land at Nellis Air Force Base on 25 March for the reason outlined in Paragraph 1. b. above. Appropriate changes were made and troops assigned those aircraft were transported to Nellis Air Force Base for embarkation aboard these aircraft.

8. The main elements of the Brigade closed their home bases on 25 March with the Camp Detachment returning on 31 March.

9. During the entire movement to and from Camp Desert Rock no accidents were reported.

10. Recommendations. None.

CONFIDENTIAL UNCLASSIFIED

CONFIDENTIAL UNCLASSIFIED

SECTION VI

CONDUCT OF THE EXERCISE

1. General. From the viewpoint of the Brigade, the most difficult portion of Exercise Desert Rock VI - Marine Corps was completed at the conclusion of the planning phase. During the training phase numerous details were coordinated to insure achievement of the degree of precision required. The only imponderables remained in the execution. High on the list was the question of the direction of the fall-out of shot BEE. Would it curtail the maneuver or cause cancellation? There was a high probability until D-minus-2-Day that shot APPLE would be detonated before shot BEE and that fall-out from the former would contaminate the maneuver area. And finally there was the question of the date on which shot BEE actually would be detonated. It had been scheduled for 18 March, but by the time the Brigade arrived at Camp Desert Rock there had been so many changes that the shot schedule was in a state of some uncertainty.

   a. The 18 March ready date for shot BEE was changed on 11 March when it was re-scheduled for HORNET plus eight days. Subsequently shot APPLE was inserted into the considerations, and shot BEE was scheduled for APPLE plus two days. The succeeding modification scheduled shot BEE and shot APPLE to be ready on 20 March with the "Go" signal to be given to that shot for which the weather was best suited. Finally, on 19 March the decision was made to detonate shot BEE on 21 March. Accordingly, those elements of the Brigade scheduled to occupy selected positions within the Nevada Test Site on D-minus-1-Day formed their convoys on Sunday, 20 March, only to have the shot postponed until 22 March.

   b. D-Day was ultimately confirmed as 22 March.

2. Definitions.

   a. D-Day. - The day on which shot BEE was actually detonated. (22 March).

   b. HOW-Hour. - The precise instant on D-Day that shot BEE was detonated. This occurred at 0505, 22 March.

   c. MIKE-Hour. - The exact time on D-Day at which the helicopters bearing the first assault troops were launched from the initial launching site. It was announced by the Brigade Commander after HOW-Hour on D-Day and was set at 0512, 22 March.

3. Deployment to the Nevada Test Site.

   a. Commencing at 1300, 21 March, Loading Zones #1, #2, #3, Brigade Command Post, MASS-3 and MAG-36 Command Post were occupied.

CONFIDENTIAL UNCLASSIFIED

Vehicular transportation as required was provided by the Deputy Exercise Director. The above troops, totaling 931, closed their positions by 1800.

(1) Deployed in Loading Zone #1 were the following:

(a) Two radiac monitor teams.

(b) Two reinforced rifle platoons, one each from two separate rifle companies.

(c) Thirty (30) helicopters.

(2) Deployed in Loading Zone #2 were the following:

(a) One rifle company less the platoon in Loading Zone #1.

(b) Battalion Command Post troops.

(c) Palletized simulated supplies.

(3) Deployed in Loading Zone #3 were the following:

(a) One rifle company less the platoon in Loading Zone #1.

(b) Six 75mm Pack Howitzers.

(c) Six 4.2" Mortars.

(d) Three 75mm Recoilless Rifles.

(4) Deployed in the respective command posts were the normal personnel and communications.

b. Commencing at 0219 on 22 March the remaining Brigade troops departed Camp Desert Rock to occupy trenches 3500 yeards from ground zero. These troops comprised maneuver troops representing two rifle companies, one 75mm Pack Howitzer Battery, 4.2" Mortar Platoon, 75mm Recoilless Gun Platoon, and Battalion Command Post troops. In addition to these troops but participating as troop observers only were one hundred forty two Marines of the Camp Detachment and rear echelon. Total Brigade troops entrenched was seven hundred ten (710).

(1) Wire communication checks were made regularly during the period prior to HOW-minus-1-Hour. Radio silence was in effect from HOW-minus-1-Hour to HOW-plus-15-minutes on all equipment below 235 megacycles. All communications were satisfactory.

CONFIDENTIAL UNCLASSIFIED

4. Pre-shot activities.

a. Brigade troops entrenched were given appropriate instructions by the Deputy Exercise Director.

b. Brigade troops elsewhere in the Test Site were not required to be in trenches because of the distance they were positioned from ground zero. Control of these troops was exercised by the Brigade Commander.

(1) At HOW-minus-1-Hour these troops were assembled and a muster taken.

(2) A count-down was conducted commencing at HOW-minus-1-Hour until zero time.

(3) At HOW-minus-5-minutes troops were instructed to face away from ground zero and to be seated.

(4) At HOW-minus-3-minutes troops were instructed to shield their eyes with their hands or arms and to remain in that position until told to rise.

(5) Troops were told to rise at approximately HOW-Hour plus three seconds.

c. The close support aircraft departed Marine Corps Auxiliary Air Station, Mojave, California at 0415 and arrived at the pre-shot station between Lathrop Wells and Desert Rock at 0450.

d. At HOW-minus-1-Hour, the helicopters, located at Loading Zone #1, turned up their engines then shut them off. At HOW-minus-ten-minutes the helicopters turned up their engines and the troops embarked.

e. Commencing at HOW-minus-15-minutes and continuing until HOW-plus-five-minutes the Brigade Command Post was in direct contact by wire with the Deputy Exercise Director located in the trenches and the Commander, FTG 5 (P) who was located in the Air Operations Center, at the Control Point at Yucca Pass.

5. Permission to commence maneuver is granted.

a. Shot BEE was actually detonated at 0505. From that moment the Brigade Commander sought the permission of both the Deputy Exercise Director and the Commander, FTG 5 (P) to commence the tactical exercise. Permission was granted by the latter at HOW-plus-two-minutes and the Deputy Exercise Director gave his permission at HOW-plus-five-minutes. MIKE-Hour was announced as being HOW-plus-seven-minutes or 0512 and the word to commence the maneuver at MIKE-Hour was passed. Mean-

CONFIDENTIAL UNCLASSIFIED

CONFIDENTIAL UNCLASSIFIED

while at 0507 the close support aircraft were released to Brigade control by Commander, FTG 5 (P), and proceeded to the assigned orbit point, reporting to the Brigade Direct Air Support Center.

