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By DM LSC Date 8/15/05

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This document consists of 24 pages

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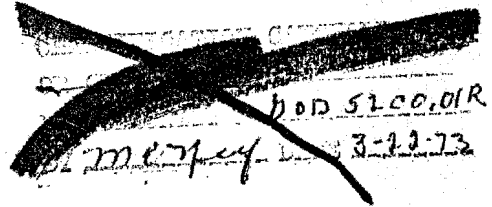
COLLECTION R6 326, 51-58 Secretary

BOX No. 183 (NN3-326-93-010)

FOLDER MR 4A 7 Redwing Vol.



DEPARTMENT OF DEFENSE
MILITARY LIAISON COMMITTEE
P. O. BOX 1814
WASHINGTON 25, D. C.



April 27, 1956

Dear Mr. Strauss:

Inclosed is a letter from the Chief of Naval Operations which transmits material for briefing foreign observers at Operation REDWING. The portion of the briefing being prepared by Dr. Ogle, Deputy for Scientific Matters, Joint Task Force SEVEN, is not inclosed. I understand that this material is being cleared informally with members of your staff and will be submitted formally at a later date.

I do not believe any of the briefing material inclosed with the Chief of Naval Operations' letter contains Restricted Data. Even if it should involve Restricted Data, such Restricted Data would be, I think, of a type clearly transmissible to the United Kingdom and Canada.

Concurrence of the Atomic Energy Commission in the use of the inclosed material in briefing foreign observers at Operation REDWING is requested.

Sincerely yours,

/s/

Herbert B. Loper
Chairman

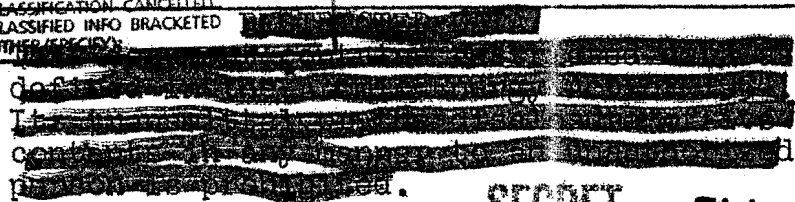
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CNO ltr, 24 Apr 56,
w/Incl.

Honorable Lewis L. Strauss
Chairman, Atomic Energy Commission

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
SINGLE REVIEW APPROVED BY <u>DOE 5650-2B</u>	<input checked="" type="radio"/> CLASSIFIED INFO CANCELLED
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DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>08/27/01</u>	DETERMINATION (CIRCLE NUMBER(S))
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NAME: <u>William A. Hennessy</u>	<input type="radio"/> CLASSIFICATION CHANGED TO
2ND REVIEW DATE: <u>11/19/01</u>	<input type="radio"/> CONTAINS NO DOE CLASSIFIED
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NAME: <u>William A. Hennessy</u>	<input type="radio"/> CLASSIFICATION CANCELLED
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This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure is subject to Administrative and Criminal Sanctions.

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By DM LSC Date 8/15/05

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DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON 25, D. C.

April 24, 1956

FROM: Chief of Naval Operations
TO : Chairman, Atomic Energy Commission
VIA : Chairman, Military Liaison Committee

SUBJ: Transmittal of Proposed Briefings for Canadian - UK -
PJBD Representatives in the Pacific Proving Ground

Ref: (a) Atomic Energy Act of 1954
(b) Agreement between the Government of the United States
of America and the Government of Great Britain and
Northern Ireland for Cooperation Regarding Atomic
Information for Mutual Defense Purposes
(c) Agreement between the Government of the United States
of America and the Government of Canada for Cooperation
Regarding Atomic Information for Mutual Defense
Purposes

Encl: (1) Assistant to the Secretary of Defense (Atomic Energy)
Memo of 9 April 1956, with two (2) copies of Enclosure
thereto

1. Enclosure (1) forwarded to the Director, Atomic Energy
Division, Office of the Chief of Naval Operations, a proposed
briefing for foreign observers at Operation REDWING, and requested
clearance of the briefing under the State - Defense Military
Information Control Committee Procedures and for the joint
determination with the Atomic Energy Commission as to transmissi-
bility.

2. The subject briefing has been reviewed by the Navy,
Army and Air Force members of the State - Defense Military
Information Control Committee and found to be releasable under
the policies governing the disclosure of classified military
information to foreign governments.

3. It is considered that this exchange of Restricted Data
information is transmissible under the pertinent sections of
references (a), (b) and (c). Concurrence of the Atomic Energy
Commission in the transmissibility of this information is
requested.

