Skylark Sounding Rocket History

Skylark, one of the World's longest running space programmes, will come to an end with the launch of the 441st Skylark sounding rocket. This marks the end of 50 years of outstanding scientific research that has included investigations into atmospheric conditions, X-ray astronomy, land use and the effects of microgravity.

The Skylark sounding rocket has been a leading British success story since its design in the mid 1950s. The first Skylark was launched from Woomera, Australia, during the International Geophysical Year of 1957. The final Skylark mission, MASER 10, carries a suite of experiments to study the effects of microgravity, including a biological investigation of the protein, actin, and a study of interfacial turbulence in evaporating liquids. MASER 10 will be launched from the Esrange Site, near Kiruna in northern Sweden.

Hugh Whitfield, of Sounding Rocket Services Ltd, which has operated the Skylark programme since 1999, says, "Skylark is one of the most successful rocket programmes of all time, but this British achievement is largely unknown. We should be immensely proud of the contribution to science that Skylark has made and it is a testament to the skill of British engineers that the programme has lasted nearly half a century."

Skylark rockets have been launched from Wales, Argentina, Australia, Brazil, Norway, Sardinia, Spain and Sweden. Early experiments ranged from atmospheric studies to X-ray astronomy and research into the ionospheric interactions that cause aurorae. The rockets were popular with young scientific researchers, as it was possible for a PhD student to design a space experiment, launch it on a Skylark vehicle and write up the results in just three years. In recent years research has focused on microgravity experiments led by the German space agency, DLR, and testing equipment for Spacelab and the International Space Station.

The Skylark 7 that will be used for the final launch is a two-stage rocket that can carry a payload weighing 380 kilograms to an altitude of 230 kilometres. The Skylark 7 is powered by a "Goldfinch" boost stage and a "Raven XI" main stage motor. Skylark was developed by the Royal Aeronautical Establishment, Farnborough, in conjunction with the Rocket Propulsion Establishment, Westcott. The rocket motors, which were filled with a plastic propellant, were produced by Royal Ordnance Bridgewater and Westcott. Initially funded by the UK government, Skylark has been operated on a commercial basis since 1966, first by British Aerospace, then Matra Marconi Space, and finally Sounding Rocket Services Ltd. Although production of motors ended in November 1994, a stockpile has meant that Skylarks have continued to be launched at least once per year ever since.

Skylark's performance was greatly enhanced in 1960 by the addition of a booster stage (Cuckoo) burning for four seconds, giving 80 kN thrust and adding about 40% to the peak height for a given payload mass. Later additions to the Skylark motor family were the Goldfinch booster and Raven XI, which when used together gave an apogee of over 500 km for a payload of 100 kg mass.

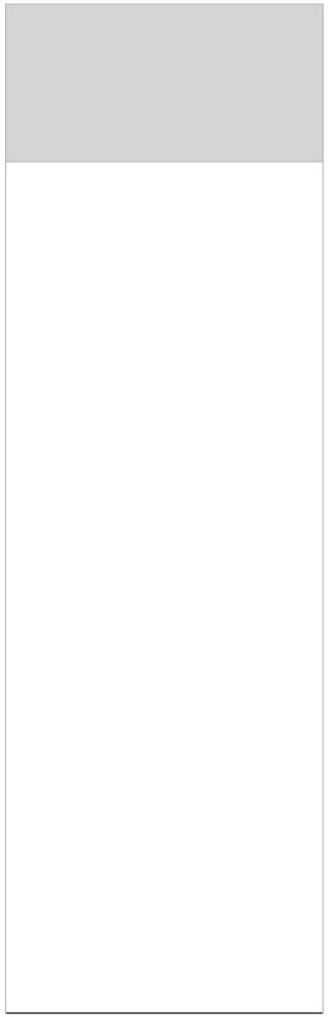
Another important Skylark development was the introduction of a three-axis stabilised attitude control unit (ACU) developed jointly by RAE and Elliot Automation Ltd., Frimley. The ACU was initially designed as a sun-pointing unit but later versions were available with sun, moon or star pointing sensors. After August 1964, many attitude controlled SkylarK s were launched, gathering much new information about the nature of the solar disk and other Galactic phenomena. Over 300 Skylarks were launched for scientific research purposes, yielding a very noteworthy success record.

Skylarks remained in use until 2005 although their application to astronomical research in the UK came to an end in 1978.