6. Initial launch at MIKE Hour.

a. The two helicopters bearing the radiac monitor teams launched at MIKE Hour followed three minutes later by the main elements of the initial wave which were in attack formation during the run-in to the Landing Zones. It is worthy of note that MAG 36 brought thirty helicopters to Camp Desert Rock and the Nevada Test Site and achieved one hundred per cent availability of their helicopters for the initial launch. Overall availability during the exercise averaged ninety-seven per cent. It was largely due to this remarkable achievement that the total time expected to be required for executing the Landing Plan was considerably reduced.

b. As the main elements of the initial wave reached the selected check point on the ground, the time for the close support aircraft to be on target was determined and announced. With precision and excellence, the close support aircraft of MAG 15 (22 F9Fs) conducted a pre-briefed strike on the assigned objectives at exactly ninety seconds before the main elements of the initial wave of helicopters touched down.

c. Meanwhile the radiac monitor teams had landed in the two landing zones and had reported the zones radiologically safe. The maneuver had commenced with precision.

7. Troops in the trench area slated to participate in the maneuver formed at MIKE Hour and commenced marching to Loading Zones #4 and #5 approximately two and one half to three miles to the south respectively. (It should be noted that all loading zones represented aircraft carriers for problem purposes).

8. Upon completion of the initial assault lift, the helicopters automatically moved into predesignated flight patterns to lift the assault troops from Loading Zones #2 and #3 to Landing Zones ABLE and BAKER respectively. This portion of the helicopter lift was completed by MIKE-Hour-plus-one-Hour-and-eighteen-minutes.

9. During the conduct of the lift described in Paragraph 8. above, the troops destined for Loading Zones #4 and #5 had arrived in position from the trenches and were organized for embarkation upon arrival of the first helicopters.

CONFIDENTIAL UNCLASSIFIED

10. Helicopter availability continued at a very high percentage during the exercise with the result that the entire Landing Plan was executed by 0900 (3 hours and forty-eight minutes after MIKE-Hour). It had been previously estimated that execution of the Landing Plan would consume four and one half to five hours, based on an aircraft availability of eighty per cent.

11. Upon landing, the troops moved out rapidly and secured their objectives. Four close support aircraft remained on station for the duration of the maneuver.

12. Decision is reached to terminate exercise on 22 March.

a. All previous planning had been based on conducting a maneuver of 30 to 36 hours' duration. During the conduct of the exercise on the morning of D-Day, 22 March, it was learned that 23 March had been established as ready date for one of three shots. Thus, the Brigade was faced with the possibility of being asked to leave the Test Site during the hours of darkness on the night of 22-23 March. In view of this fact and the accelerated execution of the landing plan, the decision was made to terminate the exercise during daylight on 22 March. All events slated for D-plus-1-Day were ordered to be executed on D-Day.

(1) Arrangements were made with the Deputy Exercise Director to have the necessary transportation report to the designated embarkation points on the afternoon of D-Day vice D-plus-1-Day.

(2) The movement by helicopter of one reinforced rifle platoon (for problem purposes representing a reinforced battalion) from Landing Zone ABLE to Landing Zone CHARLIE was executed at 0955.

(3) The R4Q aircraft slated to make the air drop of simulated supplies in support of the assault on objective WILLIAM on D-plus-1-Day were contacted at El Toro and arrangements were made to conduct the scheduled air drop as soon as possible on D-Day. These aircraft arrived on station at 1330 and executed the air drop which was completed at 1358.

13. The maneuver was terminated at 1500. Vehicular convoys reported to pre-designated assembly areas and moved the troops to the materiel display area to witness the effect of shot BEE thereon. This was completed at 1730 and the troops re-embarked aboard the vehicles provided for the return to Camp Desert Rock. All troops closed Camp Desert Rock at 2000, 22 March.

14. Public Information Aspects.

a. Prior to arriving at Camp Desert Rock, three (3) news stories accompanied by photos were released to the wire services, as well as local news media, in Los Angeles and San Diego. These releases dealt with training, rehearsals and departure of the Brigade from the California home bases. Good coverage was obtained locally.

b. Upon arrival at Camp Desert Rock an arrival story with pictures was prepared and delivered to the Joint Test Information Office (JTIO) in Las Vegas for clearance and release. Prior to shot day various photographs of news interest were delivered to the Joint Test Information Office for release. A telephone recorded interview was arranged between the Brigade Chief of Staff and Station KFI, Los Angeles for a delayed radio broadcast.

c. A schematic of the operation was prepared and released through the Joint Test Information Office. (See photographic supplement).

d. On shot day the first photographs were processed and delivered to the Joint Test Information Office at an early hour. The shot story and pictures were on the wires by 1100. Later in the day other pictures were delivered. 4000 feet of 35mm color film was flown to Consolidated Film Labatories in Los Angeles for processing, arriving at 1330 on shot day. On the following day this film was flown to Camp Mercury for projection and clearance by the Atomic Energy Commission and Department of Defense and then flown back to Los Angeles for placement. NBC and CBS accepted certain portions of the film for their networks, NBC to broadcast in color as well as black and white. Parts of the film were also placed with the major theatrical and newsreel companies.

e. Taped interviews were made with the Commanding General and other Marines as well as a four (4) minute on the spot description of the explosion. These tapes were serviced to all networks in Los Angeles on shot day.

f. It is understood that a representative of Life Magazine will view the color footage for possible use in the future.

g. Arrangements were made for a representative of Time Magazine to interview the Brigade Chief of Staff relative to the operation.

h. A round up release with pictures was delivered to the Joint Test Information Office on shot day plus one.

UNCLASSIFIED

15. FISCAL.

a. The direct cost to the Marine Corps of the Exercise was approximately $40,000.00. This sum does not include the cost of subsistance furnished by the Army, the cost of recovered stock fund material, the cost of transporting personnel and equipment, or the cost of ASA material procured for the operation.

b. Of the $40,000.00, approximately $25,000.00 was used for reimbursable supplies and services furnished by the Army. The remaining $15,000.00 was used for consumable Stock Fund supplies procured specifically for the operation and for commercially-procured supplies and equipment required by the Public Information and Photographic section for photographic supplies.