4. Attention is invited to the recommendation contained
in enclosure (1) that this matter be handled on an Urgent basis.

/s/ Courtney Shands
By direction

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OFFICE OF THE SECRETARY OF DEFENSE
WASHINGTON 25, D. C.

April 9, 1956

MEMORANDUM FOR THE DIRECTOR, ATOMIC ENERGY DIVISION,
OFFICE OF CHIEF OF NAVAL OPERATIONS

SUBJECT: Foreign Observers at Operation REDWING

1. Reference is made to the memorandum for the Chairman, Joint Chiefs of Staff, from the Deputy Secretary of Defense, dated 9 February 1956, and the memorandum for the Commander, JTF-7, from the Assistant to the Secretary of Defense (Atomic Energy) dated 4 April 1956, copies of which have been furnished you previously.

2. The above references describe the foreign observer program for Operation REDWING along with procedures for the preparation of suitable briefings to be given the participants. The Deputy for Air, JTF-7 has submitted to this office copies of the briefings for clearance, which are forwarded herewith for clearance under the State-Defense Military Information Control Committee procedures for the disclosure of classified defense and atomic information to foreign nationals, and for the joint determination with the Atomic Energy Commission as to transmissibility, if required.

3. It is understood that the scientific aspects of the briefing is being prepared by Dr. Ogle, Deputy for Scientific Matters, JTF-7, which will be cleared informally through the Atomic Energy Commission first. You will want to insure that this part of the briefing is properly cleared under SDMICC procedures also.

4. I recommended that this matter be handled on an urgent basis in view of the limited time available and the fact that the Atomic Energy Commission concurrence in this program was made subject to subsequent agreement in this area.

/s/ Herbert B. Loper
Assistant to the Secretary
of Defense (Atomic Energy)

Incl:
Memo fr Deputy for Air, JTF-7,
dtd 4/3/56. w/3 Incls.

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HEADQUARTERS
JOINT TASK FORCE SEVEN
WASHINGTON 25, D. C.

April 3, 1956

MEMORANDUM FOR: Colonel D. L. Crowson
Military Liaison Committee
Office of the Secretary of Defense
Rm 3E1028, The Pentagon

SUBJECT: Transmittal of proposed briefings for Canadian-U.K.-
PJDB Representatives in the Pacific Proving Ground

1. Please find inclosed (Inclosures 1, 2, and 3) copies of the proposed briefings to be given to the above named individuals on their visit to the Proving Ground. You will note that in the briefing to be given by the undersigned there are certain charts indicated. These charts are not forwarded herewith, but are in the process of being cleared by representatives of the Atomic Energy Commission for viewing by the news media personnel on shot number one. There will be no restricted data contained therein and it is assumed that if the AEC clears them they will be acceptable for the foreign observers enumerated.

2. This headquarters was notified today that there will be no foreign observers other than the Canadian-U.K.-PJDB personnel; however, we had prepared briefings of an unclassified nature on the strength that at one time there was a requirement for such in connection with the proposed 44 foreign observers and they will be maintained by me in the event some crash requirement arises while we are at Eniwetok.

3. I would appreciate your forwarding the briefings as approved to me as soon as they are cleared. This will undoubtedly be after I have proceeded to the PPG as I am departing the 9th. My address will be:

Deputy for Air
Headquarters, Joint Task Force SEVEN
APO 437, San Francisco, California

/s/ Perry B. Griffith
Brigadier General, USAF
Deputy for Air

3 Incl:

1. Briefing by Gen Griffith
2. Briefing by Gen Macdonald
3. Briefing by Adm Southerland

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OPERATION REDWING

BRIEFING FOR UK - CANADA - PJBD

TEXT

The purpose of this briefing is to acquaint you with the operational concept and organization for Operation REDWING. REDWING is the code name for a series of atomic tests to be conducted in the Pacific Proving Ground this coming Spring and Summer by JTF-7.

Joint Task Force SEVEN, which will conduct REDWING, is the permanent organization established 31 March 1953 by the Joint Chiefs of Staff for conducting atomic tests outside the continental limits of the United States. Prior to this JCS action, overseas tests were conducted by temporary task forces brought together as the need arose. This is the seventh overseas test; previous ones have been under the Army three times the Navy twice, and the Air Force once, REDWING is under the Executive agency of the Navy. Separately, and under different sponsorship, there have been 5 tests in the U.S. at the Nevada Test Site; these mostly of devices of lower yield than those normally detonated overseas. The over-all briefing is classified as SECRET R. D.

Of the six overseas tests, with the exception of WIGWAM all were held in what is now known as the Pacific Proving Ground. WIGWAM, a one-shot under-water detonation, off the coast of Southern California, was of primary interest to the Navy and conducted by them even though operational responsibility rested with JTF-7.

