

TSR.2 Short Memories

One the following pages is a collection of short memories, generally a page or less, from contributors.

They are from:-

Page 2 Alma Borsey, widow of the late Bill Borsey, was a toolmaker on the jigs at Samlesbury.

Page 3 Len May, employed at Flight Refuelling

Page 4 Len (Charly) Charlwood, a supervisor in 25 Dept Weybridge

Page 5 From Mrs Vivien Howard, widow of Nigel, a lorry driver from BAC Preston

Page 6 From John Preece, an RAF fighter pilot. John was later Squadron Leader, Jaguar Operational Requirements Liaison Officer based at BAC Warton.

Page 7 From Geoff, employed at Marshalls of Cambridge and received via the Key Publishing aviation web forum.

Page 8 From Lewis Robertson, ex-Ferranti Bracknell

Page 9 From Geoff Meekums, a Royal Navy officer seconded to Mullards.

Alma Borse

I know you would like to hear about actual experiences on the project from workers who may be still 'going strong' in retirement and I feel I should write to you as my late husband, Bill Borse, was a toolmaker on the jigs at Samlesbury (he served his apprenticeship at English Electric, Strand Road, Preston).

This was in our early married years and I still live in the same house we bought in 1958! In those days we had no car and Bill cycled to Strand Road. When he moved to Samlesbury to work on the jigs for the TSR2 he travelled with our neighbour, Roy Mills, on the back of Roy's scooter to Samlesbury and they had some scary rides in the winter time! As far as I can remember, Bill worked weekends – about a 54 hour week for about £40! He used to say he worked a lot of hours for the money!! Our mortgage was £9 odd per month at the time, so I suppose it is all relative and I do think money went further in those days!

He was so disappointed when the TSR2 was cancelled and the jigs thrown on the scrap heap that he left for a totally different line of work, but went back to Strand Road as a Sub-Contracts Engineer after 8 years

Len May

Whilst I was employed at Flight Refuelling 1951-66, originally in my RAF trade of Instrument Mechanic, I was entrusted with the TSR.2's revolutionary reed switch actuated fuel level contents reading, units, 16 per aircraft – 8 in each compartmentalised wing tank. Ordered off a suggested mock-up at Farnborough, with the frantic efforts I was responsible for the building, testing, inspection and delivery to the EE chaser chap (called Smith) in time (just) for incorporation into the first XR219 first test flight. It was a frantic race against time, successfully so, and wonderful the sense of achievement – only to be shattered by the subsequent cancellation of TSR2 and all contracts.

The unit was build at Flight's Wimborne factory but testing was done at Tarrant Rushton airfield 7 miles away meaning hair raising trips to and fro most days.

I'm 83 now, but I well remember the pressure, failures and successes of this project and the people involved including: Progress Office Manager: Stan Fisher; Drawing Office Designer: Fred Ellis; Mechanical? Builder of Assemblies: Bob(?) Warton; Planner: John P Fisher; Testing Inspector: John Fields. And many others including the chap who interfaced with these.

Len (Charly) Charlwood (age 91 in 2007)

I was a supervisor in 25 Dept Weybridge. I heard a rumour that the TSR2 had been cancelled, and as the TSR2 was our mainstay I gave all my stock of work to the craftsmen of my department, this carried them over until other orders came in.

The TSR2 structure was made of a material called 20-20. It was wonderful material to work with in the normalised condition: one could stretch it or shrink it to form it, almost like putty. After forming it would be treated and became very hard and thus difficult to work any further.

One day, cycling across the track, I saw a huge fire; it turned out to be a TSR2 being fired as there was not even a fireman there to mourn its final moments. I went to the fire office and was told: 'Oh yes, we are destroying the TSR2'. What a sad ending

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Mrs Vivien Howard

I was so excited to read about your request for information on people who were connected with the TSR2. I myself still tell people about how the cancellation of the TSR2 affected us badly at that time. We had four young children and a baby on the way. My husband Nigel started work for English Electric, Strand Road about 1954. Later BAC and then BAe, Nigel was 23 yrs then. He was a heavy goods driver long distance most of the time. He went to all the air shows with the job and enjoyed it very much, he also did a bit of chauffeuring for BAe.

When the TSR2 was being built, they had a special vehicle made to carry large parts. It was called the Queen Mary. It was driven at the front and the back, Nigel drove the front. It was a very large vehicle. It was made to transport the wings and large parts. Before work started on the TSR2, Nigel's wage was £11.50, but it went up to £31.00 per week. It was like winning the lottery for us, so you can imagine how we felt when the government cancelled the TSR.2 overnight. It was scrapped, it was a tragedy. Nigel's wage went back to £11.50.

I remember making my shopping list and I didn't know whether to buy 2lbs of sugar or a quarter of tea. £11.50 was to keep 7 of us, Nigel, myself and 5 children. It was heartbreaking for us at the time and also a struggle. Sadly for us, we lost our eldest son on July 6th 1997 aged 45. Six days later my husband Nigel died on the 12th July 1997. I lost them both to cancer. Nigel retired from BAe aged 55 years in 1987 due to ill health.

