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12 July 1946

Subject: Report of Observations at Crossroads

To: Major General L. R. Groves  
Commanding General  
Manhattan Project  
P.O. Box 2610  
Washington 25, D. C.

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CLASSIFICATION CANCELLED  
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MOND A. CARPENTER  
REVIEWED BY  
DATE 6-28-74

1. General. -

a. Boarded USS Blue Ridge with Military Observer Party 12 June 1946, at Oakland, proceeded to Bikini and departed ship 6 July for Kwajalein. This party was composed largely of officers on staff duty in the War Department (including Ground Forces) and Navy Department. Additional officers joined at Honolulu and a larger party (essentially A.A.F. and Navy) joined at Kwajalein. Included in this latter increment were three officers from Japan - two Ground and one Air. On the ship enroute, indoctrination sessions were held under guidance of ship's P.R.O. covering several subjects, such as ship design with Admiral Brands; weather phenomena under Lt. Col. Russell, Air Corps Instructor at Leavenworth; Able Day operations under Colonel Hale, Air Corps, from Army-Navy Staff College, etc. One session, in which Brown and I were asked to lead off, was devoted to the Manhattan Project, but I qualified the discussion at the outset to matter contained in the Smythe Report or questions thereon.

b. The Blue Ridge traveled with the Appalachian (Press) and the Panamint (United Nations and other observers) in general assignment to the TRANSPORT UNIT 1.3.1 of the TASK FORCE. Our position during the detonation was eastward of the target fleet and was reported as 20.4 miles from its center; consequently, slight appreciation of the physical phenomena was gained by observers. The press party was violent in criticism. I did not visit any MED parties or ships, in view of liaison, security and transportation relations with the Navy.

2. Preliminary Observations. -

a. The target array in general agreed with the sketch shown in Crossroads Press Release No. 46 dated 13 May, except for some minor vessel substitutions and a general tightening up or closing in of the positions of some capital ships. I estimated the Saratoga was moved 600 yards radially closer to the target ship Nevada from its position

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shown on the above noted sketch; the Nagato and Pensacola 250 yards each; the New York and Arkansas 300 yards; the Pennsylvania 450 yards. I believe this shift was decided upon after early trial drops which all achieved accuracy within 500 feet of the Nevada.

b. On 29 June, when entering and anchoring in the lagoon, a good general view of the target fleet was gained, and on 30 June parties were taken to observe preparations on certain target ships; namely, Independence, Nevada and Nagato. During these tours most attention was focused on the abnormal items placed on ships for observations, such as Army supplies and materiel and animals.

### 3. Detonation Observation. -

a. Surface wind direction was quite easterly on 1 July; a statement I could not verify had this wind bearing as much as  $130^{\circ}$  at the lagoon compared to the  $45^{\circ}$  normal trade wind. I do not believe a change was made in the direction of approach of bombing aircraft ( $225^{\circ}$ ), but this factor accounts for certain ships moored bow only being caught in an attitude different from those moored bow and stern. The flash from our point of observation was but slightly above the horizon, no color other than a faint pink or salmon was observed, a cloud intervened to obscure most of the mushroom effect, and the lower column dissolved rapidly. The heat, blast and sound waves were only faintly perceptible, particularly the first two, and then only to an observer knowing approximate time of incidence. The strong prevailing wind and sun conditions easily obscured the bomb phenomena.

b. The blast occurred at 0900 hours local time, and the observer vessels moved into the lagoon late the same afternoon, mooring up-wind between the target fleet and Bikini Island. Reports were received of sinking of the two APA's and capsizing of the Destroyer Lamson, but this long range observation was limited to fires and explosions visible on the Independence, Saratoga, some transports and oil barges and general superstructure damage. The following morning observers' vessels moorings were changed to the north side of the lagoon; during which move the sinking of the Sakawa was observed. The following day a 3-hour boat tour was made circling practically all of the target vessels and giving a very good over-all survey. At this time, I considered the point of detonation to left and astern of the Nevada about 500 yards; later a figure of 700 yards was heard. On 3 July, parties were conducted aboard the Pensacola, the Saratoga and the Prince Eugen, and on the 4th the Nevada, Arkansas and APA 66 (position was about 500 yards forward of the Arkansas). On this latter day Colonel Warren came to the Blue Ridge in the afternoon to discuss radiological safety, and Captain Quackenbush, U.S.N., brought film and pictures for the observers to view. On the 5th, Admiral Parsons, Dr. Sawyer, Dr. Bradbury, Colonel Warren, Captains Lyons and Drager (U.N.S. Medical), and others talked to assembled observers on the Blue Ridge. General Nichols was present. Colonel Betts, JTF J2, added some remarks on security.

