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July 16, 1953

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Paul C. Fine  
Division of Military Application

TRIP REPORT — MLC TOUR — JULY 5-11, 1953

SYMBOL: MA:PCF

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U. S. ATOM. COM.  
BY: ~~Gen K E Felt~~  
DOCUMENT NO. LXI - 2321-2A

General Fields, Colonel Dorsey, and I accompanied the military members and staff of the Military Liaison Committee on a visit to Los Alamos (July 5-7), Sandia (July 7-8), and Livermore (July 9). Gen. Fields and I spent the morning of July 10 at Berkeley. Colonel Dorsey will cover the Sandia aspects in his trip report.

Ostrich Program

At Los Alamos, Dr. Holloway gave the following data on the Ostrich program:

	Length (inches)	Diameter (inches)	Weight (pounds)	Estimated Yield (megatons)	Probable Yield Range (megatons)
TX-14	223.5	61.4	30,000		
TX-16	296.7	61.4	42,000		
TX-17	296.7	61.4	42,000		
	171.5	52.9	23,000		

\* Length and weight of [redacted] are for warhead alone, without tail structure which will add some length and about 2000 pounds in weight.

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DATE AUG 14 1974

There will be one assembly team at Castle and two others starting in June or July of 1954.

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there ever were of Tests and further tests are planned.

(The work on [redacted] by the RaLa firing group has meant that there has not been much recent work on RaLa shots. However, Dr. MacDougall said that Los Alamos is still interested in RaLa and that they have a number of RaLa shots in mind that will take at least two years to carry out.)

#### Test Operations

Dr. Graves said that four of the UPSHOT tests gave radioactive fallout, and these were tower shots. Cumulative infinite doses in populated areas were calculated, in some of the highest cases, to be 6 roentgens at Rockville (pop. 300), 7.7 roentgens at Hurricane (pop. 1500), 12 to 15 roentgens at Riverside Cabins (pop. 14), and 7 roentgens at Crystal (pop. 7). Some cows died from what may have been a combination of starvation and radiation. Some sheep died that were near starvation and appeared to have burns of some kind around the mouth and nose. Some horses were blinded, apparently either because they were looking at the fire ball or because of beta radiation from radioactive material caught in their eyes.

There has been no fallout problem for any airburst shot to date. However, for some experiments it is essential to do tower shots. In future tests in Nevada, it is planned to try 500-foot towers instead of the 300-foot towers used at UPSHOT. In a series where there are fewer tests than in UPSHOT, it would be possible to wait for more nearly ideal wind conditions each time. However, the wind sometimes shifts at the last minute and, in one case, shifted adversely after the shot had been fired. It may be desirable to limit tower shots to 35 kilotons, while airbursts of up to 100 kilotons may be handled satisfactorily.

At Eniwetok, there is also a fallout problem, not only in regard to the atoll itself but also in regard to the 30,000 natives living on various islands to the south. The cost of tests at Eniwetok is greater by about a factor of three than tests in Nevada. The number of people for an Eniwetok series is about 9000, compared with around 2000 in Nevada. The time required for preparation and for an operation at Eniwetok is about 6 months, compared with as little as 3 months in Nevada.

In the CASTLE operation, four shots will be fired at Bikini first: one on an island to the northwest of the atoll, two on barges in the north of the lagoon, and one on an island to the south, in that order. Then, two shots will be fired at Eniwetok: one on the island to the northeast where the GREENHOUSE George shot was fired and the other on a barge in the crater of the IVY Mike shot.

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Scope of Tests After CASTLE

Dr. Bradbury said that ~~\_\_\_\_\_~~ of the fissionable material produced had been used for testing and the result had been a 400 or 500% increase in the utilization of fissionable material. In the future, one Nevada series of tests might be held per year with approximately six shots and one Eniwetok series every 1 1/2 to 2 years.

Dr. MacDougall mentioned a number of possible candidates for future tests, which are listed below. None of these have been definitely decided on.

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CAD. If there should be a military requirement for this small implosion warhead, a test of its performance might be in order.

Small Gun. If a small gun (8 inches or 240 mm in diameter) were developed, a test might be desirable.

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Boosting Experiments. Tests may be required because of the unknown extent of mixing of the thermonuclear and fission components. The

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possibility of using a solid compound such as lithium deuteride instead of the deuterium gas used in the [redacted] may need to be tested.

Initiation. It is hoped that the mechanism of operation [redacted] can be understood from HE shots at Los Alamos. However, there is a possibility of a full-scale test if a [redacted] is developed or [redacted]

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High Yield Mark 7. [redacted] Mark 7 containing around [redacted] of or alloy may need testing at Eniwetok.

Mark 13. This may be proof tested at some future time.

[redacted] A test at Eniwetok will probably be necessary when this has been developed.

Thermonuclear Weapon Components. Component tests related to studies or improvements of the TX-14, TX-16, TX-17, and [redacted] may be necessary in Nevada. Two such tests were made at UPSHOT, the [redacted] and the [redacted] experiments.

PROJECT WHITNEY

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(During the afternoon of July 9, a presentation of the status of the MTA project was made by a representative of the California Research and Development Co., and then a tour was made of the facilities of Project Whitney and the MTA at Livermore.)

(Discussions were held in Berkeley on the morning of July 10 among personnel of the Division of Military Application, the San Francisco Operations Office, and the University of California Radiation Laboratory on facilities and budget matters in regard to Project Whitney. These discussions will be covered by Col. Beckedorff and Mr. Gise in their trip reports.)

(The MIC members visited the Naval Radiological Defense Laboratory on July 10.)

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