Skylark Raven Sounding Rocket

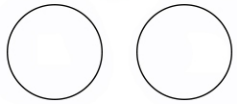
1/40 Scale Paper Model

1



1 to 2 connector

3



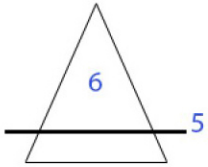
Formers, glue to cardstock

5

Glue to cardstock, cut out the light blue cirrcle

6

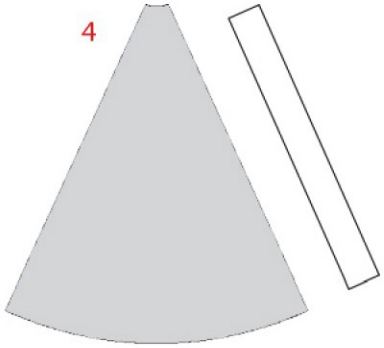
Color back Black



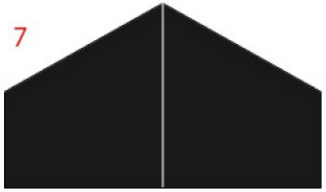
Glue 5 to the bottom of the rocket, glue 6 up into the opening of 5.

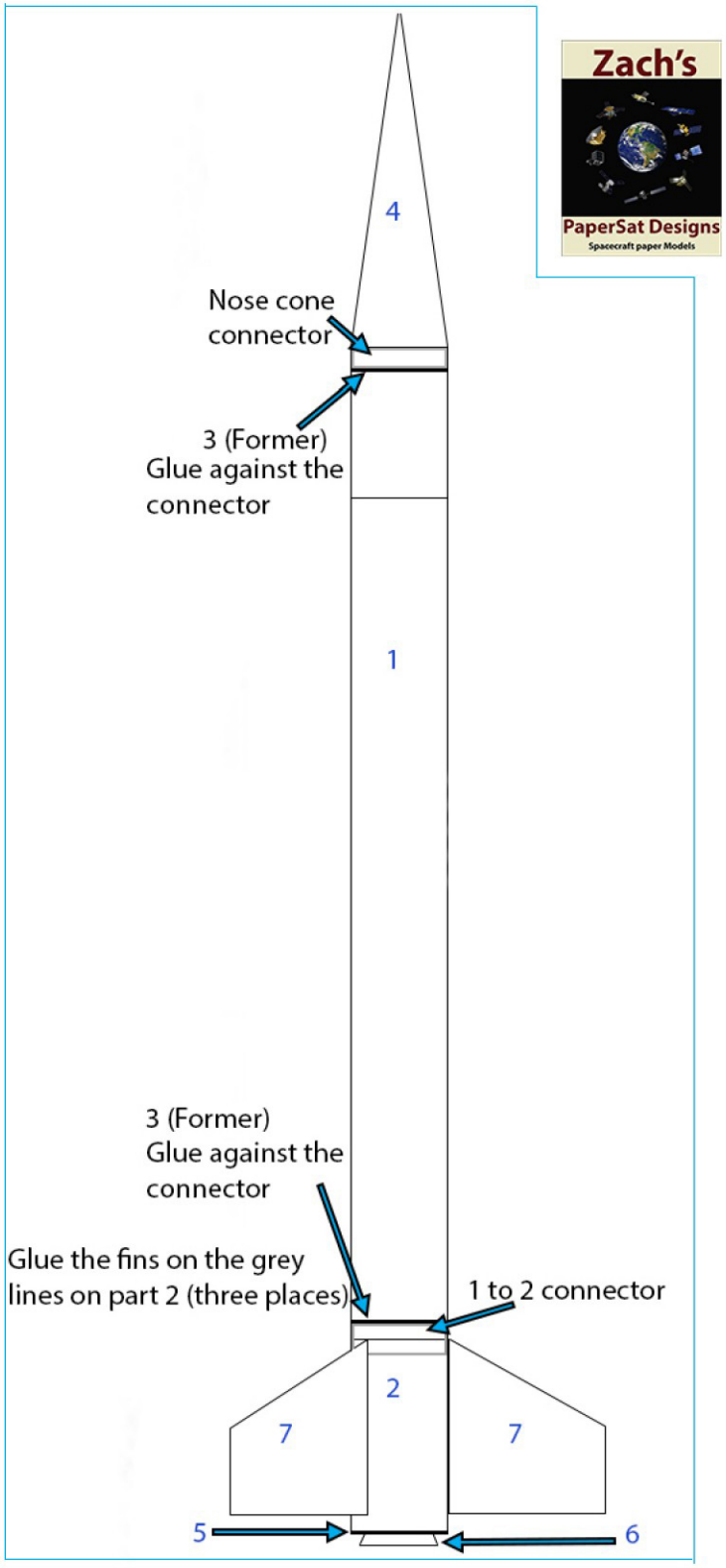
2

4



7





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