Super Fighters at Warton 1948-1972
Tony Wilson – Heritage Department, BAE Systems Warton
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For the only time in these web-site summaries I am writing in the first person. First, I was not an attendee (I certainly wanted to be, but circumstances prevailed), and as a one-time colleague of the speaker, there was a personal edge to this presentation.

The expectation had been a review of hitherto unseen projects, but it turned out to be a review not just of projects that were drafted and never built (or even built and scrapped), but a discourse that delved deeply into the background relevant to the projects. A telling early comment by the speaker was his observation that, over time, project timescales have lengthened, and by now they are so long that from gestation to operational service can be equivalent to a lifetime in the business. His objective was to present knowledge from the company's legacy, together with material from the National Archives, that would improve understanding of many of the hidden issue that bring technology, industry and political policies together to shape UK military aircraft designs, and chose to use the Warton team experience from its 70 years or so at the leading-edge of the many dichotomies.

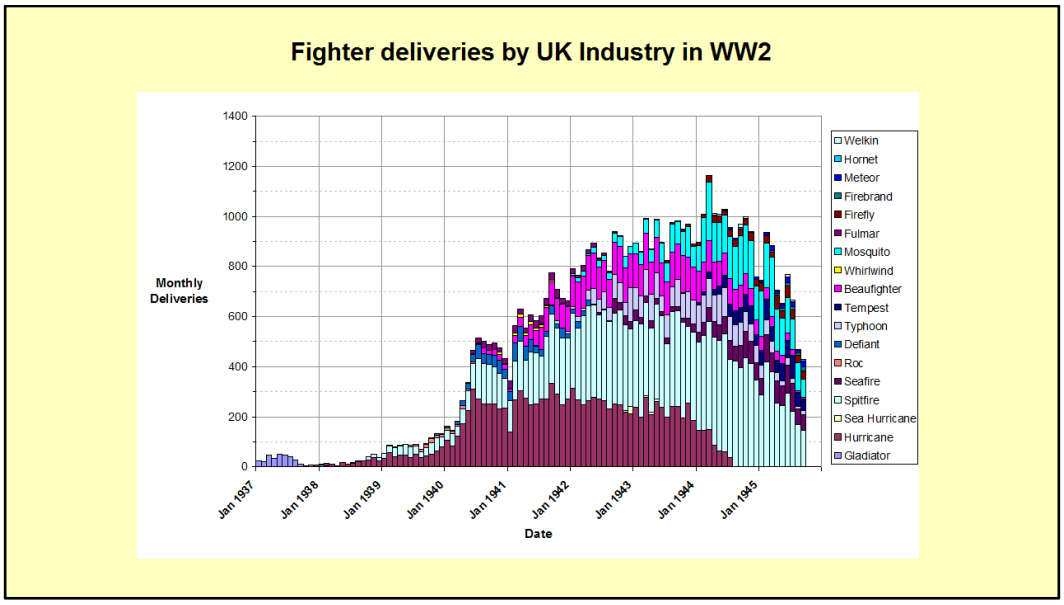
The perspectives used were broader that any ever printed in public, at least with such a genuine and deep knowledge of the issues involved, and comments received with the notes and a recording of the lecture are what drive me into a personal stance. It was not 'glossy coffee table book' stories retold with a few tit-bits – I found it to be an illuminating discourse on a scene where things can move at a snail's pace (even occasionally seem to reverse: one has to have been there to know the frustration) and hence I admired, from listening to his presentation, not just his knowledge, but also his ability to weave the threads of government and industry needs, to debunk some of the political machicolations that the press dwell upon, and to savour the successes – albeit they come so infrequently.

In what I perceive from post-lecture comments it wasn't quite the presentation that had been expected. There were concerns about the quality of some drawings – but I delight at seeing an original configuration drawing – the countless amounts of effort they portray make them worthy of being seen without embellishment. I meet my obligation to conclude the season's lecture reports, and rue the fact that I could not attend a presentation of an era in UK aircraft development that was as volatile as any we are ever likely to come by. Overall it described, in some depth, the technical, environmental and institutional challenges that those entering the modern aircraft design must face.

