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THE JOHNS HOPKINS UNIVERSITY

Applied Physics Laboratory
8621 Georgia Avenue
Silver Apring, Maryland

Operating under a "Section T" Contract
with the Bureau of Ordnance
U. S. Navy

SUCCESSFUL DEMONSTRATION AND VERIFICATION OF RAM-JET THRUST IN SUPERSONIC FLIGHT

June 19, 1945

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An unequivocal demonstration of ram-jet thrust at supersonic speeds took place Wednesday, June 13, 1945, with the launching at Island Beach, New Jersey, of a Model 3 ram-jet, whose range (about 11,000 yards) was nearly double that of the same model launched "cold". This was verified the following day by launching a second bird identical to the first, and the range this time was recorded as 14,000 yards. Both the above birds burned CS_2. Supporting evidence was accumulated by the launching of two additional models similar to the above except for the use of pentane and acetaldehyde fuels, respectively; these latter units showed a 50 per cent increase over the range of the "cold" models.

Observers at Forked River, three miles down the peninsula, heard the crack of the shock wave as the first CS_2-powered bird passed overhead--in fact, the average velocity computed for the second bird is 1750 ft/sec for the entire flight. A similar computation on the acetaldehyde and for the pentane-powered birds shows an average velocity of 1100 ft/sec. While these figures are based only on the field observations as they now exist and have not been confirmed in detail by checking against film records, there can be no doubt that a large magnitude of thrust was obtained.

It should be borne in mind in considering the average velocities that the power stage of the above ram-jet flights could not have persisted for the full time of operation, since the present fuel supply is exhausted after roughly 15 seconds. This, coupled finally with the report of an observer that the first ram-jet "sizzled" when it struck the water, justifies the final conclusion that ram-jets have been demonstrated to deliver significant thrust in supersonic flight, and that it is expected that records now being analyzed will show this thrust to be comparable to the drag of the Model 3 ram-jet.

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ABSTRACT:

Ramjet thrust at supersonic speeds was demonstrated by launching a Model 3 ramjet having a range of about 11,000 yards. Verification was attained by launching a second, identical Model 3 ramjet whose range was recorded as 14,000 yards. Both the above "Birds" burned CS_2. Supporting evidence was obtained by launching two additional models similar to the above, except for the use of pentane and acetaldehyde fuels, respectively.

DISTRIBUTION: Copies of this report obtainable from Air Documents Division; Attn: MCIDXD

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