DR PLEMING'S OPERATION VULCAN

DESIGN PROJECT 2023/24

SECONDARY

An innovative project for Year 8, Year 9 and Year 10 Students
Supporting Gatsby Benchmarks 3, 4, 5 & 6

The Avro Vulcan XH558, also known as The Spirit of Great Britain, with its impressive technical innovations, helped place Britain at the forefront of aviation design nearly 70 years ago.

This iconic aircraft is now being used to enthuse and inspire future generations. Here is a chance for your school and students to get into the spirit and take part in our latest secondary schools design project.

VULCAN TO THE SKY TRUST
HONOURING THE PAST, INSPIRING THE FUTURE

in partnership with

work-wise
INSPIRING SKILLS AND EMPLOYABILITY

HISTORY

Seventy years ago, Britain led the world in aircraft design, and it was then that the famous Avro Vulcan was born. It still remains one of the best examples of aerospace innovation and engineering, combining the requirements of a bomber with the performance and agility of a jet fighter. This is its story...

Following the end of the Second World War in 1945, tensions started to grow between two sides: the USA and Western Europe on one side, and Russia and Eastern Europe on the other.

Both sides were also starting to develop nuclear weapons to defend themselves against attack by the other side, and this gave rise to what became known as the Cold War – something that lasted for another 45 years.

The British Government was developing its own nuclear bombs, and soon realised these bombs needed new, bigger, faster aircraft to carry them. In 1947, the Government issued the specification for a new bomber to UK aviation companies, inviting them to submit design tenders. It was decided to order three of the designs; the Valiant; the Victor; and a design from a company called Avro. This was like nothing that had been seen in the skies before. It had huge delta-shaped wings and Avro called this new aircraft... **the Vulcan!**

The three aircraft were collectively known as the V-Force and delivered Britain's strategic nuclear deterrent during the 1950s and 60s.

To investigate the practically unknown characteristics of the delta design, it was decided that a series of one-third scale research aircraft would be built, the first flying in 1949. These experimental aircraft led to the first full size Vulcan taking to the skies for the first time in 1952. Over a period of 32 years, a total of 134 Vulcans were made, and towards the end of the Cold War, many aircraft were converted from bombers to reconnaissance aircraft and fuel-carrying tankers.

The Vulcan played a famous part in the battle for the Falkland Islands between Britain and Argentina in 1982 - in fact, this was the only time the aircraft saw active service within a war. They served the RAF up until 1984, when they were finally grounded, with the exception of one...

VULCAN XH558

Vulcan XH558 was built in 1960 and chosen by the RAF in 1984 to remain in operation as a display aircraft. Over the years XH558 performed at air displays in front of millions of people until the Ministry of Defence (MOD) discontinued the Vulcan Display Flight. In 1993, XH558 - the last Vulcan in RAF service - landed for what many believed was the final time.

However, one person was not going to let the Vulcan disappear from our history. In 1997, Dr Robert Pleming began the journey to restore XH558 and put her back into the skies. When the Vulcan was bought from the MOD, the purchase included an almost complete library of original documentation and design data, and several hundred tons of spare parts which were invaluable to the project. After many years of modifications and repairs, Vulcan XH558 finally returned to the skies in 2007, and thrilled spectators at air displays all over the world until 28 October 2015, when it was grounded for the final time.

Vulcan XH558 has now started the next chapter in its story, helping young people think about and explore some of the current and future questions in aviation, aerospace, and more broadly around future technologies and sustainability, learning the lessons from the past and using these to inspire the future.

DR PLEMING'S OPERATION VULCAN SECONDARY SCHOOL DESIGN PROJECT

Ever wondered how an ejector seat works? Well, now is your chance to find out!

We would like students from Years 8, 9 or 10 to get to grips with the science and engineering behind this. They should then design and build a scale model of their own ejector seat, to be explained and demonstrated to our expert panel of judges. Students should base their ideas on the Vulcan's own ejector seats, and devise a mechanism that allows it to operate in a safe, environmentally friendly and secure manner. Students will be given the opportunity to learn about and see an ejector seat from Vulcan XH558 at the launch day.

PROJECT LAUNCH DAY

All teams who sign up will be invited to a project launch day on 1 February 2024 at Magna Science Adventure Centre, during which the project will be presented and the teams fully briefed.

The day will also involve the students in interactive activities which will help them understand the theory of flight and allow them to brainstorm initial ideas for their design. Engineers and members of the Vulcan to the Sky Trust team will be there on the day for students to start brainstorming their ideas before they head back to school to work on their project.

TIMELINE

NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG

November 2023
Invitations to enter.
Closing date for registration Friday 15 December 2023
Places will be booked on a first come first served basis.

1 February 2024
Operation Vulcan Launch Day at Magna Science Adventure Centre

Feb – April 2024
Teams work on the Operation Vulcan Design Project back in school with regular 'Ask the Expert' sessions with supporting engineers and Vulcan volunteers.

April 2024
Showcase and judging day at CBE+. Designs presented to an expert panel of judges and the winning entry determined.

May – July 2024
Winning entry to be developed into a fully working model in collaboration between the Students/ School and the Engineering Team at CBE+ and partners.

During this phase the winning students will also get to **visit Vulcan XH558.**

Summer 2024
Final Model to be located in the new Skills Street Vulcan facility at Gulliver's Valley.

The project is free to enter. To sign up for this project, please complete the on line booking form here **https://bit.ly/operationvulcan** or for more information e-mail Emily Woods at emily@work-wise.co.uk. Note the closing date for registration is **15 December 2023**.