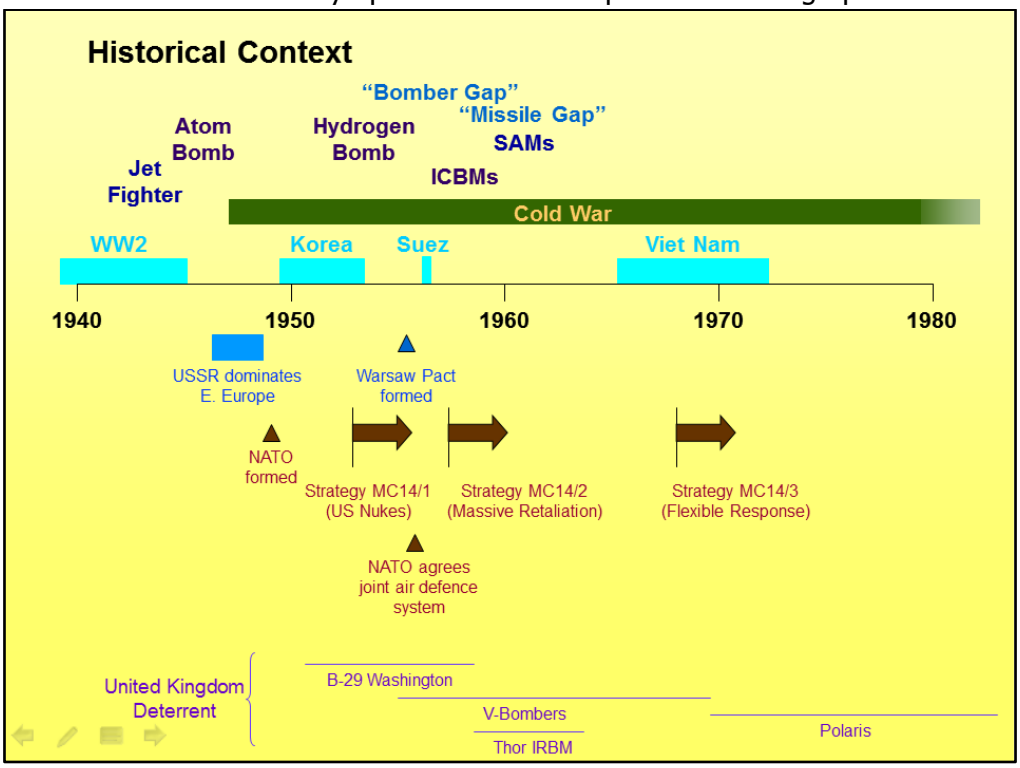
The speaker fulfilled his own well-measured belief that we have to look back on legacy and learn from the past. It is an attribute in current-day disciplines of all kinds that the lessons of the past or often forgotten and re-appear in the future. The presentation was attended by an audience of 75: there was no recording of the question and answers session to add comment on immediate audience reaction.

Lecture Notes compiled by Mike Hirst

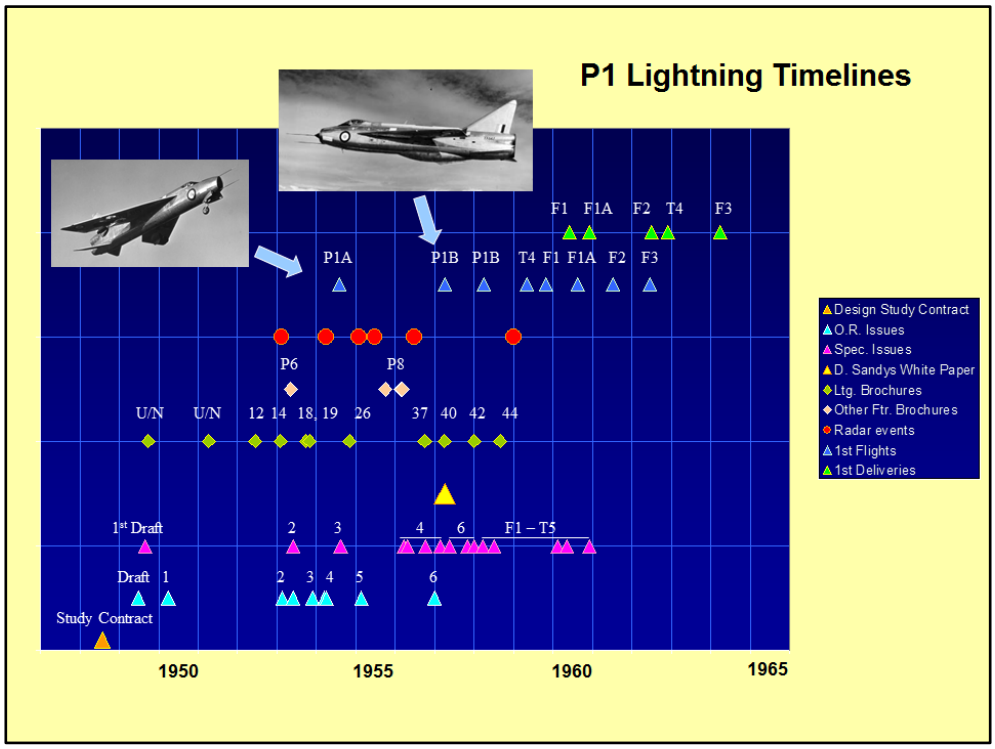
A selection of the slides used are presented as a record of, largely, the breadth of content.