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4. Damage. -

a. General. - Most early observations made by or reported to observers were only of a superficial nature, since the full and true extent of damage was only determinable by qualified damage assay officers, who were permitted to go below decks. The general attitude in the Military Observer Group was to minimize damages and to limit the category to superstructure and to overlook the magnitude of combined effects of heat, blast and radiation of the detonation.

b. Sinkings. -

(1) Attack Transports (APA). Gilliam and Carlisle were apparently closest to the high pressure region and sustained such hull damage that sinking was immediate.

(2) Destroyers. - Lamson and Anderson, the first was in the vicinity of the Arkansas, was of an old design known to be somewhat dynamically unstable, and it apparently capsized immediately and sank several hours after the blast; the Anderson was believed by Admiral Parsons to have suffered secondary internal explosions, because its distance from the detonation alone did not seem to explain its rapid disappearance.

(3) The Japanese cruiser Sakawa took a severe beating aft and sank the following morning before a boarding party could get any information.

c. Other Damage - General. -

(1) Within the 1,000 to 1,500 yard radius I should say all outside radar and radio gear were destroyed or seriously damaged, and stacks and other light superstructure the same. In the inner zone, the blast pressure penetrated to interiors to affect boilers, furnaces and other vital components. Heat and radiation effects to vessels within 1,000 yards would have been fatal to exposed personnel, and radiation effects would have been extremely serious to other personnel, depending upon their degree of shielding. The wave action was negligible; it is doubted if this amounted to 2 feet at the island 3 miles distant.

(2) Nevada. - Serious damage aft, catapult aircraft and crane destroyed, main deck dished in several places and collapsed in one place, probably major boiler and furnace damage. Rumor that aft main gun turret shifted.

(3) Pensacola and Salt Lake City, Cruisers, and Destroyer Hughes (location was forward of Nevada about 100 yards). - About the same damage as the Nevada.

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- (4) Independence Aircraft Carrier. - The flight deck was swept clear and the island was destroyed, direct blast battered the stern and buckled the flight deck. Secondary gasoline fires and torpedo explosions wrecked the interior. Considerable radiation after effects which, with damaging, made ship uninhabitable.
- (5) Nagato (Japanese BB). - Unknown, probably about equal to Nevada, but close evaluation is necessary to eliminate previous damage incurred in Japan which had been quite serious.
- (6) Arkansas. - Generally the same as Pensacola above decks, considerably less damage below.
- (7) Prince Eugen, Pennsylvania and New York. - Superficial.
- (8) Saratoga. - Nil, slight burn on flight deck where QM bales ignited.
- (9) Skate - Submarine. - This vessel was moored about 100 yards in rear of Nevada, and took a severe beating. Was said to have capsized and righted itself; boarding party delayed by radiation effects.
- (10) Concrete Barges. - Small floating dock and oil barge fairly close to high pressure zone did not appear to have sustained any serious hull damage.
- (11) Army Ground Forces Equipment and Stores. - A gross waste of effort, but probably very useful in indoctrinating personnel on the effects of atomic explosive.

5. Conclusion. - The Crossroads Operation was on a large scale, complicated and difficult in coordination, but well-run for a "first operation". Many interested parties, imbued with their own problems and desires, had little appreciation of other parties involved, yet coordination was achieved. True results and values will only be known when consolidated report is completed. A separate report by the Manhattan District on radiological effects and conclusions may be advisable to drive home points obscured by early publicity, and emphasis on animals recovered alive soon after detonation.



L. E. SEEMAN  
Colonel, C.E.  
Commanding

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