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The Pacific Proving Ground known as the PPG, consists of ENIWETOK and BIKINI Atolls located in the Marshall Islands some 530 miles south of Wake Island. These atolls are occupied the year-around by representatives of the Atomic Energy Commission and by certain small military organizations, one of which is an Air Force unit of 20 officers and 240 men belonging to the Special Weapons Center at Kirtland, AFB.

REDWING is a most ambitious program. It is a combination of test series REDWING and DIXIE. DIXIE was originally planned for the Nevada Test Site, but it was decided to combine DIXIE and REDWING and hold them both in the PPG. This decision has resulted in a program of 15 and possibly 19 shots depending on the results of the first few. The net result, is that we shall fire about three times as many atomic weapons and devices as have ever been fired before during any test in the PPG, and also conduct something on the order of 43 weapons effects tests, and all diagnostic measurements for Los Alamos, UCRL, and Sandia Corporation.

To orient you as to our current organization and relationships within the DOD and AEC, we have prepared this chart. Our Headquarters (point) is located between operations in Washington and it consists of a typical joint staff with about equal representation of Army, Navy and Air Force Personnel. For example, the Naval Deputy and Chief of Staff are Rear Admirals, the Army Deputy is a Major General and I am the Deputy for Air. The Operational strength of the staff consists of 167 personnel, of which 52 are Air Force, 52 Army and 63 Navy.

These task groups (indicate) perform the following functions: Task Group 7.5 is the construction and maintenance task group. Task Group 7.1 assembles and fires the atomic devices and makes

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diagnostic measurements of interest to the AEC and to the DOD and is also responsible for conduct of the Weapons Effects Tests. The headquarters of 7.5 and 7.1 are located in New Mexico. Both, as you can see by the dotted line, are under the Scientific supervision of the Atomic Energy Commission, the composition of both being predominantly civilian scientific and instruction personnel. Task Group 7.2 is the Army unit which operates military base support facilities on ENIWETOK Island and provides group security in the PPG. Task Group 7.3 is the Navy Task Group providing primarily the surface transportation required to conduct these tests, also a squadron of P2V's to conduct security and safety patrols and a squadron of Marine Helicopters to provide airlift at BIKINI. Task Group 7.4 is the Air Task Group. It provides the major portion of the airlift in the PPG and performs most of the air missions essential to our success. I will discuss these missions further in a few minutes.

The mechanics of operation of JTF-7 is as follows: After preliminary planning by the AEC and the DOD, we receive our directive from the JCS to conduct an overseas test. Then on 15 March, the Chairman of the AEC designated Commander JTF-7 as the senior AEC representative in the proving ground for operational control of civilian forces in addition to the military units he (CJTF-7) commands. This date coincides with the beginning of the operational period and signaled the start of our test series. Actually it is also the same date the fissile material leaves United States shores.

During the preceding months of preparation and planning, the Armed Forces Special Weapons Project, USAF, has compiled the DOD Weapons Effects Test Programs as developed by the Services - the AEC has fabricated its devices and performed

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essential construction and the military Services have provided to us the military task groups for organization and training in accordance with our planning criteria. After all this preparation we are now executing our mission as effectively and expeditiously as possible. We will return forces and equipment to supplying agencies at the earliest date after completion of REDWING, after which our headquarters resumes planning for any ensuing test series.

The first shot of operation REDWING is scheduled for 1 May*. Succeeding shots will be fired as rapidly as devices can be made ready, as weather conditions will permit and as crews and aircraft are able to perform under varying conditions. We hope to fire the last shot in late August. To meet this schedule movement of our major elements to the forward area began in February. The Air Force task group headquarters for example, is in place now. We - JTF-7 - will establish our Headquarters at Parry Island ENIWETOK Atoll, 15th of April. We hope to have completed our roll-up operations by end of 1956.

For those of you who may not be familiar with the PPG, here is a chart which shows ENIWETOK and BIKINI Atolls, a part of the proposed danger area, and the air control area. To take advantage of existing weather, we have established the capability of firing either a large yield device on BIKINI or a small yield device on ENIWETOK on any one day. Conditions often exist when wind vectors may be unfavorable for the fall-out pattern of a large yield device at BIKINI but entirely satisfactory for the firing of a small yield device at ENIWETOK. This we refer to as our 2-Atoll-concept.

All of us are interested in achieving the greatest results at the lowest cost. None the less, the operation will be

* Wording to be changed as the operation progresses.