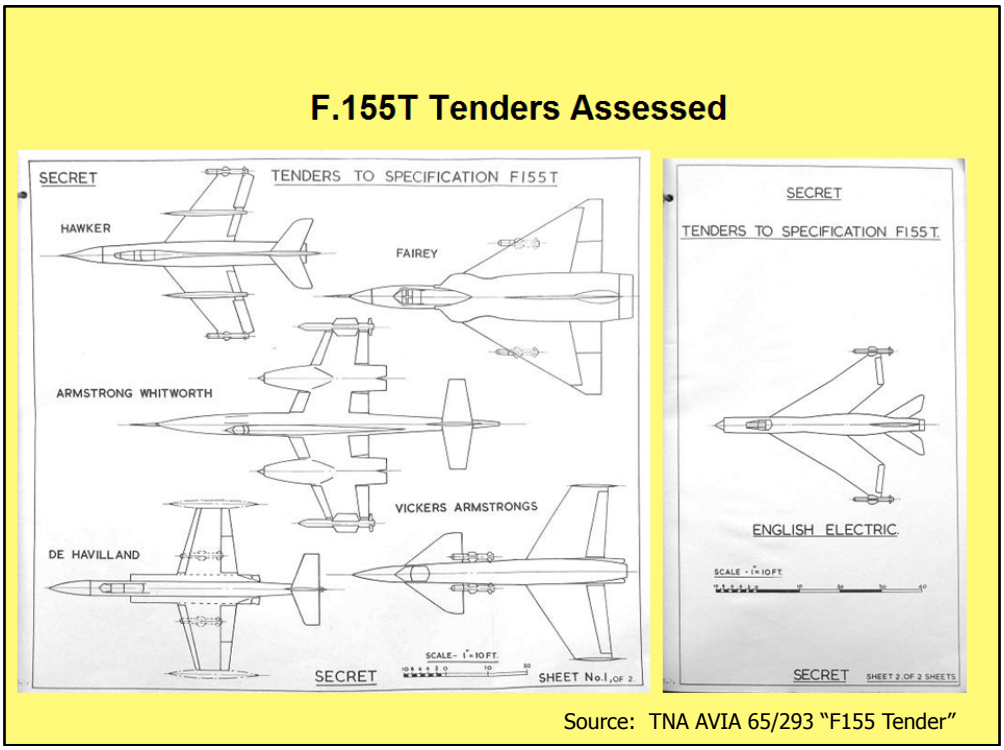
This delivery timeline shows how demand was never likely to support the output of such a diverse industry again. Warton came into the scene almost unexpectedly, having been a 'shadow' factory operator in the era plotted on this graph.



This slide illustrates how military strategies based on more fast-changing global threats than nations had needed to consider in the past were beginning to influence aircraft specifications sooner than the aircraft could be designed.