John Preece, Royal Air Force pilot

1. In around 1962, my station commander at Gutersloh in Germany gave a lecture to all the fighter pilots on the base about the coming of the new wonder plane. His name was Colin Coulthard and as he was very knowledgeable had presumably been in OR or some ministry post that was involved in the project. He certainly got us excited about it and many service personnel felt let down when the cancellation occurred.

2. Whilst at Warton, I attended the farewell dinner for Pete Money Penny, Chief Navigator. Jimmy Dell in a farewell speech described how he and Pete were at Boscombe on that fateful day waiting to fly one of the prototypes. There was a technical delay and they were told to go and have lunch and return to fly in the afternoon. They went into Andover and were in a pub when the TV news came on announcing the cancellation. Glasses dropped from nerveless fingers and they dashed back to the airfield to find that the aircraft had been towed away and was never to fly again. He described it as a very black day in his life.

From Geoff

In 1963 I was employed by Marshall Aerospace at Cambridge in the Aircraft Design Office. They had a contract from BAC Weybridge to design structure and system installations.

I worked on the equipment bay installation, just aft of the cockpit. I remember that with all the equipment installed the bay door could not be shut, and we had to design an outboard "bulge" in the door so that it cleared protruding equipment.

I also worked on the air cooling system within the bay, and found that by the time I had piped the air to all areas of the bay the air supply had run out, both in volume and velocity.

Another problem was thermally insulating the fuselage skin from the internal frames and stringers. We used, if memory serves me, an asbestos based material called Durestos.

Costs also went sky-high when suppliers learned what project their equipment was to be used for. We needed some ordinary immersion heaters for a test tank, and the price was almost four times that of an ordinary domestic heater, due I believe to being "aircraft approved".

When the Government cancelled the aircraft Marshall's received a telegram which terminated the contract overnight, and most of us designers were made redundant.

From Lewis Roberstson, ex-Ferranti Bracknell

I joined Ferranti, Bracknell, during May 1960 and worked as a junior development engineer on the inertial platform for the TSR 2. The platform had three Gyros; a large Azimuth Gyro made by Kearfott and subsequently by Ferranti, Edinburgh, and two smaller ones made by Honeywell. The two types had different voltage power supplies. A member of the team was very unpopular when he connected the wrong one and ruined a Gyro!

The platform was large by subsequent standards and contained some of the electronics which necessitated forced air cooling.

This early system was not as accurate as modern ones and received corrections from a Doppler Radar System, which measured ground speed. It operated in the pure inertial mode during such manoeuvres as toss bombing.

As far as I can remember only one experimental model made it in to the air; it was flown in a Comet to Gibraltar and back and the test results were encouraging.

An amusing incident occurred during the summer of 1963 when my wife and I were on holiday in Spain. We were walking along when I noticed a copy of The Daily Telegraph outside a shop. The headline announced the first flight of the TSR 2, I grabbed the paper and stepped forward to show it to my wife, where upon a very concerned lady emerged from the shop thinking I was stealing the paper. Her mood turned to bewilderment when I began to tell her about TSR 2!

Just before the TSR 2 was cancelled I moved to Elliott Bros at Frimley, where I joined the pension scheme, which became the GEC Plan and is now the BAE 2000 Pension Plan.

From Geoff Meekums, former Royal Navy officer seconded to Mullards

I claim to be the only naval officer who did anything positive for the TSR2 (you may be aware that the flying prototype was dismantled under duress by Fleet Air Arm personnel from "C" Squadron at A&AEE Boscombe Down).

Towards the end of my training as an Electrical Engineer in the Royal Navy in early 1960 I was a Lieutenant and was sent to the Mullard Research Laboratory at Cross Oak Lane, Salfords, near Redhill Surrey. There I worked on the design of the TSR2's Sideways Looking Radar (SLR). This was an RRE Malvern Development contract shared by Mullard, who designed the processor and transmitter control, and Thorn EMI (I think) who designed the radio frequency side of things (Transmitter/receiver).

Amongst other things, I designed the "A" model transmitter control unit which had a nominal PRI of 263 micro sec. The Moving Target Indication (MTI) system used pulse cancellation via a 263 usec (nominal) quartz delay line. Despite being in a temperature controlled environment, the delay line could "wander" slightly so the transmitter PRI had to be determined by the "length" of the delay. The control circuit was built using transistors and I can remember having the first pre-production batch of OC 170s to use.

The project leader was Keith Fuller, who later became head of what became the Phillips Research Laboratory. Other Mullard men involved were Ron Godfrey, Norman Goddard and ??? Brown.

I moved on to a different company after about 8 months but, as the project did not have to pay for me, I was deemed the equivalent of an up-to-the-minute Techtronix oscilloscope - badly needed by the project.

The early flying trials were carried out in a Varsity flying from RRE Pershore with, I am told, the "A" model airborne within in a year. The Sideways Looking radar went on to become part of the Phantom aircraft's recce pod.

As an aside I later became involved with the IFF equipment (Cossor 1500 & 1520) originally designed for the TSR2. It proved very reliable in service when fitted to all RN and RAF front line aircraft. The original TSR2 avionics environmental spec had to be seen to be believed!