16. COMMENT.

a. The overall conduct of the exercise as directed in Brigade Operation Order 1-55 was executed with greater success than was anticipated, especially when viewed in the light of the many artificialities introduced and the restrictions imposed. It is considered that careful, detailed planning coupled with an intense training program which included rehearsals were major contributors to the success of this exercise, while small unit leadership left nothing to be desired.

17. RECOMMENDATIONS. See Section VII.

UNCLASSIFIED

SECTION VII

CONCLUSION AND SUMMARY OF RECOMMENDATIONS

1. General. An evaluation of the entire exercise as described in the preceding sections leads to a number of conclusions concerning accomplishment of the Brigade objectives and the value to be gained by Marine Corps participation in future Desert Rock Exercises.

2. a. A review of the objectives of the exercise, in the light of events that transpired, is considered to justify the conclusion that the Brigade accomplished them to a large extent. The commanders and staffs were afforded realistic training in planning for and conducting operations that are supported by atomic weapons. Experience gained in coordinating plans with other services and major commands proved exceedingly valuable.

b. The experience of Brigade troops in participating with an actual nuclear detonation served to familiarize them with the phenomena incident to it, as well as its effects.

c. In observing the effects thereof on the displayed demonstration materiel, troops were familiarized by realistic means with the passive defense measures which serve to minimize or protect against the effects of an atomic explosion. It served to remove apprehensions concerning the capability of the weapon. All hands gained a high degree of appreciation of its power as well as its limitations and its proper place in the family of weapons, both nuclear and conventional, available to the Marine Corps. From the standpoint of the individual Marine, the opportunity to witness a nuclear detonation was a most interesting experience, and proved highly instructive.

d. In reflecting on the objective of further evaluating and developing tactics and techniques involved in the execution of air-ground task force missions when atomic weapons are employed, it is considered that the artificialities necessary because of the restrictions imposed in an operation of this type precluded full pursuit of this objective. Nothing occurred however, to alter the conviction that nuclear weapons can be exploited with great success by a Marine amphibious assault force organized and equipped along the lines visualized in the Concept of Future Amphibious Warfare approved by the Commandant of the Marine Corps. Successful exploitation must be heavily dependent upon a most exacting precision and coordination among all arms coupled with a speed of decision and execution unprecedented in amphibious operations. The concept of the Marine single weapons system under one commander, as was utilized by this Brigade,

proved a most effective means of satisfying those requirements. It is recommended that determined efforts in this direction be continued on an urgent basis.

3. It is considered that much is to be gained from Marine Corps participation in future Desert Rock exercises. For example, the opportunity to conduct live monitoring exercises provides splendid training available by no other means. The many problems generated by the employment of nuclear weapons are brought home with tremendous impact. It is true that the maneuver itself could readily have been executed with equal success at Camp Pendleton with the use of atomic simulators. However, the realism engendered by coming face-to-face with an actual nuclear detonation adds a great deal to the benefits derived, and augments the total fund of training and experience of the Marine Corps.

4. RECOMMENDATIONS.

a. That the Marine Corps continue to participate in the Desert Rock exercises.

b. That firm shot assignments be established at the Washington level at least four (4) months in advance of the actual participation, in order to facilitate the complex planning process on the part of participating elements.

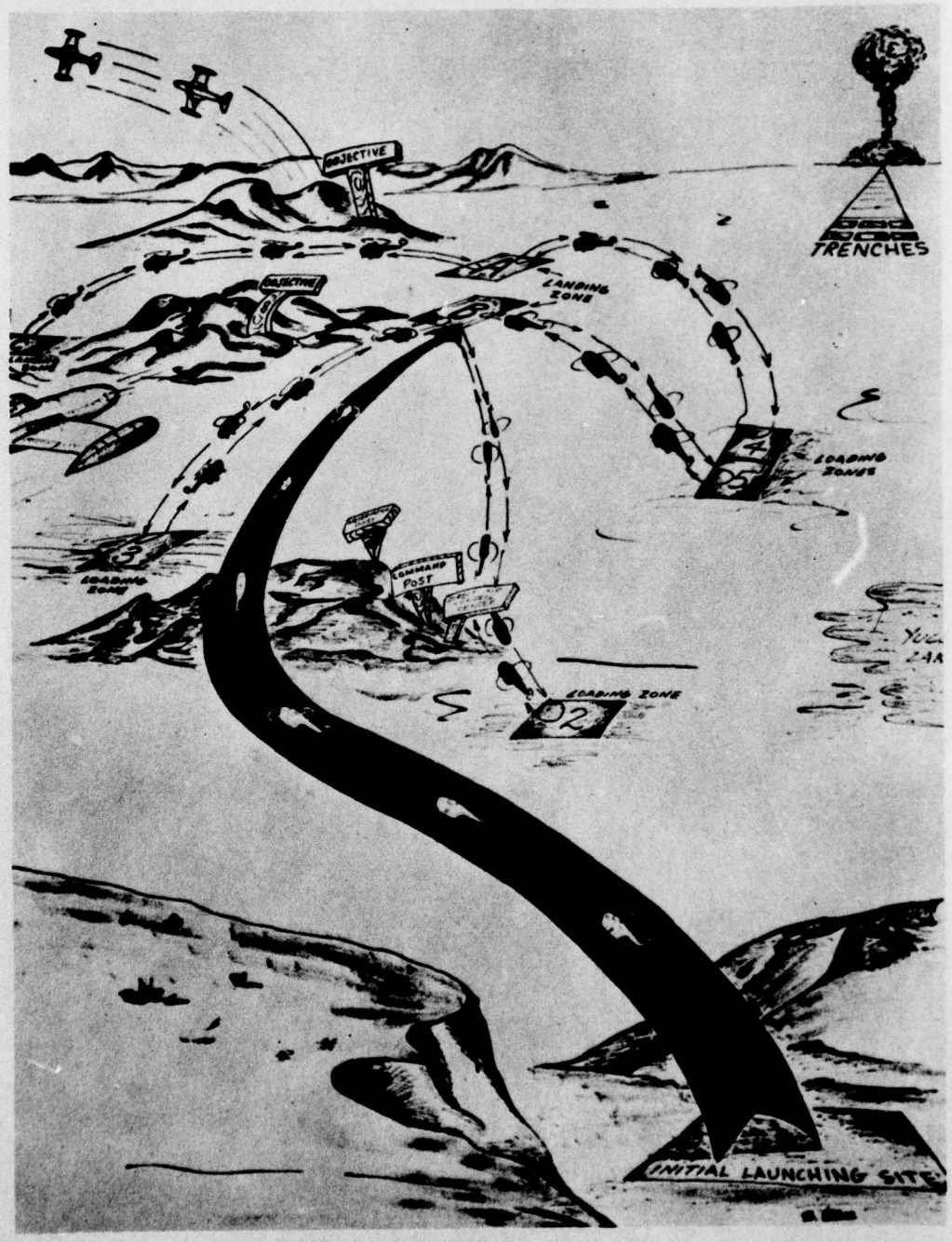
c. That troop maneuver participation be conducted within the framework of the Fleet Marine Force as a matter of training.