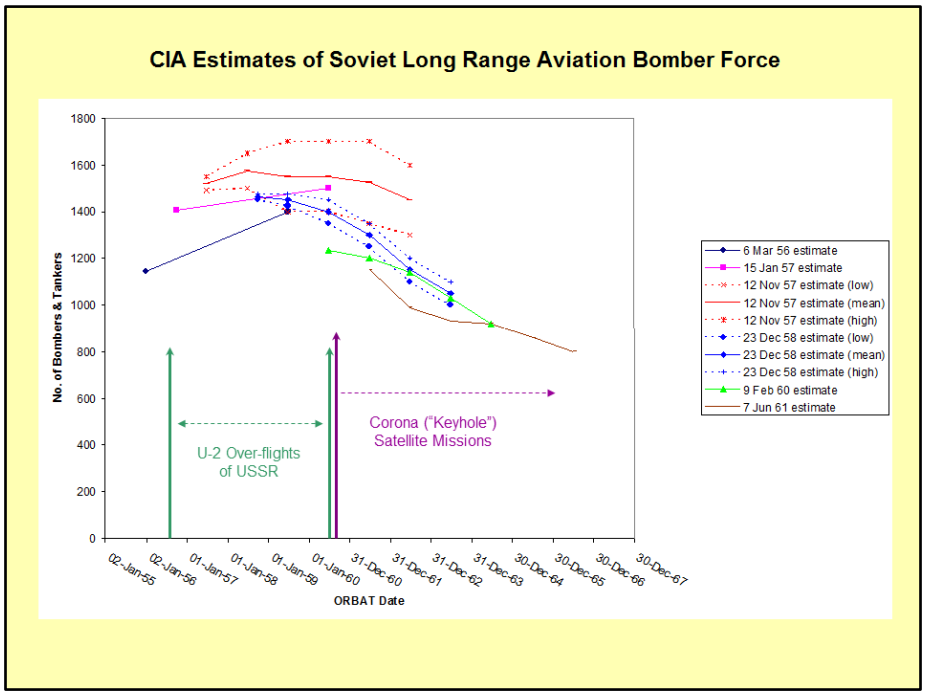


P1 (Lightning) took over a decade to evolve from its origins (as a research aircraft) to being in service as an RAF's front-line interceptor-fighter. Even before its first flight, the RAF had begun the search for a more advanced fighter (OR 329, F.155T). P8 was the Warton submission.

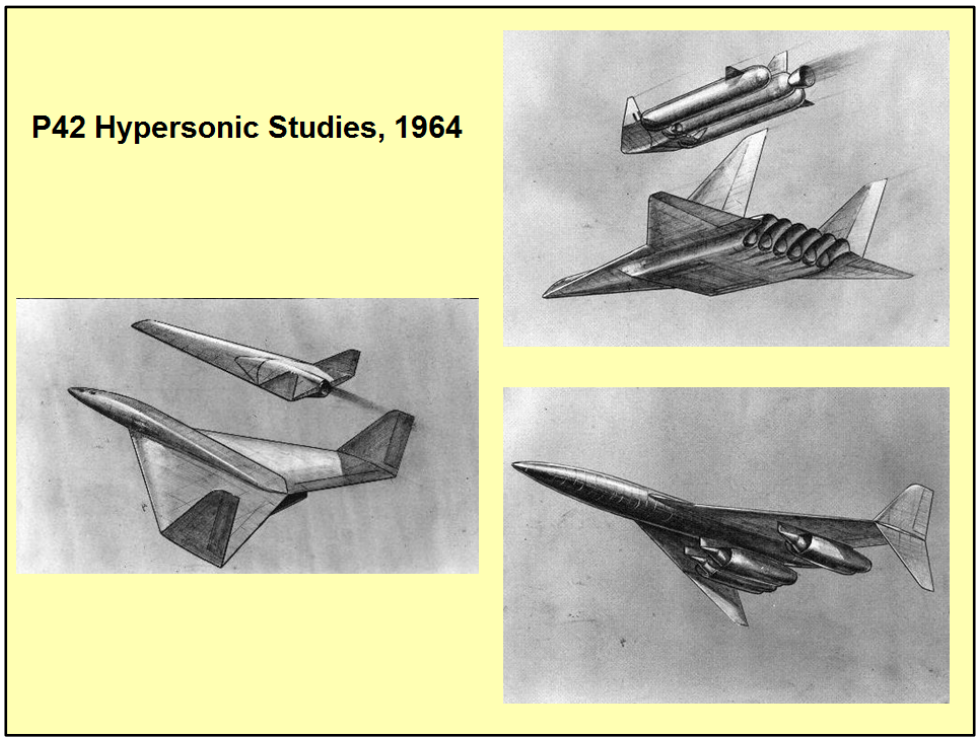


Source: TNA AVIA 65/293 "F155 Tender"

