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Box B

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FINAL DETERMINATION UNCLASSIFIED L. M. Redman MAR 13, 79

To: Captain Parsons From: David Wood Subject: September Progress Report, 20 mm. Section of Group O-1.

A. Targets Fired.

1. Round numbers 1101-D and 1102-D. These targets were constructed of WC-9% Co hollow cylindrical tamper pieces with a case of heat treated alloy steel shrunk on. The tests were to determine the relative behavior of two different types of elkonite energy absorption anvils used. Results indicate that silver base elkonite will withstand greater plastic flow without rupture than copper base elkonite under the conditions existing in target anvils.

2. Round numbers 1103, 1104, 1105, and 1106. These targets were fired on Critchfield's request and were designed to determine the behavior of small metal rods included in plastic when subjected to the longitudinal impact of a projectile.

B. Development of the Gomez Ranch Initiator Firing Site.

1. An improved firing procedure has been established to reduce the hazard of personnel acquiring radioactive contamination of themselves or their clothing. To accomplish this, two small hutments have been designed and are now in process of construction. In addition, the necessary mount and gun parts are being obtained so that a complete 20 mm. gun and mount will be available to be kept at Gomez Ranch and used only for initiator testing.

C. Equipment and Installations in the Technical Area, 20 mm. Range.

1. The evacuated gun mount (Job 1204 D), complete with all parts ordered, was received from Detroit. When received, the principle parts assembled correctly and good vacuums could be maintained in the system. However, when several electrical

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- 2 -

connection fittings were brazed to the main cylinder, a large warping occurred. It is not clear whether this can be attributed to lack of stress relieving in the original product or not, but it seems probable. Attempts are now being made to repair the mount.

2. The air conditioning and heating systems for the range have been revised to provide suitable working conditions during the winter months.

3. Flash X-ray equipment was installed and several preliminary tests made of the equipment.

D. Experiments for the Study of Shock Waves in Metals.

1. Approximately ten 20 mm. firing tests were made in which it was attempted to develop an optical method for measuring shock wave velocities using a rotating pyramid camera. The results were not encouraging and the method will be discontinued, at least for the present.

2. Similarly, experiments at 3 inch scale using a primacord timing method to measure shock wave velocities were made and found unsuitable. In the future the effort in shock wave velocity measurements will be concentrated on the electronic method which has shown more promise in several tests made at 3" scale during the past month. In addition, flash X-ray photographs of shock waves in metals will be made at 20 mm. scale during October.

David Wood

David S. Wood

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