Launch Vehicles - Aeolus

By asri - Posted on 08 September 2009

General Information

Aeolus (Latin derivation of the original Greek Aiolos) was the mythical Greek God of the Winds. The word Aiolos also means 'Quick Moving' which is quite appropriate considering the Aeolus launch vehicle was a sounding rocket initially used to aid in the development of the Woomera Range and later to study the upper atmosphere.

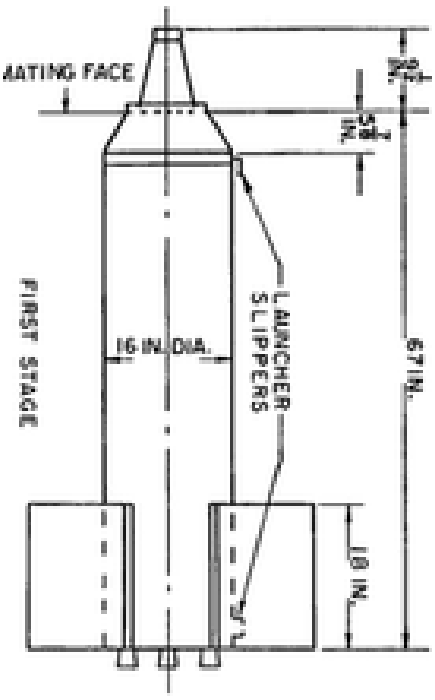
Aeolus was essentially a Long Tom second stage rocket boosted by seven 5 inch Light Alloy Plastic Star (LAPSTAR) motors in the first stage.

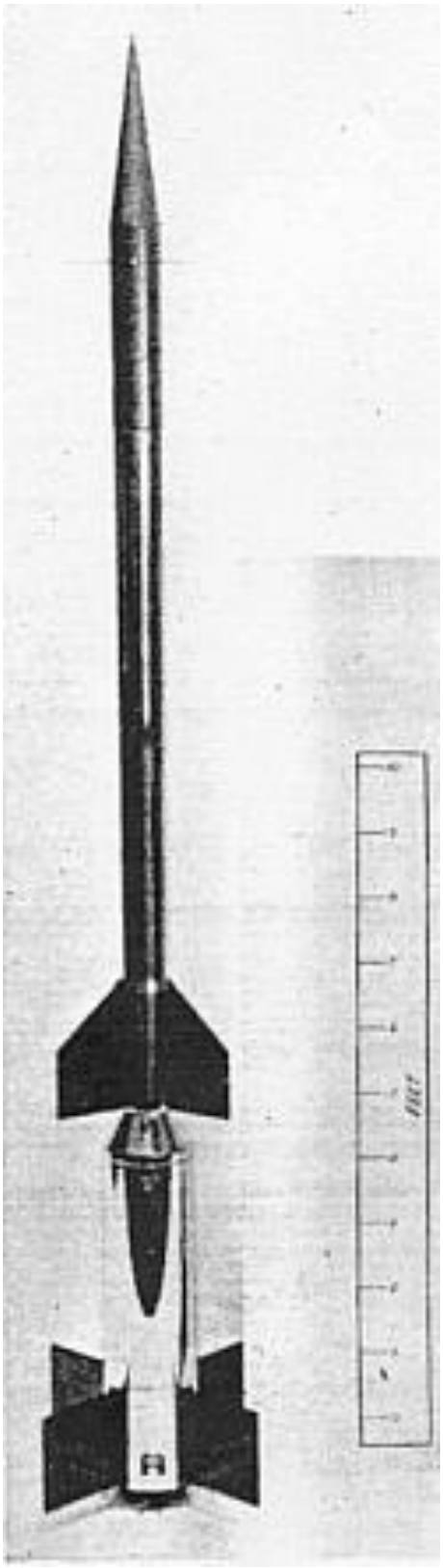
Aeolus was designed and constructed at W.R.E.

The boost motor cluster (first stage) is held at the rear by a light metal fairing which also serves as the base for the four rectangular fins, and at the front by an aluminium alloy nose casting which is faired down to the diameter of the second stage.

Mating of the two stages is achieved by a small cone on the front of the boost nose casting which picks up in the venturi of the second stage.

The Aeolus boost assembly (at left) is 16 in. diameter and 67 in. long. The total weight of the first stage is 600 lb. The weight of the second stage varies between 520 and 650 lb., which gives a total launch weight range of between 1120 and 1250 lb.



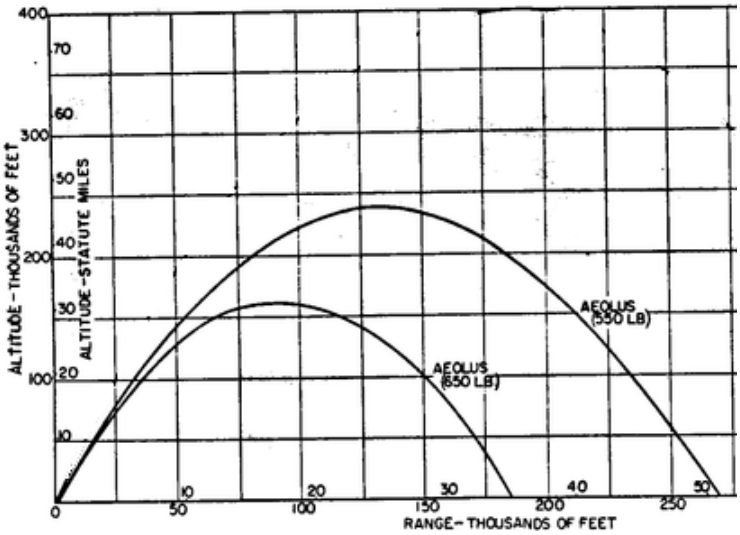


Normally the Aeolus instrument head does not separate from the motor after the completion of the burn therefore impact velocities are quite high - in the order of 4000 ft/sec with the rounds being completely destroyed on impact. However, if instrumentation recovery was required the head could be explosively separated from the motor and recovered by parachute.

If separation was required this would typically occur at a region of 150000 to 200000 feet when the round has a velocity of between 2000 to 3000 ft/sec

Seven (7) launches were made from 1958 to 1961.





Typical Trajectory Profile

Purpose:	**Range Development & Upper Atmospheric Research**
Period of Use:	**1958 - 1961**
Payload Mass:	**30 - 130 lb**
Apogee:	**240000 - 165000 ft**

Motor Details

	Ignition	Motor	Impulse	Burn Time
Stage 1	**T+0**	**7 * LAPSTAR**	**49140 lb.sec**	**2.7 s**
Stage 2	**T+16**	**MAYFLY**	**50300 lb.sec**	**3.6 s**