

My personal memories of the ill-fated TSR.2

Tactical Strike Reconnaisance 2)



It was early 1959 when I started my engineering apprenticeship with English Electric at the factory in Clayton-le-Moors near Accrington that I first came into contact with aircraft.

The very well selling (until this day still being used in Afghanistan!) Canberra bomber was coming to its end. We were still making it but not in large quantities.

We then started in 1960-61 to build the Lightning, which was to say the least a very powerful fighter for its day.

With these two projects plus the Thunderbird/Bloodhound missile weapons line, you really got a sense of being proud to taking part of not only history, but also of technology way ahead of its time, and the fact that we a sort of "family"!

Pre-Production Memories

My first contact with the TSR.2 project was when were setting up the milling department to cope with planks of aluminium approximately five metres long and 40cm thick. I said to the departmental head (Bill Leeming), "we are going to need some waste bins". He said they will be here tomorrow; sure enough they came, some 20 or so. I then had the job of painting TSR 2 on all of them. After asking why this needed doing, I was told in no uncertain terms that it was a matter of costing i.e. accountability. In retrospect this was probably the first hint of what was going to happen later when the financial side of the project came under the scrutiny of the finance people (the Boffins)!

Then the water tank with a sonar device for inspecting the aluminium planks was installed. I at first didn't have a clue as to what this tank was going to be used for, but it was soon apparent. We were going to be

working on solid aluminium (7m x 2m x 10cm) planks, which were going to be parts of the fuselage. If any cavities were in the aluminium, this could be a very dangerous situation when flying at Mach 2. The inspecting of these planks was a very simple process, which had of course to be developed along with the TSR 2. We put something like 9 planks in the one massive tank (3 x 3), and then scanned over them with the sonar apparatus. The echoes coming back were all of the same height on the screen, until if a cavity was at hand, and then the signal on the screen would be different, thus telling us of its existence. This would be then returned to Alcan as a supplier for resmelting.

After installation of the milling and routing machines, the cranes for lifting the aluminium planks with their respective fittings were installed. These were based on vacuum suction pumps i.e. 3 – 4 saucer shaped feet approximately 30cm in diameter were attached to a frame work that was lifted/lowered by the crane. When the pumps were switched, on a vacuum would be caused and the saucers would be affixed to the aluminium plank. There were of course safeguards around the edges in case of an electrical failure, which wasn't common, but could and did happen! I remember one day when somebody was lifting a plank to transport it, that there was an electrical cut-off, unfortunately for the guy he (or somebody else never got to the bottom of it) forgot to put the securing brackets on. The plank went down from about 3m height with one hell of a bang!

Production Memories

Milling out the ribs of the above mentioned planks of aluminium (later to be the outer skin of the TSR-2, was in itself a challenge. With a multi-cutting milling arbor turning at something like * 1200 RPM and a milling pitch (forgotten but very fast), we were able to do this in a very reasonable time and above all to very fine tolerances.

The biggest challenge however was trying to find a way to cut through a honeycomb, which was ultimately going to be used for strengthening purposes between (which I think was) the upper and lower parts of the wings (not sure of this). This metal was aluminium but produced in quite large sizes, with the honeycomb walls only being wafer thin!

Firstly a cutter blade had to be developed, which was sharp enough to cut but not bend, then the correct milling speed (RPM) had to be found and last but not least the pitch speed. This was done by:

- Feeling
- Experimenting
- And above all experience

Which proves the point that the English skilled worker matches the best in the World, which after working for the last 40 years in Switzerland I can only verify?

How proud we were that after the maiden flight by Wg Cdr ^Roland Beumont and his good but critical report, to receive a letter of thanks from the then Minister of Defence Mr. Julian Amery. This seemed to me, to be the start of a really exciting era, how wrong I was!!

Of course not all things went to plan. Some (quite a lot really) internal structural parts had to be modified/rectified by gluing pieces of aluminium to them. This is where "Araldite" as so called "2-Component" glue came into action. Troubled workers on the shop floor were starting to talk about the fact that all the Russians needed as a weapon was something which would melt Araldite and the aircraft would fall apart!!