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expensive. Here is a chart that shows in summary what our effort will represent in personnel and major items of equipment: (discuss)

The cost of the Operation will approach 150 million dollars. This cost will include the pay of all personnel, and the cost of construction required for Operation REDWING. It will not include the cost of normal items of military supply, nor will it include the cost of fissile material or atomic and thermonuclear devices.

At this point I will discuss in greater detail the organization and mission of the Air Force task Group. Here is the major breakdown of this group, the number and types of aircraft assigned, and a resume of major functions. The groups headquarters was established at Kirtland AFB, where the organization manned and trained its subordinate elements and where it came under us for planning purposes until it moved here in March. Many of the supporting units did not report for operational control until we moved to the forward area. Examples of these include the TAC, SAC, and MATS elements. The group is divided into three units, the test support unit, test aircraft unit, and test service unit. The aircraft and missions assigned to each are as follows: (Read from chart)

I am sure all of you appreciate the supply, maintenance, and operational complexities associated with this great variety and number of large and small aircraft. Getting all of them crowded onto ENIWETOK Atoll represents a considerable planning feat in itself as you can see from this airdrome layout on ENIWETOK. (discuss) The C.O. of 7.4 came under our positive operational control 15 March in the PPG.

Up to this point, I have given you a broad picture of our organization, missions, and operational concept of Operation

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REDWING. Of equal importance along with the development of atomic weapons, is the acquisition of data concerning the effects these weapons may produce. A very comprehensive weapons effects test program has been developed within the Department of Defense. Now, this chart gives 8 major types of measurements which we shall make during the operation. This represents an estimated expenditure of 15-1/2 million dollars worth of research and development funds. In very general terms, these programs will serve to provide the Department of Defense with this kind of data:

PROGRAM I

Blast and Shock Measurements:

Fundamental research to determine the actual release of blast and shock energy and the drag forces induced when an atomic weapon is detonated. This program has been further subdivided into 10 projects. Measurements are made principally by using gauges near the surface of the earth at varying distances from ground zero, by firing rockets around the burst, by shock photography, wave propagation, and dropping parachuted canisters over ground zero.

PROGRAM II

Nuclear Radiation and Effects:

This is a most important program since it will take measurements related to fall-out and radioactive contamination including counter-measures. It has been subdivided into 14 projects. Data is acquired generally by use of film badges and counting devices located over a vast area around the target; placement of two instrumented liberty ships down wind, firing instrumented rockets into the stem and cloud, and cloud sampling by penetration with manned aircraft.

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PROGRAM III

Structure and Equipment:

This will measure structural responses to the various kinds of atomic energy released by a bomb or similar device on buildings of several different types.

PROGRAM IV

Bio-Medical

In this program, the school of Aviation Medicine and other interested agencies will take measurements of flash blindness, thermal radiation or burning effects, on animals such as rabbits, monkeys, and pigs.

PROGRAM V

Aircraft Structures

Here is a measurement program of dynamic interest to the Air Force. In it, we position in space, as close to the fireball as predicted thermal levels will permit, our weapons effects test aircraft. Positioned by Radar and Raydist these highly instrumented aircraft will receive from 90 - 100% allowable blast, gust or thermal effect. We will have voice and visual control of these and other aircraft in the test area through our air operations center at ENIWETOK and in the combat information center of the Commander's flagship when afloat. Following each shot, analysis of the observations will enable our effects technicians to determine within 200 - 300 feet precisely where each aircraft was at shot time. This is rather remarkable since some are travelling at a high rate of speed - in the case of the F-101A, on the MACH.

All of these observations with effects test aircraft are made to help define the delivery capabilities of each.

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PROGRAM VI

Test of future Service Equipment and Materials:

This program has been broken into 2 projects. The first project is accurate location of an Electro Magnetic Pulse Source with stations 300 to 5,000 miles distant. The second is the measurement of the Effects of Atomic Detonations on the Ionosphere. The objective of the first part of this program is to determine ground zero of a release anywhere on the earth by electromagnetic signals originating from a nuclear detonation. As a further requirement, an attempt to obtain yield data by analysis of the pulse will be made. Stations will be located in the Pacific and at various locations in the U.S.

The second part of this program (originally program VII which you can see has been scrubbed), is to investigate the physical properties of the ionosphere and what reorientation if any of the earth's magnetic field is occasioned by a MT blast.

PROGRAM VIII

Thermal Radiation and Effects

The purpose here, is to make basic measurements of radiant power as a function of time, and the related effects on various structures materials, aircraft, and machinery. In general these measurements are made by instrumenting panels of differing materials at known distances from ground zero for later analysis.