d. That in addition to troop maneuver participation, Fleet Marine Force Commanders be afforded the opportunity to participate in future Desert Rock exercises to the extent of sending as many monitor teams as is practicable to conduct separate post-shot live monitoring training exercises within the Nevada Test Site.

e. That developmental units and activities of the Marine Corps participate only to the extent necessary to insure complete correlation of all special weapons considerations in their developments, and as a matter of orientation for those individuals who require it.

f. That the Marine Corps expand and accelerate its program to provide all officers a comprehensive course of instruction in the appropriate aspects of special weapons employment.

PHOTOGRAPHIC SUPPLEMENT TO REPORT ON EXERCISE DESERT ROCK VI-MARINE CORPS



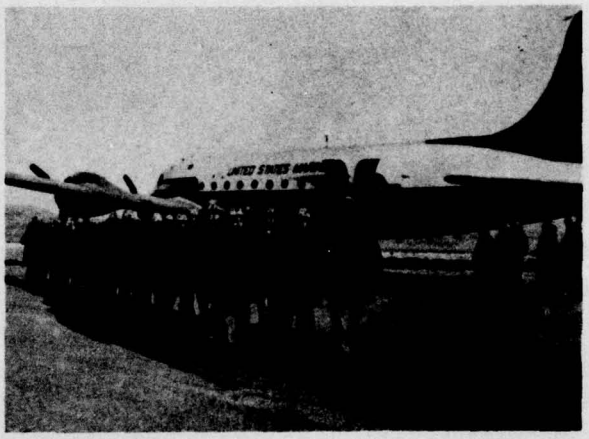
ENCLOSURE (1)

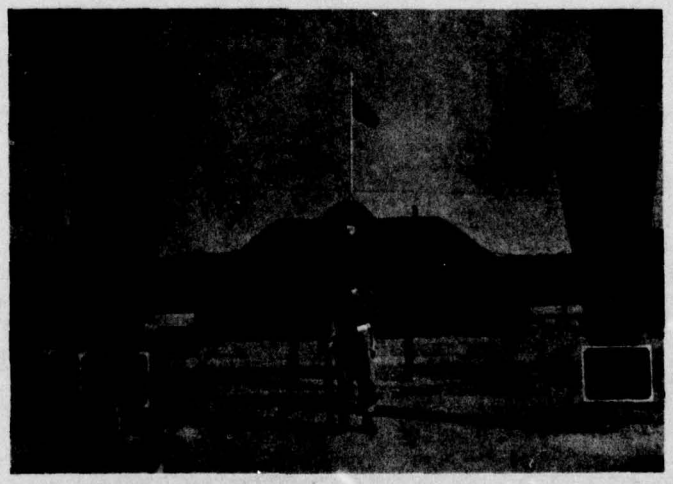
NAVY—DPPO 11ND, SAN DIEGO, CALIF.

TROOP AIR-LIFT

TO CDR

DEBARKING





HQ 3D MCPAEB
CAMP DESERT ROCK

BRIG CP PERS
H—3 MIN

TRENCH
POSITIONS
H—60MIN

APPROACH
TO L—Z

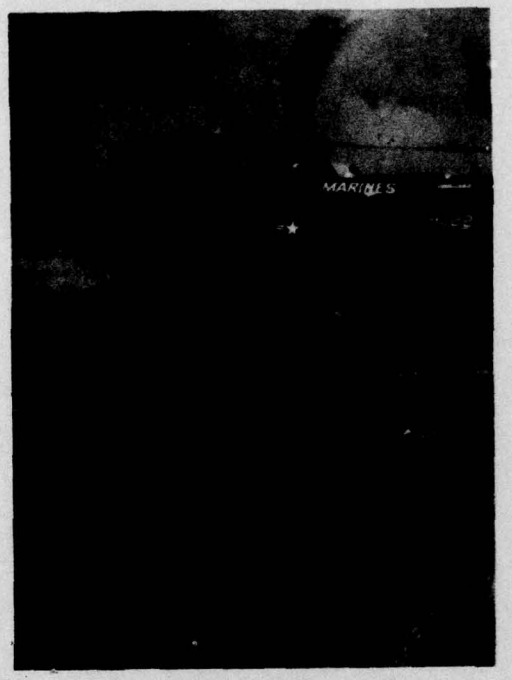
ENCL (1)

HELICOPTER
SET-DOWN

"HELI-TEAM"
DEBARKING

"HELI-TEAM"
CLEAR

HSU
OPERATIONS



75MM PK
HOWITZER
DELIVERY

IMMEDIATE
DEFENSE

ENCL (1)

3.5" ROCKETS
IN
POSITION

"READ YOU LOUD
&
CLEAR"

REPORTING
LANDING ZONE
"RAD—SAFE"

[redacted]
[redacted]
ATOMIC ENERGY ACT 1946

UNCLASSIFIED

DOE [redacted] NO RESTRICTED DATA OR FORMERLY RESTRICTED DATA.
HAS NO OBJECTION TO ITS DECLASSIFICATION.
COORDINATION REQUIRED WITH DNA
Raymond A. Carpenter RAC 1-31-79
REVIEWED BY DATE

UNCLASSIFIED

[redacted]
RESTRICTED DATA
ATOMIC ENERGY ACT 1946

SECRET
RESTRICTED DATA
UNCLASSIFIED

ENCLOSURE (2) TO REPORT OF EXERCISE DESERT ROCK VI - MARINE CORPS

REPORT OF MARINE CORPS EQUIPMENT DEMONSTRATION

1. PURPOSE OF THE DEMONSTRATION

a. To demonstrate and record the effects of an atomic explosion on Marine Corps equipment and personnel (represented by manikins) at various distances from ground zero and in various orientations.

b. To obtain qualitative technical atomic effects data which should be of interest to both service operational and technical agencies.