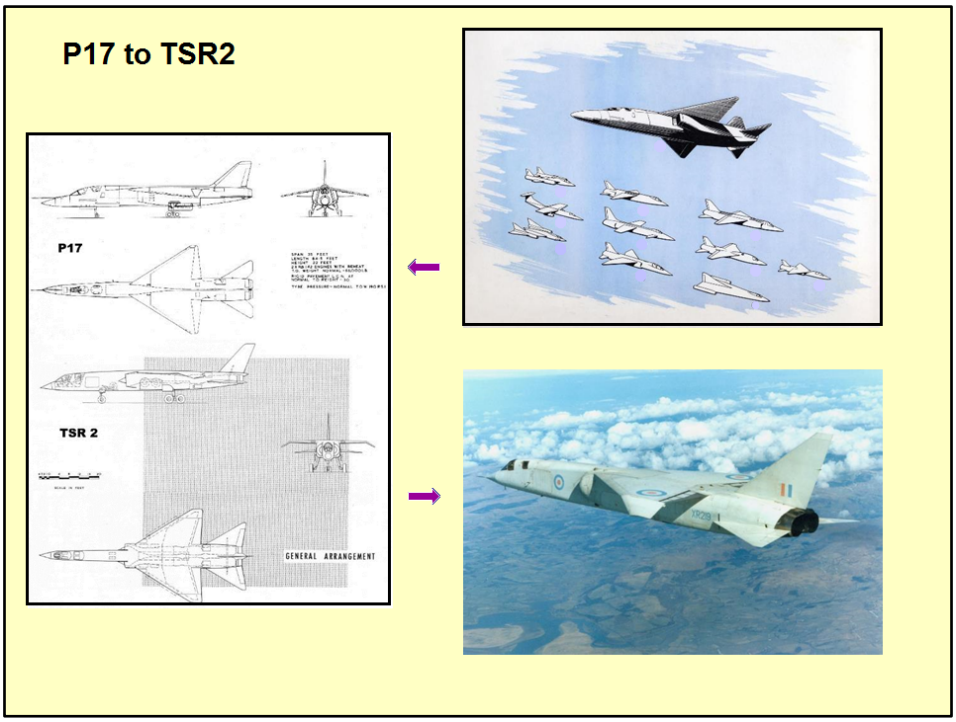
Seven design proposals were submitted to the Government (six shown here). The tender assessment debate epitomised the three-way tensions between the RAF, the Ministry of Supply and Industry.



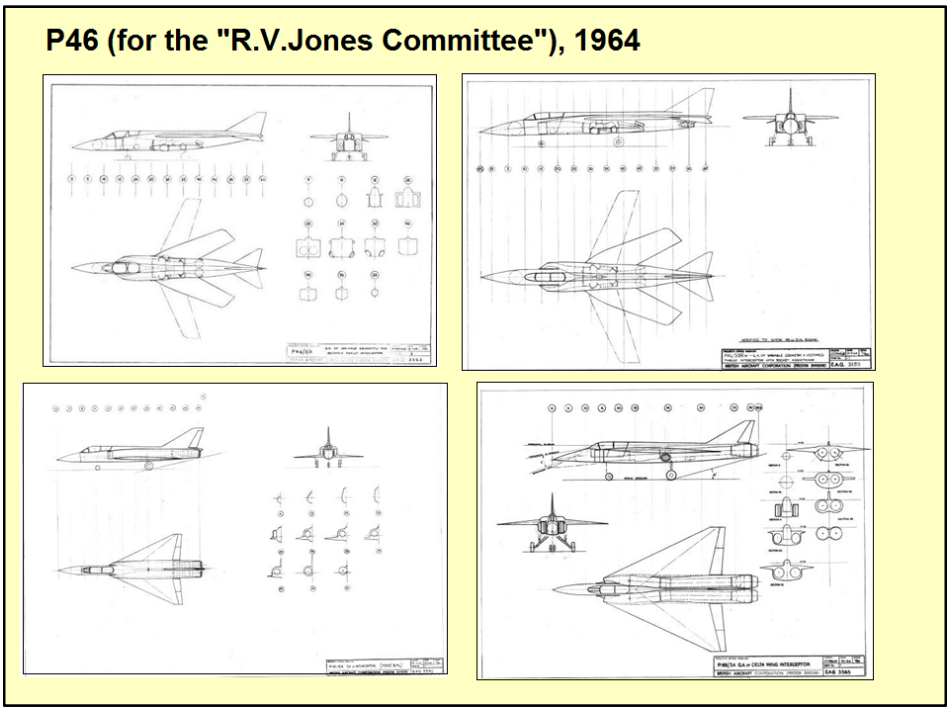
The assessment of threat in the deepest periods of the Cold War changed considerably as a result of US-led improvements in reconnaissance capability. The shift to strategic ballistic missiles led the RAF to cancel most of its fighter requirements before the Duncan Sandys white paper of 1957.