PROGRAM IX

General Support:

This program includes technical photography from aircraft of the growth and dispersal of the atomic cloud on all MT shots: documentary photography as required by the AEC and DOD; Special

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meteorological measurements required in other tests: the provision of special timing signals for all tests; and in general, as the title implies, a support not otherwise specified before.

Here is a sample array of 20 aircraft that might be put up for any one shot. (discuss)

Gentlemen: What I have given you is a general discussion of our missions and the way we intend to accomplish them.

[REDACTED]

DOE
6/16

Since CASTLE we have advanced considerably in forecasting central Pacific weather. Furthermore we have taken every conceivable step to obviate such an unfortunate situation as that which occurred on CASTLE.

I should like to summarize what we expect to gain from firing these tests as follows:

If all of the devices on OPERATION REDWING perform according to theoretical computations, we can expect (1) weapons of smaller size with greater efficient use of special nuclear material -- to enter stockpile in the very near future. (2) Something we can use as a nuclear warhead in the various types of missiles not now equipped with them. (3) Considerable advancement in our knowledge of the effects of nuclear detonations. (4) Information on which to base resultant systems and methods of defense against them.

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SAFETY MEASURES-OPERATION REDWING REMARKS
PRESENTED AT OFFICIAL OBSERVERS BRIEFING
BY MAJOR GENERAL JOHN C. MACDONALD

I. INTRODUCTION

Operation Redwing will have many international implications. You are familiar, I am sure, with the unfortunate situation produced by the contamination of Marshallese natives by the first shot of Operation Castle on 1 March 1954. For the past two years, Joint Task Force SEVEN has been studying new techniques in the forecasting of fallout patterns in order that the situation which developed in March 1954 will not occur again. In the next few minutes I will discuss the safety measure which will be taken during Operation Redwing.

II. IMPROVED WEATHER DATA

Any forecast of fallout patterns is only as good as the weather information available. Further, meteorology is an inexact science at best. Since there are very few weather reporting stations which operate on a year-around basis in the Central Pacific, it has become necessary to establish additional weather reporting stations which will operate during the periods of atomic test series. The weather reporting network which will be utilized for the coming operation will be greater than on any previous operation at the Pacific Proving Ground. (Show weather station chart.) This chart shows the weather reporting network to which I have referred. Data from all of these 50 stations will be utilized in preparing weather forecasts.

III. NEW WEATHER TECHNIQUES

1. Tropical Meteorology. The Task Force has continued to support an extensive study of tropical meteorology. This research has been conducted in Honolulu under the direction of Dr. C. E. Palmer of UCLA. Dr. Palmer's group, including a number of Task Force personnel, has developed considerable information concerning the specialized field of tropical meteorology which will be very useful in making weather forecasts at Eniwetok. One specific area which has been studied has to do with "vertical components." Wind currents do not move necessarily in horizontal planes. Previously, it has not been possible to include vertical components of winds in the calculation of fallout patterns. We believe that on Operation Redwing these vertical components can be considered so as to make fallout pattern forecasts more reliable.

2. The radioactive clouds of very high-yield weapons rise above 100,000 feet. The wind structure at these altitudes is important in forecasting fallout patterns. During Operation Redwing the Task Force plans to use improved equipment to obtain wind data at high altitudes:

a. Better balloons have been developed which will give us much more data above 60,000 feet than we have obtained in the past.

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b. We plan to use LOKI missiles which will be fired from destroyers. These missiles are expected to reach altitudes of 130,000 feet. They will eject at selected altitudes strips of metal foil which can be tracked by the radar equipment on the destroyer. If this technique is successful we will have wind data above 100,000 feet for the first time.

IV. IMPROVED FALLOUT FORECAST

A fallout prediction unit was used during Operation Teapot at the Nevada Test Site last Spring. This group of experts made important improvements in the forecasting of fallout patterns. We will have a similar fallout prediction unit at the Task Force Headquarters during Operation Redwing. We feel that we can make much more reliable forecasts of fallout patterns now than we could two years ago. The data obtained during Operation Castle has permitted us to develop models of the clouds produced by megaton yield weapons. Therefore, we will be using megaton cloud models to forecast fallout patterns of new megaton weapons for the first time.

The National Bureau of Standards has produced a fallout computer device for the U.S. Weather Bureau. The idea for this fallout computer was suggested by Dr. Lester Machta of the Weather Bureau. Several of Dr. Machta's assistants, with at least one of his new machines, will be with us in the fallout prediction unit during Operation Redwing. Another type of optical fallout pattern computer has been developed at Los Alamos, and one or more of these optical computers will also be available to us in the fallout prediction unit. Lastly, a third type of fallout computer is being developed by Sandia Corporation.

