

Two-Stage Vehicle for
University of California Radiation Laboratory

PROGRESS REPORT NO. 3

For the period between
1 January 1958 - 31 January 1958

Subcontract No. 108, Appendixes B, C, and D

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Submitted by
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Monrovia, California

IV. Field Tests

Five test vehicles were launched during January, three at White Sands Proving Grounds and two at the NAMTC, Point Mugu.

A single-stage ASP was launched on 7 January at WSPG to determine the drag coefficients for the present ASP design. Good data were obtained.

On 8 January, a two-stage vehicle, consisting of an ASP and two Loki motors, was flown. The Loki's ignited on schedule, but the expected altitude was not obtained. It was believed that the second stage ignition timing might not have been optimum. The head did not separate.

Another ASP with two Loki's was launched on 17 January. The Loki's did not ignite and the head did not separate. Programmer failure was believed to be the cause of these malfunctions.

On 22 January, an ASP with two Loki's was launched at the NAMTC, Point Mugu. Both Loki's ignited on schedule, the head separated, and both parachutes deployed properly. Photographic coverage was excellent. The motor section was recovered, but the head was not. It is not known whether the flotation system failed or the recovery ship simply did not locate the head. Peak altitude was considerably less than was expected.

The fifth test was conducted at NAMTC on 23 January, using essentially the same vehicle. The Loki's ignited on schedule, and the head separated properly. No data were obtained from the ground equipment at Mugu until the final 2 or 3 minutes of the flight. Radar coverage during this period showed that the second stage chute had not deployed.

A test employing an ASP with two stages of two Loki's each is planned. It was decided to mount the head on the four Loki's and deploy the ASP at

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This informal monthly progress report is the third of a series submitted in partial fulfillment of Subcontract No. 108. The information is regarded as preliminary and subject to further verification and analysis.

I. Delivery

Forty-eight ASP motors, 96 Loki motors, 5 modified launchers, and 18 new launchers have been shipped to the Pacific Proving Grounds. One modified launcher is still at WSPG.

II. Electronics

Fifteen programmers have been built, and 45 more are in production. Some modification of the design was necessary after the programmer was flown in the test vehicles, but other tests yielded good results. Preliminary design of the sequence firing equipment is complete. Prototype units are being made, and no design changes are anticipated. Twenty-four launcher boxes and five master control boxes will be built.

III. Wind Tunnel Tests

The operational characteristics of the diffuser-filter assembly were observed in a wind tunnel test conducted on 30 January at the NACA Ames Aeronautical Laboratory. Results were even better than expected, fully confirming the design calculations. The records are expected to arrive from Ames by 14 February, and a report on the test will be forwarded when the data have been analyzed.

burnout. It is hoped that this three-stage vehicle will attain the desired altitude.

V. Field Service

Field service will be supplied as required for operations at PPG.