COMPONENT D-CHARGE

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Normal Process Development
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MASTER

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This is the final report on a project which provided for the development of an extrudably formed, miniaturized shape charge for use in destructively depressurizing the contents of a component recovered from the 56-JTA warhead.

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Section K
COMPONENT D-CHARGE

ABSTRACT

Several different shaped-charge configurations were tested. Charges with an included angle of 60° and brass conical liners were determined to be more satisfactory. Existing loading equipment was used to extrude RX-08-BD into the final design.

DISCUSSION

The most satisfactorily shaped charges tested were hand-loaded with 5 grams of XTX-8003 or 2-1/2 grams of RX-08-AZ. The shaped charge loaded with XTX-8003 was 1/2-inch diameter and 1-1/2 inches in length. The shaped charge loaded with RX-08-AZ was 3/8-inch diameter and one inch in length. Both shaped charges had conical brass liners with an included angle of 60°. The shaped charge loaded with RX-08-AZ had a pointed conical liner, while the shaped charge loaded with XTX-8003 had a conical liner with a small radius at the apex. Initial tests included evaluation of brass, aluminum and mild steel liners, and included angles of 60° and 82°. Brass liners having an included angle of 60° were determined to be most satisfactory. The shaped charge with the larger included angle did not create as distinct a cavity in the steel test block as did the shaped charge with a 60° included angle.

After the initial tests were run to determine the best size, shape, and material to use, one design was chosen and tooling was fabricated to load this shaped charge with existing equipment. The smallest charge with a 60° included angle and a brass conical liner was chosen to be machine-loaded with 2-1/2 grams of RX-08 series. No problems were encountered during loading. The final weight of RX-08-BD in each of the machine-loaded parts was most consistent. An extruding pressure of 500 psi was used during one each one-minute cycle to load the parts.

Since no problems were encountered in machine loading the shaped charges, and the design performed satisfactorily, no other designs were tested for evaluation. This completes the work which will be done on the Component D-Charge project.

CONCLUSIONS

The test design determined from the test series indicated a brass conical liner with a 60° included angle to be most effective. Shaped charges containing 5 grams of XTX-8003 or 2-1/2 grams of RX-08-BD are sufficient to depressurize the 56-JTA component.

No problems were encountered extruding RX-08-BD into the chosen shaped charge design. A capability is available to load future shaped charges.