2. DEMONSTRATION PLAN

a. Representative items of Marine Corps equipment and clothing were selected and divided into five (5) groups to be laid out in five (5) positions. Within positions, identical equipment and clothing on manikins, were positioned in various orientations at the same distance from ground zero in order to demonstrate the effects of shielding and shading. In like manner, equipment and clothing in different positions were duplicated in order to demonstrate the effect of distance on the resulting damage. The five (5) demonstration positions were located as follows:

(1) Position No. 1 — 500 yards extending to 950 yards from ground zero

(2) Position No. 2 — 600 yards extending to 1100 yards from ground zero

(3) Position No. 3 — 1900 yards from ground zero

(4) Position No. 4 — 2300 yards from ground zero

(5) Position No. 5 — 2800 yards from ground zero

b. Similar equipment was placed in Positions 1 and 2. Some equipment was unprotected, while other equipment was situated with various degrees of protection in the form of foxholes and emplacements. Positions 3, 4, and 5 contained primarily manikins dressed in summer, winter, and arctic uniforms. Manikins were oriented facing ground zero, both standing and prone and in and out of foxholes.

c. PREDICTED AND APPARENT EFFECTS OF ATOMIC EXPLOSION TO DEMONSTRATION EQUIPMENT.

(1) See Appendix 1.

(2) Explanation of column entries and terms used in Appendix 1 is as follows:

(a) No. This number facilitates the use of Appendix 3. The first number indicates the position and the second indicates the specific display within the position.

SECRET
RESTRICTED DATA
UNCLASSIFIED

ENCLOSURE (2) TO REPORT OF EXERCISE DESERT ROCK VI - MARINE CORPS (CONT'D)

(b) Abbreviated Marine Corps nomenclature. Item.

(c) Distance. Distance of the item from ground zero.

(d) Predicted Damage. Predicted damage to the item based on the estimated (pre-shot) yield of the device.

(e) Actual Damage. Actual damage to the item as a result of being exposed to the effects of the atomic explosion.

(f) Definition for generalized levels of damage.

a. Severe. That damage which is sufficient to prevent the accomplishment of any useful military function, and the repair of which is essentially impossible without removal to a major repair facility.

b. Moderate. That damage which is sufficient to prevent any military use until some repairs are effected.

c. Light. That damage which does not seriously interefere with immediate military operations but necessitates some repair to restore the item to complete military usefulness.

(g) Criteria of damage expectancy.

a. 500 yards - 125 Cal/cm^2, 18 PSI, 80,000 rtrem.

b. 1000 yards - 30 Cal/cm^2, 6 PSI, 4700 rtrem.

c. 1500 yards - 13 Cal/cm^2, 3 PSI, 480 rtrem.

d. 2000 yards - 7 Cal/cm^2, 2 PSI, 60 rtrem.

e. 2500 yards - 4.6 Cal/cm^2, 1.6 PSI, 8 rtrem.

3. SUMMARY OF TEST SITE CONDITIONS

a. Terrain extremely flat, gradually, gently and uniformly falling away from ground zero.

b. Area sparsely covered with low, dead shrub growth.

c. Area partly swept by blasts of previous atomic explosions.

ENCLOSURE (2) TO REPORT OF EXERCISE DESERT ROCK VI - MARINE CORPS (CONT'D)

d. Area forward of 700 yards (excluding the hardtop) rocky and sandy dirt, extremely dusty. Area beyond 700 yards, sandy dirt.

e. All displays located from 500 yards to 700 yards were situated on the perimeter of a hard top or paved surface. (See Appendix 2).

f. In order to comply with the desires of the Atomic Energy Commission and still maintain the desired distances for certain of the demonstration materiel it was necessary to consolidate all displays of Positions 1 and 2 within the 700 yard limit. All displays within this zone were situated along the perimeter of the hardtop area according to their prescribed distance from ground zero.

4. DIAGRAM OF EQUIPMENT DEMONSTRATION LAYOUT - APPENDIX 2

5. SUMMARY OF DAMAGE

a. The following general effects were produced at the respective positions.

(1)	Position No. 1	Complete destruction to no damage
(2)	Position No. 2	Complete destruction to no damage
(3)	Position No. 3	Very light
(4)	Position No. 4	No damage
(5)	Position No. 5	No damage

Appendix 1. Predicted and apparent effects of atomic explosion to demonstration equipment.

Appendix 2. Diagram of equipment demonstration layout.

*Appendix 3. Photographic record of damage to demonstration equipment and clothing.

*NOTE: a. One complete set of contact prints, numbered to correspond with items listed in Appendix 1, forwarded to the Commandant of the Marine Corps with original of this report, and one set retained by Marine Corps Test Unit Number 1.

b. In the interests of economy, no further distribution made. Negatives retained on file at Headquarters, Marine Corps Test Unit Number 1, for forwarding to the Commandant of the Marine Corps, or such other disposition as he may direct.

APPENDIX 1 TO ENCLOSURE (2), REPORT OF EXERCISE DESERT ROCK VI - MARINE CORPS

PREDICTED AND APPARENT EFFECTS OF ATOMIC EXPLOSION TO DEMONSTRATION EQUIPMENT

(Unless otherwise specified, items were placed unprotected on open ground and pointed or faced toward Ground Zero. Angles are with reference to a line from item to Ground Zero. Definitions for categories of damage are contained in the foregoing discussion. Condition of equipment is considered to be good unless otherwise specified.)