V. CONCLUSION AS TO WEATHER AND FALLOUT FORECASTING

We are confident that improved weather techniques and the enlarged weather reporting network, together with added experience and new fallout computers we will be able to make more accurate and more reliable forecasts of fallout patterns than we have been able to make on previous overseas operations. Moreover, since Castle showed us how tremendous the lethal fallout patterns of megaton weapons can be, we will not fire under conditions that are, in any way marginal.

VI. DANGER AREA

The Task Force has requested the AEC to effect the establishment of a Danger Area for Operation Redwing. The new Danger Area is shown on the chart. (Show Danger Area Chart.) The AEC has obtained the approval of the Department of State for this proposed area. This Danger Area is established as shown, and an announcement of the New Danger Area has been made. The Department of State has notified concerned foreign governments through State Department channels. The Chief of Naval Operations has insured that appropriate Notices to Mariners and Notices to Airmen have been given wide distribution, including distribution to appropriate foreign and international agencies.

The Danger Area became effective on 20 April. The Danger Area will be kept in force until after the last shot, which may

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be as late as 1 September. It will not be possible to open this area to transient shipping between shots, since it is impossible to predict more than two or three days in advance when we will be able to detonate the next shot.

A shot will not be fired unless the forecast of the pattern of significant fallout is entirely within the Danger Area. Navy P2V patrol aircraft will start searching this area after 20 April and will continue until after the last shot. These patrols, which are made for the purpose of discovering any transient shipping, will be intensified before each shot, especially in the areas of the forecast fallout.

If a transient ship is discovered in the area of forecast fallout for any shot, that shot will not be detonated until the area is cleared. The search planes will attempt to advise the master of the transient ship to leave the Danger Area, and the plane commander will indicate a course which will permit the ship to clear the area as soon as possible. If the search plane cannot communicate with the transient ship, the search plane commander will notify Task Force Headquarters by radio. A destroyer or other ship will be dispatched to communicate to the transient vessel by radio, by flag signal, or otherwise, a request to leave the Danger Area. In the event the master of the transient ship refuses to leave the area, this information will be passed to Admiral Hanlon, Task Force Commander, who will request advice from CINCPAC and CNO, meanwhile postponing any detonations.

VII. RADSAFE MONITORING STATIONS

The Task Force will place qualified RadSafe monitors with equipment on a number of inhabited atolls to the east and south of the Pacific Proving Ground. This was not done on Operation Castle. The special RadSafe monitoring stations, operated by trained personnel, equipped with two-way radio communications and radiac instruments, will be established on WOTHO, UJELANG, UTIRIK, RONGERIK, KUSAIE, KAPINGAMARANGI, TARAWA, KWAJALEIN AND RONGELAP, (shown on RadSafe monitoring chart in red dots). In addition, weather stations on MAJURO, PONAPE, WAKE, MIDWAY, JOHNSTON, TRUK, GUAM and IWO JIMA (shown in blue dots) will be equipped with radiation detection and measuring instruments. These weather stations will report radiation intensities to the Task Force.

The trained RadSafe monitor personnel at the populated atolls will be able to advise the natives, through interpreters, of safety measures they should adopt if hazardous fallout occurs. The RadSafe personnel can assist the native inhabitants until they are evacuated, if this becomes necessary. The RONGELAP natives who were contaminated on Operation Castle suffered some skin lesions, loss of hair, and temporary blood changes because of the contamination they received. If they had been advised to wash themselves repeatedly in the lagoon at RONGELAP after the dangerous fallout began, they probably would not have suffered any visible ill effects.

Joint Task Force SEVEN has developed plans for the evacuation of natives from inhabited islands, should the situation demand such action.

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VIII. MARINE BIOLOGY SURVEY

An extensive program for the study of the contamination of Pacific Ocean areas is planned. This ocean study program may be considered in three parts:

a. Weapons Effects Test. Program 2 of the weapons effects test effort will be concerned with fallout. Project 2.62 of this program is known as oceanographic analysis of fallout contours. This project will be conducted by Scripps Institute of Oceanograph. Fast ships will enter the fallout area as soon as possible to take samples for analysis and to measure vertical penetration of the contamination over wide sea areas. In addition, the Scripps vessel "Horizon" will obtain numerous water and plankton samples for analysis.

b. Radiobiology Marine Survey. The Division of Biology and Medicine of the AEC has recently requested that a ship be provided to make two cruises in the vicinity of the Pacific Proving Ground. The first cruise will be made about a month after the first shot. The second cruise will be made after the last shot. Each cruise will traverse the sections indicated on the large chart. (Radiobiological Survey Chart) During these cruises, samples of plankton, fish and water will be collected every 25 nautical miles at varying depths. The Division of Biology and Medicine believes that the radiobiological survey of marine life will be of great importance as a basis for factual public statements concerning the extent of radioactivity in the sea and marine life near the PPG, and for advice to both Japanese and American fishing interests.

