COMMANDER JOINT TASK FORCE ONE
USS MT MC KINLEY (AGC 7) Flagship
13 July 1946

Crossroads

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MEMORANDUM:

The following dispatches transmitting respectively the preliminary reports on Test ABLE of the President's Evaluation Commission to the President and the Joint Chiefs of Staff Evaluation Board to the Joint Chiefs of Staff are provided for information. These reports were released in their entirety by the President on 11 July 1946. The texts of the reports given below are complete.

I - REPORT OF THE PRESIDENT'S EVALUATION COMMISSION:

"Dear Mr. President:

"Your Evaluation Commission, divided between positions at sea andin the air, witnessed the first Bikini Test, at 33 seconds after 9:00 A.M. local time on July 1, and has since completed a survey of the damage. The second test, wherein the bomb will be exploded under the water, will in some respects be of even greater interest, for it will have no precedent. The report of your Commission required by its directive of May 18 must await assembly of considerable data deriving from instrumental and photographic measurements and analysis of fission product samples. However, we believe that it lies within the scope of your directive and may be of possible assistance to you, to submit, now, the following brief observations made from the layman's point of view, but with such accuracy as is presently available:

"The organization and execution of the operation was magnificently handled and has commanded our continuous admiration. The bomb was dropped under favorable weather conditions about thirty seconds after the time set. The greatest credit is due Admiral Blandy and the officers and enlisted personnel of both services who, with scientists and other civilians, have served and are serving under him with a display of team work that must be seen to be fully appreciated.

"Their conservatively safe distance from the burst led many observers to entertain an initial opinion that the bomb employed was somewhat under par. It is now, however, safe to state that the energy was of the same order of magnitude as in the case of previous atomic detonations, between the highest and the lowest of this bomb's three predecessors.

"The accuracy of the drop was such that the explosion occurred within the area included within the allowance for the probable error of the elevation of drop, and detonation was probably within one hundred feet of the chosen altitude. Nevertheless the explosion actually occurred several hundred yards west of a point directly above the target ship Nevada, and therefore entirely west of the closely spaced array of capital ships.

"There were ninety targets anchored in the lagoon when the bomb exploded. These were not in battle formation but were placed in positions to give the largest amount of desired technical information with especially close concentration around the center target point. Those ships anchored a mile or more from the point of drop largely escaped injury. Those within a mile were sunk or suffered damage varying with the distance from the point of detonation

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and with the type of ship construction. On explosion, a destroyer and two transports sank promptly. A second destroyer and the Japanese Cruiser Sakawa sank within 27 hours. The Light Carrier Independence was gutted with fire and resultant explosions. The Submarine Skate was heavily damaged and later towed away. All of these were near the point of explosion. The other ships including the only two capital ships which were within one half a mile of the detonation received damage that would require more or less complete overhaul and in most cases repair at major bases before they could again be used for combat. A study of this damage will point the way to changes in design which should minimize the damage from blast and heat. Beyond these ships there was extensive damage to superstructure, radar and fire control. Had the ships within the damage area been manned, casualties and psychological injuries would have required a large percentage of replacements. Until the readings of complex instruments and the future life history of animals within the ships have been determined no accurate appraisal of potential damage to human life within the ships can be made.

"No wave or blast damage could be noticed on Bikini Island which is approximately three miles from the point of detonation.

"We are of the unanimous opinion that the first test amply justified the expenditure required to conduct it and that the second test is equally desirable and necessary. You made a wise decision when you approved the plans for these tests and they have been carried out with extraordinary skill, diligence and ingenuity. The test just completed has again proven that the atomic bomb is a weapon of terrific power when used on land or sea.

Most respectfully yours,

CARL A. HATCH, Chairman
For the Committee."

II - REPORT OF THE JOINT CHIEFS OF STAFF EVALUATION BOARD:

"In compliance with a directive from the Joint Chiefs of Staff dated 27 February 1946, the Evaluation Board presents the following preliminary report of the Atomic Bomb Test A held at Bikini Atoll on 1 July 1946. This report covers general observations only. Detailed evaluation must await full collection and analysis of data from observers and instruments and will be reported at a later date.

"The Members of the Board inspected target ships the day before the test, witnessed the explosion from an airplane 20 miles distant and then approached to within nine miles of the Atoll for a brief view. On the following day, as soon as safety clearance had been received, the members flew to Bikini and began their examination of ship damage. Many photographs have been studied, and military and scientific specialists interviewed, in an attempt to obtain an overall understanding of test results prior to the compilation of all the data.

"From its previous study of the plans for the test, and from its observations in the Bikini area, the Board considers that the test was well conceived and executed by the services in close cooperation with a large civilian staff. It is satisfied that the conditions of the test were well chosen and that the highest skill and ingenuity have been used to obtain a maximum

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amount of data in an unbiased, scientific manner. It believes that the Commander, Staff and Personnel of Task Force ONE deserve high commendation for their excellent performance and their notably cooperative spirit.