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
1-1 How, Pack, 75mm, M1A1	Dug-in	500	Light-Moderate	Operationally undamaged; paint burned and sandblasted off; parapet pushed in.
1-2 Tank, Med, M4A3	Side-on Dug-in	500	Light-Moderate	Undamaged; parapet pushed in slightly
1-3 Mortar, 81mm, M1	Dug-in	500	Light-Moderate	Light - Paint burned and sandblasted off; sandbag parapet destroyed
1-4 Carbine	Dug-in	500	Light-Moderate	Moderate - Stock cracked; sandbag parapet destroyed
1-5 Tank, Med, M4A3	Side-on	500	Moderate-Severe	Light - Pushed 6' and turned on side; paint on shot side burned off; part of motor housing cover blown 100'; tracks, cutside phone and gun not damaged
1-6 Mortar, 81mm, M1		500	Moderate-Severe	Severe - Baseplate not recovered, muzzle of tube dented-thrown 438', bipod broken-thrown 337'

UNCLASSIFIED
UNCLASSIFIED

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
1-7 Rifle & Carbine	Secured w/sandbags	500	Moderate-Severe	Severe - Carbine stock broken, thrown 300'; rifle stock broken, thrwn 500'
1-8 MG, Cal .30 M1919A1		525	Moderate-Severe	Severe - Water jacket broken from receiver; tripod legs broken; thrown 255'
1-9 Aiming Circle, M1	Dug-in	525	Moderate-Severe	Severe - Aiming circle not recovered; tripod bent and broken; thrown 277'; sanibag destroyed
1-10 MG, Cal .30 M1919A1 Rifle	Dug-in Rifle in emplacement	525	Moderate to MG, Severe to rifle	Severe - Water jacket broken from receiver; cradle torn from tripod; rifle stock broken; rifle buried in rear of position; sandbag parapet destroyed. Tripod and receiver thrown 160'
1-11 MG, Cal .50 AA		550	Moderate-Severe	Severe - Tripod head and legs separated and thrown widely; gun and cradle thrown 509'; paint burned off
1-12 MG, Cal .50 AA & Rifle	Dug-in	550	Moderate-Severe	Moderate - Gun elevated to up-position; paint burned off; rifle stock broken; front of sandbag parapet destroyed
1-13 Grader	Void (Cancelled by CMC msg 211644Z Feb 55)			

UNCLASSIFIED
UNCLASSIFIED

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
1-14 Tractor, TD-18	Side-on Dug-in	650	Light-Moderate	Undamaged - Parapet pushed in slightly
1-15 Tractor TD-18	Side-on	650	Moderate-Severe	Light - Paint burned off; seat slightly burned and torn; wiring undamaged
1-16 Gun, auto, 40mm, M1	On jacks secured by metal stakes	700	Moderate-Severe	Light - (Unoperational wheels of gun sunk in ground to place gun on jacks); paint burned off; no apparent damage to parts; ammo port cover blown off; gun traversed 35° to right
1-17 Launcher, Rocket, T66, 4.5		750	Severe	Operationally undamaged; moved to left about 7'
1-18 Launcher, Rocket, M9	On sandbags	775	Severe	Undamaged; front sandbags destroyed
1-19 Launcher, Rocket, M9	Dug-in	775	Light-Moderate	Undamaged - Sandbags in front of emplacement failed
1-20 Truck, 2½ ton	Side-on	800	Moderate-Light	Light - Turned over on side; paint burned and wood charred; hood, canvas top and hoops blown off; windshield and headlights not damaged; motor operational; oil, battery acid and fuel leaking out

UNCLASSIFIED
UNCLASSIFIED

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
1-21 Tank, hot dip direct heat	Legs anchored w/sandbags	800	Severe	Severe - Vat caved in and thrown 35 yds; fuel tank dented; hose broken; sandbags destroyed
1-22 Flame Thrower M2A2	Strapped to sandbags simulated prone position	800	Moderate-Severe	No apparent damage of any type
1-23 Distillation Unit, Water (Badger)		800	Moderate-Severe	Moderate - Canvas ripped and torn from unit; unit pushed about 18"; paint and nos. burned; rubber covered lines and fabric insulation slightly burned. Top and side braces blown off unit and blown about 15 yds.
1-24 Crane Shovel Power Unit Crawler Mtd. 3/4 cu yd	Side-on	900	Moderate-Severe	Light - Left cab door and side dented; paint burned on left side; cab glass windows broken; cable and hook no damage
1-25 Switchboard BD-72		950	Moderate-Severe	Light - Knocked down and thrown 4 ft. Sandbags on front legs destroyed.
1-26 Switchboard BD-72	Dug-in	950	Light-Moderate	Knocked down (forward); sandbags scorched; no apparent damage
1-27 Radio SC 300	Propped against sandbag	950	Severe	Moderate - Unit separated into two constructed parts; antenna disjointed at one joint; no thermal damage; thrown 6 ft.

UNCLASSIFIED
UNCLASSIFIED

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
1-28 Radio SCR 536	Propped against sandbag	950	Severe	Paint on name plate burned; rubber not damaged; antenna intact; no apparent damage
1-29 Telephone EE-8	Propped against sandbag	950	Severe	Slight scorch to case; no damage to rubber or receiver; no apparent damage
1-30 DR-4 (w/wire) on RL-31		950	Moderate-Severe	Undamaged; sandbags destroyed; turned over on right side; wire undamaged
1-31 Reel, CE-11	Propped against sandbags	950	Moderate-Severe	No damage of any type
1-32 Wire Dispenser NX-306-G	Propped against sandbags	950	Moderate-Severe	Slight scorch to case; thrown 5 ft. Undamaged
POSITION NUMBER 2				
2-1 Mortar, 81mm M1		600	Light-Moderate	Moderate; sandbags completely destroyed; baseplate thrown 97 ft. Tube and bi-pod thrown 227 ft. Paint burned off
2-2 Mortar, 81mm M-1	Dug-in	600	Light	No operational damage; sandbag parapet partially destroyed; paint burned off
2-3 Rifle & Carbine	Secured w/sandbags	600	Light	Stocks of weapons badly gouged; rifle thrown 34 ft. Carbine 280 ft.