c. Other Marine Surveys. The International North Pacific Fisheries Commission is planning a large operation this summer to study the distribution of salmon and other fish. Ships, both commercial and research, from Japan, Canada and United States will participate. None of these ships will enter the area north and northwest of the Pacific Proving Ground, outside the Danger Area, where the greatest fallout intensity was noted after Operation Castle. Our information on this International Survey was obtained from Dr. Boss, Division of Biology and Medicine, AEC.

IX. POST SHOT AERIAL SURVEYS

After each shot of the Redwing series, aircraft will track the radioactive cloud so that we will know if unexpected wind changes are carrying significant fallout into populated areas. In addition, aircraft with monitoring equipment will fly over populated areas south and east of the Pacific Proving Ground to detect any contamination on the land masses and on the surface of the sea. This area will be searched after each shot to make sure that no contamination has fallen near the populated atolls east of Bikini. The heavy line shows flight pattern ABLE for one survey which will be made after each shot. Other flight patterns have been prepared and will be flown as the situation requires.

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X. SUMMARY

We believe that the improved weather and fallout forecasting techniques which I outlined will insure that all the significant fallout will occur within the Danger Area. We also believe that we will learn promptly of any significant fallout which might possibly occur outside the Danger Area. Finally, we believe that we are making adequate arrangements for the proper protection of native populations in the event of an emergency.

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NAVY PARTICIPATION

It is readily apparent that the conduct of an operation such as REDWING requires a tremendous amount of support by ships and boats. The Navy provides this support. Also, the Navy is called on to furnish certain air support which it is best fitted to provide. In the next few minutes I would like to outline briefly how the Navy units are employed.

The Navy units are under the command of Rear Admiral J. H. Wellings, USN, the Commander of the Navy Task Group (TG 7.3).

The Naval support can be considered as being in two categories, i.e., logistical and operational.

Broadly speaking, the logistical support consists of:

- a. Providing surface transportation for personnel and material between Atolls and between islands of the Atolls. Also helicopter transportation at Bikini.
- b. Providing accommodations afloat for personnel of TG 7.1, 7.4, and 7.5 during Bikini events.
- c. Establishment and assisting in the support of off-atoll projects.
- d. Providing surface transportation for fuels, food, and materials from the continental United States.

Operational support consists of:

- a. Security and safety patrols.
- b. Direct participation in and support of scientific programs.

In the interest of efficiency and economy, each unit is performing several missions. The employment of these ships during this operation is quite different from the normal Service use for which they were designed. Accordingly, much additional equipment has been installed and extensive modifications have been made to some ships.

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This chart shows the major Naval units assigned to CJTF SEVEN.

(SHOW CHART)

The ESTES (AGC-12) is designed especially as a command ship and therefore is equipped with extensive communication facilities to accommodate the heavy requirements of this assignment. It also has a complete CIC for simultaneously controlling the many aircraft that will participate in events at Bikini.

The ESTES serves as:

- a. The command ship for CJTF SEVEN when he embarks for the Bikini shots.
- b. Flag ship of CTG 7.3 (Commander, Navy Task Group).
- c. Headquarters for CTG 7.4 (Commander, Air Task Group) when he is embarked during the Bikini shots.

The CURTISS (AV-4) is a seaplane tender. The ship is especially equipped to give it the capability of serving as a control and firing station for events at Bikini. It has extensive shops and magazines which enable it to transport and handle special materials connected with test weapons and devices.

The BADOENG STRAIT (CVE-116) is an escort aircraft carrier. Marine Helicopter Squadron 363 operates from the BADOENG STRAIT. This helicopter squadron provides air transportation between islands of Bikini Atoll. This is the safest and most practical method for reentry to the area following a detonation. The squadron also provides transportation between ships when Task Force personnel are embarked. In addition to having the helicopter squadron, the carrier has a master raydist station installed for the tracking and positioning of planes participating in events at Bikini.

The CATAMOUNT (LSD-17) is a dry-docking ship. The primary mission of the CATAMOUNT is the up-keep and caretaking of the

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large Task Group 7.3 boat pool which operates at Bikini. This boat pool provides surface transportation in the Bikini lagoon. In addition, the CATAMOUNT is used to transport shot barges from Eniwetok Atoll to Bikini Atoll. The ship also has a telemetering station installed to receive information transmitted to it by instruments in the test array. The LSD was used extensively in the construction of camps and weather stations on the various islands throughout the area.