To me the most disturbing factor of this whole project was the fact that before the general elections in 1964, we had labour party members outside the factory gates handing out leaflets saying the TSR 2 project will not be discontinued! (One of the "jobs safe" leaflets can be seen at 503 in the Photo Album section – Ed) Knowing what I know today, I'm sure that even then this was on the cards. So you can imagine the feeling that you got, when it was finally cancelled. It made me sick to think that this was the last military aircraft to be wholly British from the development stages through to final production. We clearly lost a lot of know-how and last but not least good faith amongst the people employed in this project, so much so that I personally didn't want anything more to do with the aircraft industry, as you were never going to be sure on the point of *job security!

Security aspects

As you can imagine, the security aspects of the project were taken very seriously, with everybody having special badges to get into certain departments, so serious that when the works manager came without a badge and the security guard on the door let him in with the usual "Hello Mr. Ellis", the guard was relieved of his duties and given some other job to do!

To veer a little away from the TSR.2 to the Concorde shortly, when we were making the integral tanks of this also fine project, and more or less at the same time, we were all instructed that all drawings had to be locked up each evening and over the weekends in specially provided lockers next to our workplaces. You can imagine my surprise when I first saw the Russian "Concordski"! How on earth did they get such information?

Post project experiences

At the end of 1966 I made the decision that I would look further and at the beginning of 1967 I came to Switzerland where I've been ever since and will be retiring next year.

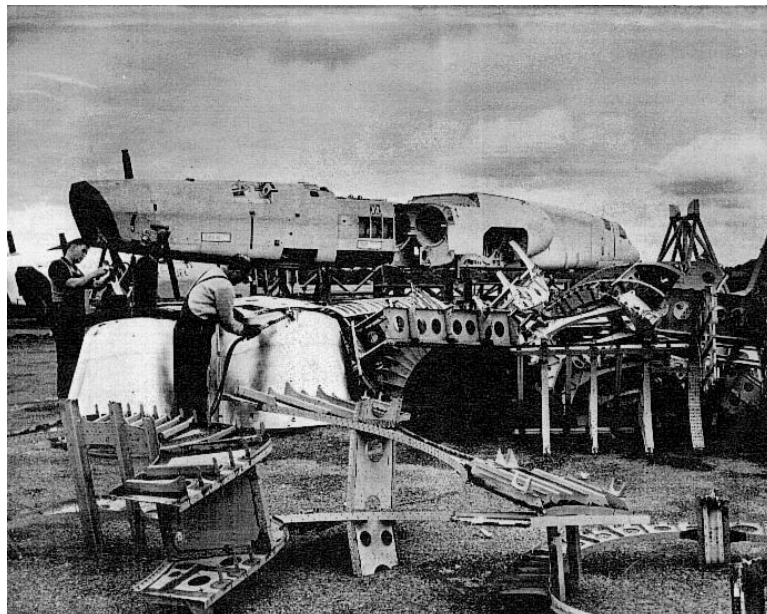
In 1972 I came across a guy who was serving in the **Swiss armed forces as well as working in the same factory as myself.

We found out that we had a common interest in aircraft and he told me when doing his national service, he was in an aircraft reconnaissance group. He then showed me his military book full of aircraft with their names, shapes and forms taken from various angles, including the TSR.2!!

Then around 1995 I was looking in a book shop and by accident picked up a monthly aircraft magazine and low and behold, the lead story was the history of the TSR.2, with some wonderful photos, which I've since framed for my office and as from next year they will be hanging in my house.

When just looking at the photos, there is something about the TSR.2 to this day, which makes you proud on the one side, but sad on the other side, in particular when you also see some photos of the aircraft being broken up in a scrap merchants yard.

Sad, very sad. (This photo, and a contribution from the person on the left, can be seen at 570 in the Photo Album section – Ed)



This brings to mind the phrase:

"All modern aircraft have four dimensions: span, length, height and politics. TSR-2 simply got the first three right".

Sir Sidney Camm

* Job security was one of the reasons for me leaving the U.K. in 1967

** The Swiss armed forces are a Militia type of force, that after doing 18 weeks of basic training they will do stints of 2 – 3 weeks every couple of years or so from then on, depending on the necessity and age of the guys.

A nucleus of the air force pilots are full time, the other are usually pilots flying passenger jets for various commercial airlines.

Notes from the writer:

As all this was over 40 years ago, please give or take a couple of years on dates mentioned. Some of the technical wording might also vary from the original.