UNCLASSIFIED
UNCLASSIFIED

APPENDIX 1 TO ENCLOSURE (2), REPORT OF EXERCISE DESERT ROCK VI - MARINE CORPS (CONT'D)

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
2-4 Carbine	Dug-in	600	Undamaged	Undamaged; front and rear of sandbag parapet destroyed
2-5 MG Cal .30, M1917A-1		625	Light-Moderate	Moderate; MG thrown 178 ft. Tripod broken
2-6 Aiming Circle	Dug-in	625	Light-Moderate	Moderate; blown to rear of emplacement; glass over compass broken; emplacement badly damaged
2-7 MG Cal .30 M1917A-1 & Rifle	Dug-in Rifle in emplacement	625	Light to MG Light to Moderate to Rifle	Rifle moderate; stock broken; blown to rear of emplacement; MG severe; water jacket broken from receiver; tripod undamaged; MG blown 33 ft.
2-8 MG Cal .50 AA		650	Light-Moderate	Moderate; paint burned off; tripod broken; unit thrown 101 ft.
2-9 MG Cal .50 AA & Rifle	Dug-in Rifle inside emplacement	650	Light to MG Rifle undamaged	Unit upset; paint burned off; sandbag emplacement partially destroyed; rifle stock broken
2-10 (Void - Cancelled by CMC 211644Z 1955)				
2-11 Tractor TD-14	Side-on Dug-in	750	Light	Undamaged operational

UNCLASSIFIED
UNCLASSIFIED

APPENDIX 1 TO ENCLOSURE (2), REPORT OF EXERCISE DESERT ROCK VI - MARINE CORPS (CONT'D)

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
2-12 Tractor TD-14	Side-on	750	Light-Moderate	Light; paint burned off; muffler puncture; fuel line broken; seatcover burned and torn. No other apparent damage.
2-13 Truck, 2½ ton	Side-on	900	Light-Moderate	Moderate; side scorched; hood and canvas top blown away; seat undamaged; small section of hoops blown away; moved about 8 inches. No damage to wiring. Operational
2-14 Truck, 2½ ton	Side-on Dug-in	900	Light	Light; hood opened; canvas on cab ripped; all portion of hoops broken; operational
2-15 Distillation Unit		950	Light-Moderate	Canvas curtains blown off; paint slightly burned; insulation on wiring heated; no apparent damage
2-16 Water purification unit, portable sand type		950	Light-Moderate	Tank and unit overturned; rubber hose undamaged; fabric hose slightly scorched; front sandbags failed
2-17 Crane shovel power unit, crawler mtd., 3/4 cu yd		1000	Light-Moderate	Light; paint burned off; glass windows broken, operational
2-18 Radio SCR 300	Propped against sandbag	1100	Light-Moderate	Knocked over, no apparent damage

UNCLASSIFIED
UNCLASSIFIED

No. & Item	Pre-shot situation	Distance (yards)	Predicted Damage	Actual Damage
2-19 Radio SCR 536	Propped against sandbag	1100	Light-Moderate	Knocked over no apparent damage
2-20 Telephone EE3	Propped against sandbag	1100	Light	Undamaged
2-21 DR-4(w/wire) on RL-31		1100	Light	Front sandbags failed; undamaged
2-22 DR-4 (w/wire)	Standing	1100	Light	Undamaged
2-23 Reel, CE-11	Propped against sandbag	1100	Light	Undamaged
2-24 Wire Dispenser MX-306G	Propped against sandbag	1100	Light	Thrown 3 feet undamaged
POSITION NUMBER 3				
3-1 Manikin(Utility uniform)	Standing facing Ground Zero	1900	Front of uniform destroyed	Manikin blown over; no damage to articles of uniform
3-2 Manikin(Utility uniform)	Prone face down, head toward GZ	1900	Shoulders of coat destroyed	Undamaged
3-3 Manikin(Utility uniform)	Prone face down in slit trench, head toward GZ	1900	Legs of trousers destroyed	Undamaged

UNCLASSIFIED

No. & Item	Preshot situation	Distance (yards)	Predicted Damage	Actual Damage
3-4 Manikin(Utility uniform)	Standing facing GZ	1900	Front of uniform scorched	Undamaged; manikin toppled
3-5 Manikin(Khaki uniform)	Prone face down head toward GZ	1900	Shoulders of shirt scorched	Undamaged
3-6 Manikin(Utility uniform, body armor & helmet)	Standing facing GZ	1900	Nylon of body armor destroyed	Manikin toppled; uniform articles undamaged
3-7 Manikin(Arctic)	Standing facing GZ	1900	Front of uniform destroyed	Fur on hood and felt on gloves slightly singed; nylon pants melted and shreaded on exposed side; regular cloth blouse undamaged
3-8 Manikin(field winter uniform)	Standing facing GZ	1900	Front of uniform destroyed	Front of blouse and legs of trousers melted and shreaded; nylon uniform showed definite signs of being affected by thermal at this range
3-9 Manikin(field winter uniform)	Prone face down head toward GZ	1900	Shoulders of uniform destroyed	Undamaged
3-10 Sandbags	Filled, stacked in pyramid, with white pine 2"x4" through apex	1900	Partial failure of sandbags; white pine charred	Sandbags singed; white pine lightly scorched

UNCLASSIFIED
UNCLASSIFIED

No. & Item	Preshot situation	Distance (yards)	Predicted Damage	Actual Damage
POSITION NUMBER 4				
4-1 Manikin(Utility uniform)	Standing facing GZ	2300	Uniform scorched	Undamaged
4-2 Manikin(Khaki uniform)	Standing facing GZ	2300	Uniform severely scorched	Undamaged
4-3 Manikin(Utility uniform, body armor & helmet	Standing facing GZ	2300	Nylon of body armor scorched	Undamaged
4-4 Manikin(Arctic uniform)	Standing facing GZ	2300	Uniform scorched	Undamaged
4-5 Manikin(Field winter uniform)	Standing facing GZ	2300	Uniform scorched	Undamaged
4-6 Pup Tent	Long axis toward GZ	2300	Scorched and blown down	Collapsed; no poles broken or canvas torn
4-7 Sandbags	Filled, stacked in pyramid, with white pine 2"x4" through apex	2300	Sandbags and white pine scorched	Undamaged or marred
POSITION NUMBER 5				
5-1 Manikin(Utility uniform)	Standing facing GZ	2800	Undamaged	Undamaged

