

Current Topics in Rocket Propulsion

An Open Source Conference

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ONZ

A Short History of the Rocket Propulsion Establishment at Westcott

Around 1935 with the likelihood of another war in Europe and the increasing sophistication and capability of bomber aircraft it was decided that the UK should investigate anti-aircraft defence using rockets as an addition to anti-aircraft artillery. This effort led to the development of the Cordite (Solvent-less Extruded Double Base Propellant) powered unguided Anti-aircraft rockets, and to the adoption of these Cordite rocket motors for numerous other uses by the allies during World War II.

As World War II progressed it became apparent that Germany had made great strides in liquid propellant rocket propulsion and so by wars end there was a great deal of effort expended to capture material and personnel who had been involved with missile and rocket development. Early in the war such rocket work as was undertaken in the UK had been dispersed around the United Kingdom for strategic reasons. Some site examples being The Flame Warfare Establishment at Langhurst, Woolwich Arsenal, Fort Halstead, Waltham Abbey, Aberporth and ROF Bishopton. It was decided to concentrate research into the new weapon systems at one site (in the terminology of the day GAT's Guided Aerial Torpedoes quickly superseded by GAP's Guided Aerial Projectiles) Initial management for weapons development for all three-armed forces was provided by the Royal Navy. Thus, on the 1st April 1946 a former Bomber Operational Training Unit airfield at Westcott became the Guided Projectile Establishment.

Initial plans were that Westcott would be responsible for all aspects of missile Research and Development. However, post war rationalisation and a turf war between the various military services and the existing research establishments led to the RAE at Farnborough assuming overall control of Research and Development in missiles and their propulsion systems. Rocket propulsion research and development for both civil and military applications was to be carried out at Westcott along with closely related work on propellants at the Explosives (and Propellants) Research and Development Establishment (ERDE) at Waltham Abbey. On the 1st of August 1947 Westcott thus became the Rocket Propulsion Department of RAE (RAE/RPD)

The first group of German Rocket scientists and technicians had arrived on site in November 1946 (a further 7 arrived a little later) and as well as working on assigned projects another task was to work with the British staff to analyse and report on the vast quantity of captured German material.

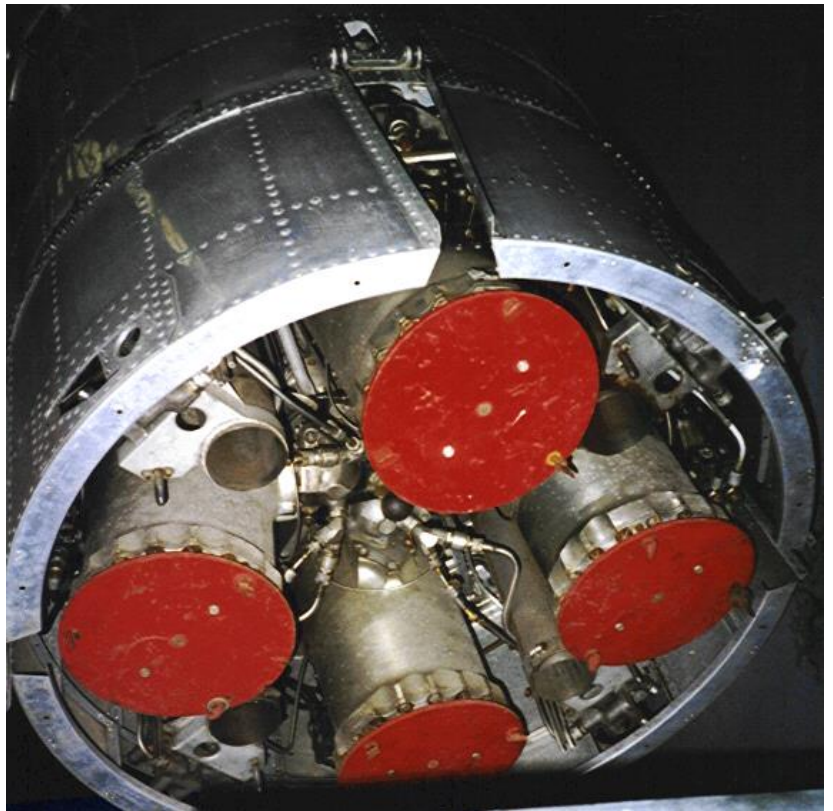
Early work included firing of Walter engines and Rocket Assisted Take Off units RATO's (a Walter 109-510 exploded at D site resulting in fatalities in November 1947) Although not a Westcott design, further development and firings of LOP/GAP (British Liquid Oxygen Petrol/Guided Air Projectile occurred LOP/GAP was a successor to Lizzie the first British Liquid propellant rocket engine developed by Lubbock and Gollin at Langhurst 1943) and would evolve into the propulsion unit for the Research Test Vehicle 1 (RTV1).

In February 1950 the construction of the Solid Propellant Laboratories (SPL) development scale rocket motor filling factory commenced and by July 1950 the first Solid motor filled (a 7 inch diameter motor filled with SU/K a type of Extruded Double Base) was later fired at 6 Site. It was quickly realised that given the understanding of propulsion technology and its state of development at the time that for efficient and effective use solid propellant powered vehicles needed to be treated as rounds of ammunition i.e. instant readiness. This of course did not stop Liquid propellant research.

Over the years many “contractor” companies ran their own rocket propulsion development programmes on site and in April 1947 one of the first was Napiers at 35 Site working on monopropellants. Westcott also collaborated extensively with industry, a good example being the Hydrogen Peroxide/Kerosene Gamma engine designed at Westcott and further developed by the then Armstrong Siddeley Motors. These engines went on to be successfully used in Black Knight and Black Arrow.

Westcott finally became an independent Establishment again as the Rocket Propulsion Establishment (RPE) Westcott in June 1958.

Many research departments and facilities existed on site amongst them Heat Transfer, Combustion Chamber Design, Propellant Manufacture and Supply, Materials, Instrumentation, Valve Spray and Flow Lab, Environmental Chambers, Centrifuge, Vibration Shock and Drop, Radio Attenuation, Liquid Hydrogen production. Other work undertaken includes expulsion charges, turbo-pumps, propellant feed systems, gas generators, propellant tank design, Liquid propellant Guns and of course design testing and manufacture of both Monopropellant and Bi-Propellant Rocket Engines for use on space vehicles and satellites.



Black Knight Engine Bay showing Gamma Engines

For further information see the following

- A History of No 11 OTU by Jim Hampton - Covers the site as an RAF Airfield
- Westcott a Chronology by John Harlow - Covers 1942 construction of Airfield to 1999
- Westcott edited by Mark Perman - Contains The official history by Maureen Fowler a complete listing of Firing sites, there uses and many photo's plus some promotional leaflets.