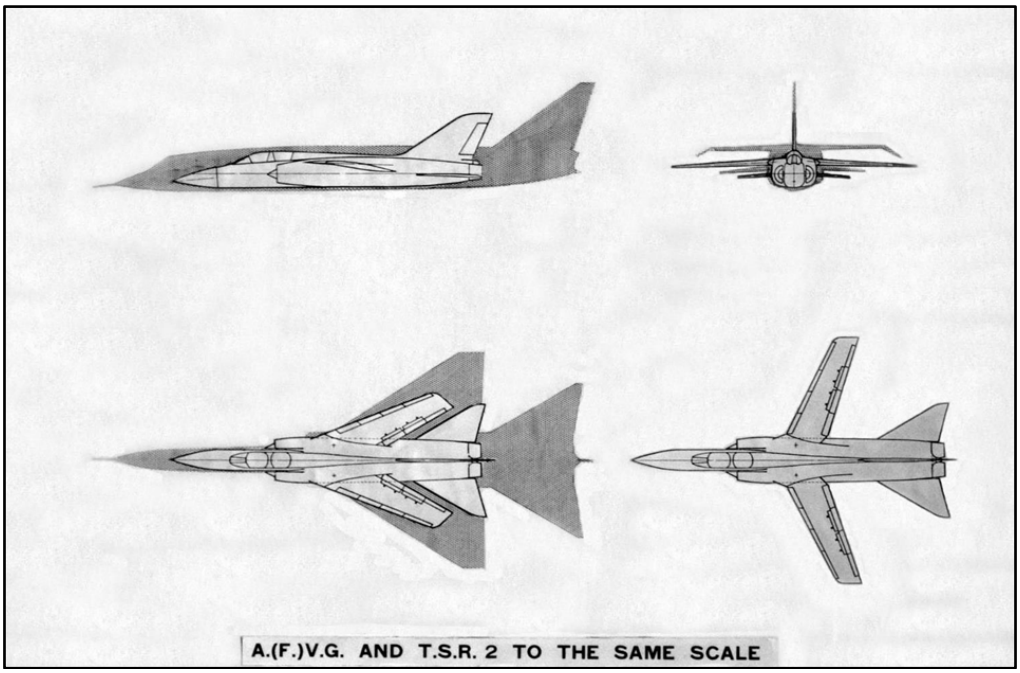
The high point, the technological sense, of the search for higher fighter speeds was reached with a Mach 4 fighter examined within a broad-ranging study of hypersonic aerospace concepts.