"Effective precautions appear to have been taken to safeguard personnel against radioactivity and associated dangers.

"The Board's present information is that the bomb exploded, with an intensity which approached the best of the three previous atomic bombs, over a point 1500 to 2000 feet westerly of the assigned target, and at approximately the planned altitude.

"The target array in no sense represented an actual Naval disposition, but was designed to obtain the maximum data from a single explosion. The most important effects produced by the bomb are the following:

(a) A destroyer and two transports sank promptly and another destroyer capsized. It later sank, and the Japanese Cruiser Sakawa sank the following day. The superstructure of the Submarine Skate was so badly damaged as to make it unsafe to submerge the vessel. The Light Carrier Independence was badly wrecked by the explosion, gutted by fire and further damaged by internal explosions of low order, including those of torpedoes. All the above vessels were within one half mile of the explosion point.

(b) Numerous fires were started on other ships, including one on a ship two miles distant, which was apparently due to some unusual circumstance, since the other fires were much closer. Here it should be remembered that the target ship decks carried a great variety of test material not ordinarily exposed on the decks of naval vessels.

(c) The only major combatant ships within one half mile of the explosion were the Battleships Nevada and Arkansas and the Heavy Cruiser Pensacola. The blast struck these from the after quarter. Apparently little damage was done to their hulls or their main turrets but their superstructures were badly wrecked. These ships were unquestionably put out of action and would, along with many others within three quarters of a mile, have required extensive repairs at a principal naval base.

(d) Other ships in the target array suffered damage in varying degree, depending on position and type of ship, but there was relatively little damage at distances greater than three quarters of a mile.

(e) The primary material effects noted were due to blast; buckling of decks and bulkheads, and destruction or deformation of lightly constructed exposed objects, including stacks, masts and antennae. Secondary effects were due to fire, and it is noteworthy that Army Quartermaster stores and miscellaneous equipment placed on the decks for the test proved more vulnerable than normal Naval deck gear. It should be pointed out that since the targets carried no personnel the fires were uncontrolled and undoubtedly there was more damage than there would have been under battle conditions. Singularly, although considerable amounts of explosive ordnance were exposed on decks and in gun turrets, there is no indication on ships which remained afloat that any of this material was exploded by direct action of the atomic bomb. Fire fighting ships entered the target area as

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soon as they could obtain radiological security permission and subdued a number of fires. The speed and efficiency with which these ships acted preserved for later examination a great deal of evidence of bomb action which might otherwise have been lost.

(f) Examination of the flash burn effects produced by the initial radiation from the explosion indicates that casualties would have been high among exposed personnel. However, it is the opinion of the Board that persons sheltered within the hull of a ship or even on deck in the shadow of radiation from the bomb would not have been immediately incapacitated by burns alone, whatever might have been the subsequent radiological effects.

(g) Within the area of extensive blast damage to ship superstructures there is evidence that personnel within the ships would have been exposed to a lethal dosage of radiological effects.

"Personnel casualties due to the blast would no doubt have been high for those in exposed positions on vessels within a half mile of the target center. Beyond this any discussion of the blast effect upon personnel will have to await the detailed reports of medical specialists.

"In general no significant unexpected phenomena occurred, although the test was designed to cope with considerable variation from productions. There was no large water wave formed. The radioactive residue dissipated in the manner expected. No damage occurred on Bikini Island, about three miles from the explosion center.

"From what it has seen and from what it has ascertained from data now available, the Board is able to make certain general observations:

(a) The atomic bomb dropped at Bikini damaged more ships than have ever before been damaged by a single explosion.

(b) The test has provided adequate data of a sort necessary for the re-design of Naval vessels to minimize damage to superstructures and deck personnel from this type of bomb. Because of the nature of the first test (air burst) little information has been obtained on hull effects. Damage to ships hulls will be studied specifically in the second test when a bomb will be exploded under water.

(c) A vast amount of data which will prove invaluable throughout scientific and engineering fields has been made available by this test. Once more the importance of large scale research has been dramatically demonstrated. There can be no question that the effort and expense involved in this test has been amply justified both by the information secured and by greatly narrowing the range of speculation and argument. Moreover, it is clear to the Board that only by further large scale research and development can the United States retain its present position of scientific leadership. This must be done in the interests of national safety.

"The Board desires to say that it has had the fullest cooperation of the Task Force Commander, and that every opportunity has been afforded it in carrying out its mission. The members of the Board have had access to all data thus far accumulated and have had every facility for personally inspecting the results of the test."

/S/ KARL T. COMPTON, Chairman

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