The AINSWORTH is a transport used for the housing of the construction personnel of Task Group 7.5 during events at Bikini. The Navy obtained the AINSWORTH from MSTs for this operation as this type of ship is well suited to accommodate large numbers of personnel.

The destroyers KYES (DD-787) and SHELTON (DD-790) are part of the safety and security force. The danger area must be free from ships during an event. These ships operate in coordination with patrol aircraft to insure that the danger area is clear. These destroyers are equipped to fire special rockets to obtain high altitude weather sounding.

The MCGINTY (DE-365) and SILVERSTEIN (DE-534) are also part of the safety and security force. These two ships have special equipment installed which will be used in connection with the fallout survey in Program 2. The equipment enables them to collect water samples and make various fallout measurement:

The KNUDSON (APD-101) which is a fast destroyer transport has the primary mission of furnishing fast transportation for personnel and high priority material, such as water samples, from Bikini to Eniwetok. This will be especially important if the aircraft landing strip at Bikini should become contaminated

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and its use be prevented immediately after a shot. In addition, the APD also has installed in it a telemetering receiving station. This station will receive information transmitted to it from rockets which are fired in connection with a detonation.

The SIOUX (ATF-75), CHICKASAW (ATF-83), LIPAN (ATF-85), and ABNAKI (ATF-96) are tugs which are used for tending barges, lighters and rafts, and for other general utility towing. The SIOUX (ATF-75) is especially equipped for handling skiffs and other floats which are used as fallout collecting platforms.

LST 306 and LST 618 were obtained by the Navy from MSTs for use in the PPG. These ships provide much of the surface lift between Eniwetok and Bikini Atolls. Their design makes them particularly suited for loading and unloading automotive equipment and materials on the beaches of the various islands used during the Operation.

YAG 39, YAG 40, and LST 611 are ships specially equipped for entering areas of heavy fallout. These ships have control stations which have special protection for the personnel aboard. This enables them to remain and operate in areas which would be prohibitive for ordinary ships. These ships are engaged primarily in fallout study programs.

Patrol Squadron ONE (VP-1) is based at Kwajalein. This squadron conducts patrols and searches in the forecast fallout area to insure that no ships are in the danger area during an event. These patrols are conducted in conjunction with the destroyers and destroyer escorts mentioned above. There are several planes attached to the squadron which are especially equipped for measuring fallout contaminated areas. These planes will conduct flights over contaminated areas and will enable us to accurately plot the areas of fallout.

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There are numerous other craft provided by the Navy such as covered barges, barges equipped for helicopter landings, and small boats equipped with many different kinds of special instruments and equipment.

Under special arrangement between the DOD and AEC a large number of boats are furnished by the Navy to Holmes and Narver, the AEC Contractors in the PPG. During the operational period these boats comprise the boat pool of TG 7.5 and are used for surface transportation at Eniwetok and Bikini Atolls.

A radiobiological survey will be conducted by the Joint Task Force during the Operation. A similar survey will be conducted after the operation is completed. The purpose of this survey is to determine what areas, if any, have been contaminated by the operation and the degree to which they are contaminated. The WALTON (DE-361) has been designated to support the first survey. Scientists under the direction of the Division of Biology and Medicine of the Atomic Energy Commission will conduct the survey. The WALTON will have special equipment installed which will provide the means of gathering the scientific data. It is expected that this survey will be of great value in countering unfavorable reaction to the tests which has occurred in certain foreign countries after previous operations like REDWING.

This broadly outlines the employment of the Navy units in the Pacific Proving Ground. Mention should be made of the tremendous support provided by the Naval Station at Kwajalein. Kwajalein is normally under the operational control of the Commander, Naval Air Bases, 14th Naval District, but the station has been directed to assist the Joint Task Force in this operation. As mentioned above, the Patrol Squadron is based at

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Kwajalein. In addition, there is an air search and rescue unit at Kwajalein which has been increased in size for the duration of this operation. The number of transient aircraft which stop at Kwajalein has increased many fold. In order to support the servicing of these aircraft and to provide for the welfare of the crews and passengers, the normal activities at Kwajalein have greatly increased. Also Kwajalein is called upon from time to time to provide amphibious aircraft for trips to outlying islands such as Tarawa or Kusaie.

In conclusion we should remember that the tremendous population in the Pacific Proving Ground requires food; the planes, ships, boats, and automotive equipment require fuels; and the installations require materials for construction and upkeep. The Navy provides transportation for these in ships which regularly visit the PPG. This brief review of the Navy part alone gives an indication of the magnitude of Operation REDWING.

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