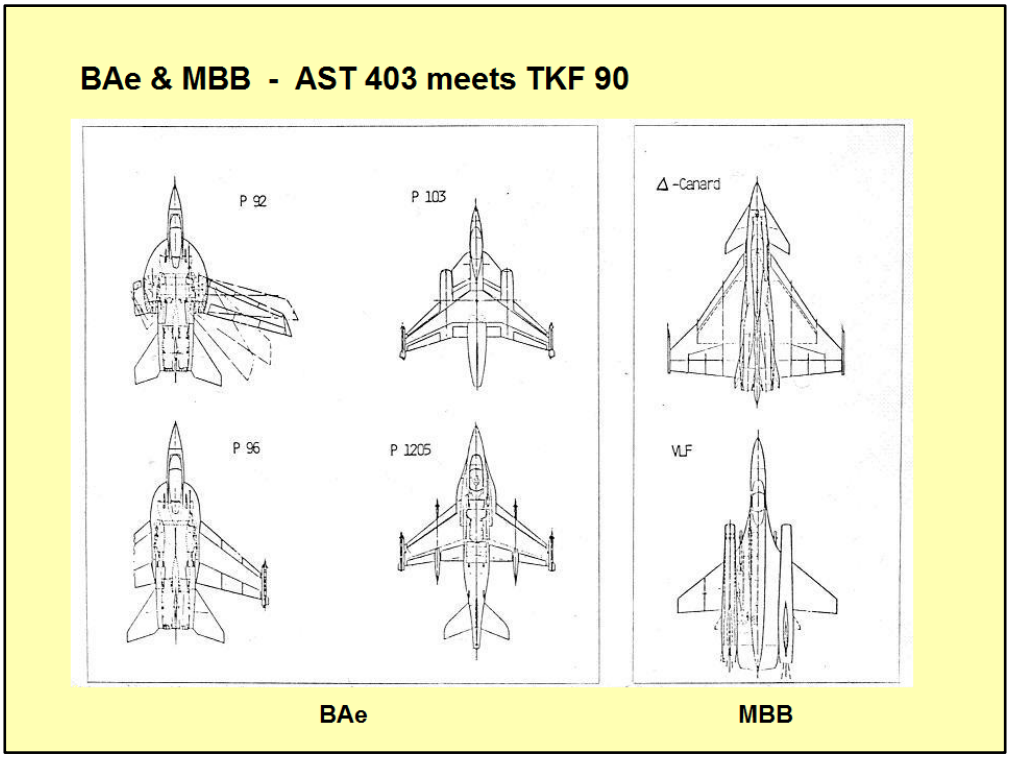
The cancellation of TSR2 in 1965 was revealed to owe much to the cost implications of the RAF's desire to also purchase F-111 while starting work on an even more ambitious multi-role successor. This slide shows the Warton original (P17) project – with a Lightning like tailplane and conventional fin/rudder, but a generally unchanged configuration.



Prof R.V. Jones (famous for his contribution to Scientific Intelligence) led a UK parametric study of future fighters. He expressed concern that the Ministry was favouring large and expensive options. He requested more information on Warton's parallel P45 lightweight trainer/combat aircraft. It heralded an era of seeking ways to get most capability from smaller, and believably, less costly airframes.



Drawing on P45, the AFVG - Anglo-French Variable Geometry project - was remarkably smaller than TSR2. AFVG gave way to the UK/Germany/Italy Multi-Role Combat Aircraft (MRCA) project – which led to the Panavia Tornado – but the UK was the only partner to evolve an air defence variant (whose specific role was examined in the lecture)



By the mid-1970s UK and other nations were responding to the US 'lightweight' fighter (F16). This slide shows four UK designs – P1205 was Kingston, the other three were Warton designs, and comparable German designs are shown alongside.

Lessons

- Threats, scenarios, military priorities can change quickly
- Projects relying on emerging technologies may end up with unbalanced features
- Focusing on a single emerging technology can be risky
- The customer's decision making process may involve many interested parties. It important to know them all, to understand their agendas and their relative influence
- These balances will change as organisations evolve
- It is important that all interested parties have a shared perception of the relative importance of cost and capability

By looking at the origins of Tornado and Typhoon, the speaker extended coverage beyond the period of the title, and drew conclusions, in terms of 'lessons' which are based on the experience gleaned from the last 70 years of progress.

He touched on issues such as the issuing by government of separate requirements and contracts for airframe, engine and aircraft systems – a practice applied even up to the Tornado programme. The airframe contract holder often felt hindered by this lack of overall control and the current-day Typhoon programme now makes them responsible for solving integration solutions, rather than being affected by the considerations of numerous problem solver. With this has come the amalgamation of many leading aviation and systems firms throughout the US and Europe.