UNCLASSIFIED
SECRET RESTRICTED DATA
UNCLASSIFIED
SECRET

No. & Item	Preshot situation	Distance (yards)	Predicted Damage	Actual Damage
5-2 Manikin(Utility uniform with poncho)	Standing facing GZ	2800	Poncho possibly scorched	Undamaged
5-3 Pup Tent	Long axis toward GZ	2800	Undamaged	Undamaged
5-4 Poncho	Two slit tronches filled with paper and covered with chicken wire, one covered with poncho	2800	Paper in uncovered trench will burn whereas poncho covered trench will be damaged	Undamaged
5-5 Sandbags	Filled, stacked in pyramid, with white pine 2"x4" through apex	2800	Little or no damage	Undamaged

In addition to the displays outlined above a test was conducted to determine the effects of an atomic explosion on sandbags. A filled sandbag, slanting on end, was placed every 25 yards from 700 yards to 1000 yards and every 50 yards from 1050 to 2800 yards from Ground Zero.

The following effects are submitted:

700 yards to 925 yards: Sandbag completely destroyed. Sandbag badly scorched and burned, torn and ripped open and contents scattered.

925 yards to 1150 yards: After about 950 yards a mound of dirt, starting small and increasing in size and height, began to appear. This mound of dirt became larger and showed more of its original shape as the distance increased from Ground Zero. The sandbags were scorched and burned in a lesser degree and the rips became small. Almost without fail the rip on the sandbag appeared down the center of the side of the sandbag facing ground Zero.

UNCLASSIFIED
UNCLASSIFIED

1200 yards: Sandbag scorched and ripped on side facing Ground Zero. Dirt in sandbag generally maintained the shape of the original sandbag

1250 yards: Start or end of sandbag failure. Threads of front side of sandbag were burned but not broken. Original shape maintained. Sharp blow on facing of sandbag broke the threads of the bag.

1300 yards: Deep scorch on facing side failed to break threads of the bag.

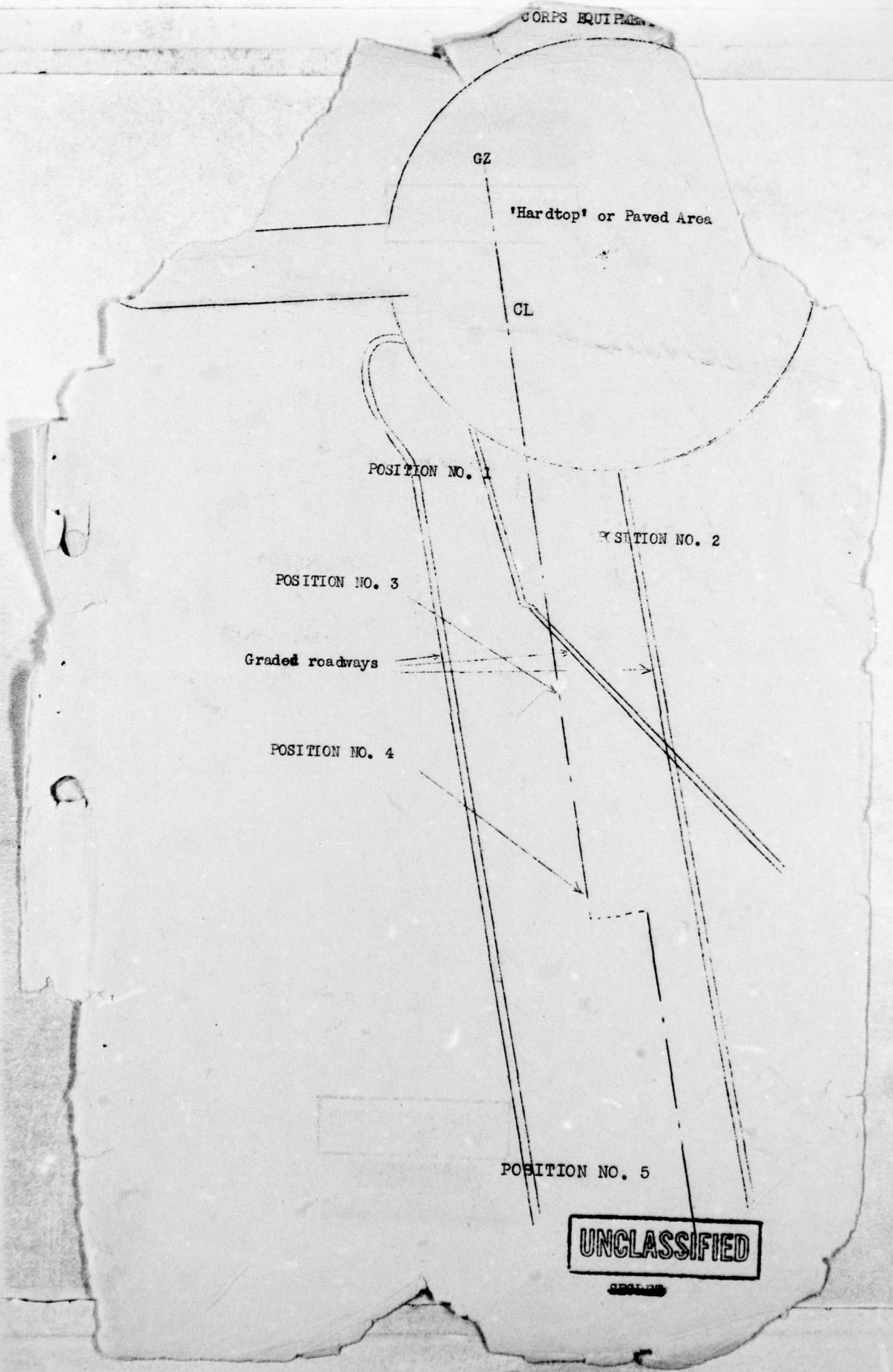
1350 yards: Facing side discolored by scorch.

1400 yards: Facing side singed.

1450 yards: Varying degrees of singe.

UNCLASSIFIED

UNCLASSIFIED


CORPS EQUIPMENT
GZ
'Hardtop' or Paved Area
CL
POSITION NO. 1
POSITION NO. 2
POSITION NO. 3
Graded roadways
POSITION NO. 4
POSITION NO. 5
UNCLASSIFIED