

LRL Interest in Willow Testying (Outer Space Testing 1959 Binder)

S. White

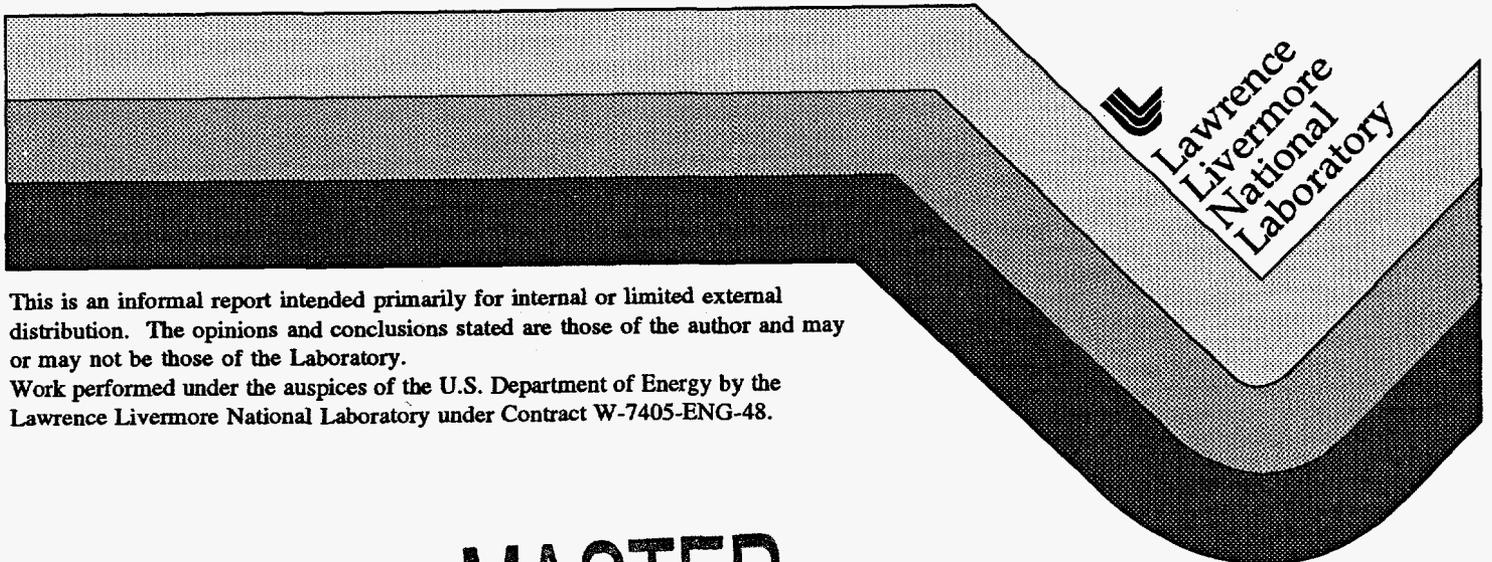
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April 29, 1959



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L. WOUTERS

April 29, 1959

MEMORANDUM

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TO: Chuck Violet

FROM: Steve White

SUBJECT: LRL INTEREST IN WILLOW TESTING.

Below is a statement of the committee position (Nance, Violet, White, Wouters) with regard to upper atmosphere testing in Willow that I would like to see presented to the Director's Office.

Because of the likelihood that LRL will desire to test high yield devices in outer space in the future it is advisable that LRL, in cooperation with the AEC, participate in the Willow Operation to the extent of checking out experiments and equipment. The types of experiments in which LRL is interested fall into two categories, yield experiments and reaction history experiments. The following experiments to obtain the yield of nuclear devices seem feasible:

- 1) X-rays by calorimeters.
- 2) Fission and fusion neutrons by time of flight.
- 3) Fission and fusion neutrons by radiochemical threshold detectors.
- 4) Fission yield by radiochemistry. Total gammas would be measured by a scintillator and delayed neutrons by a fission counter.

Reaction history measurements would consist of:

- 1) Primary to secondary transit time.
- 2) High explosive transit time.
- 3) Possibly α .

It is likely that optical and radio wave diagnostic experiments will be performed from the ground. In addition it is likely that it will be necessary to monitor certain functions of the device prior to detonation.

Because of the limited man power at LRL and because of Sandia's experience and demonstrated capabilities in Teak and Orange, it is suggested that they be given the responsibility for the yield measurements listed above under LRL supervision. Since Sandia has not yet demonstrated similar capabilities for reaction history type measurements and because of the experience that has accrued at LRL on the ground it is suggested that the reaction history experiments be retained by LRL. The telemetry experiments can be done by Sandia or other organizations which have previously demonstrated capabilities in missile and satellite telemetry. The optical and electromagnetic ground measurements could be done by LRL or contracted out, depending upon the man-power situation. The nose cone assembly packaging and monitoring of the pre-detonation functions would more likely be done by Sandia.

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It is to be emphasized that this proposal deviates from IRL policy of the past where yield and other measurements which were necessary for weapons design have been done primarily by IRL. Giving responsibility for a large group of experiments to an organization like Sandia is therefore a definite shift in fundamental policy.

It is pointed out that by giving these measurements to an outside contractor, IRL is vacating areas of capabilities in which IRL might well desire to be competent in the future. A few years from now it may well be that IRL would desire to have a maximum capability in experimental work performed on missiles in outer space for unclassified as well as classified purposes. It is true, however, that we are retaining some capability for outer space experiments by doing the reaction history measurements. It is also true that by keeping a supervisory position, we will not be out of the field, entirely.

It is important that in formulating laboratory policy these ideas be kept in mind because the future course of IRL with regard to weapons testing and experiments in outer space is being decided now.

Steve White

RSW/dao

Distribution:

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