



Rochester Avionic Archives Newsletter

From the Curator

It is always nice to know that people do actually read our Newsletters and also look at our Website. We have had three inputs recently; one about the Queen's Award picture from the last newsletter, one about an item found at an Aerospace Sale and a fascinating story from John Campbell about one of our items in the Collection.

We have so many helpers now that we are considering having an extra day on-site. This has allowed us to expand some of the tasks; we have finally got around to sorting out the site drawings and then started to repair some of the damaged items.

Chris Bartlett

Curator

The bid for the UK Army Attack Helicopter

The requirement for a new attack helicopter for the British Army was identified in the early 1990s with initial suggestions that 125 would be ordered, however an invitation to bid was not issued until February 1993. GEC Avionics was to be the prime contractor in a joint bid with Bell Helicopter Textron to offer the AH-1W Cobra for the British Army Air Corps' attack helicopter requirement.

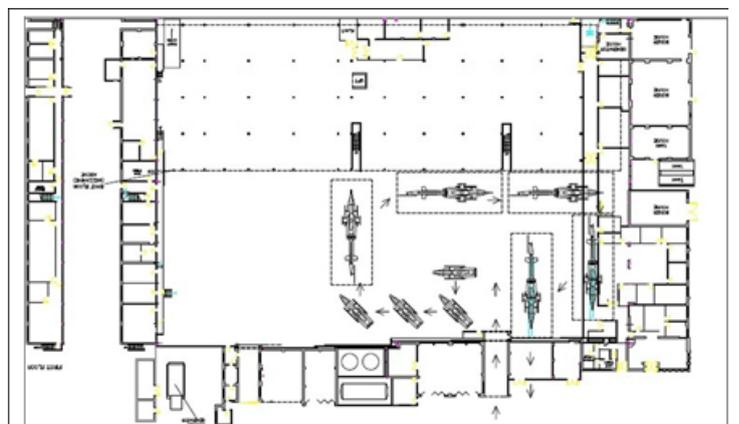
Initially a twin bladed version of the Cobra Venom was offered but later in 1994 this was upgraded to a four bladed version. Such a programme for the Bell UH-1N was already under way in the USA, and the Cobra Venom and AH-1W programmes could have been incorporated into this. The cockpit upgrade for the USMC AH-1Ws would be based round GEC's Venom cockpit. The GEC/Bell bid would have provided a helicopter with almost the combat capability of the Apache, but at considerably less cost; as much as £750 million less than that of the rival bids based on the Apache. The Army Air Corps finally requested 91 Helicopters but could have bought 130 Cobra Venoms for the same money.

The key activity that GEC brought to the bid was the expertise in designing a modern cockpit, which the venerable Cobra helicopter badly needed but also to assemble the helicopters from kits here at Rochester. The East end of the Main 40' Hanger was to have been cleared and an assembly line introduced for kits of helicopters from Bell.

In July 1995 Michael Portillo, Secretary of State for Defence, announced the award of a £2.5bn contract for the Apache attack helicopter to a consortium of McDonnell Douglas and Westland.



A Bell AH-1 Cobra in the front car park in about 1995



The 40'Ft Hanger showing the proposed assembly line

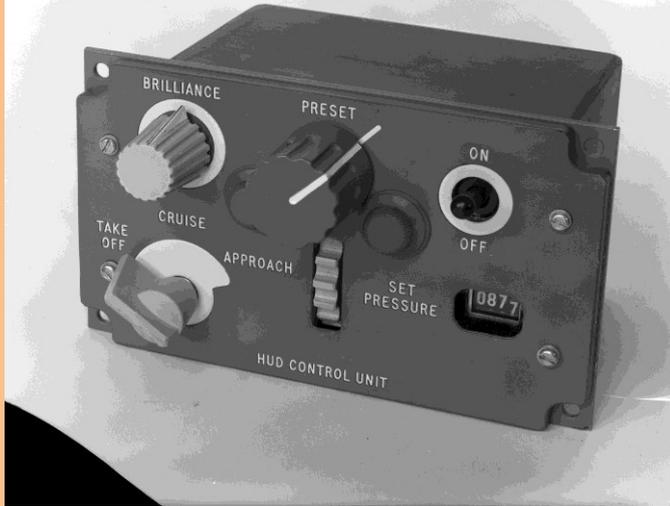
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The Head Up Display for the Short Belfast



Cintel were contracted to supply the HUD for the RAF's strategic freighter, the Belfast. Development of this long-range, strategic transport aircraft began in February 1959, with the first flight in January 1964. Only ten of the originally ordered thirty Belfasts were built, all for the RAF. The Belfast HUD was integrated with the Smiths Triplex automatic landing system and a major function of the head-up display was to monitor this automatic landing system. The picture (Left) is the Belfast HUD Control Unit. This allows the pilot to set the HUD display mode (Take-off, Cruise or Approach), PDU luminance and pressure settings.

The box was apparently acquired from a Car Boot Fair some years ago and the previous owner had had it since the 1960's.

The Queen's Award

Do you remember the picture from the last edition? I have had a lengthy reply from Mandy Pearson (née Clarke) and she says that "It is of Rod and myself receiving the award from The Lord Lieutenant of Kent, Lord Astor of Hever. I think the date was Friday 26th September 1975 and the picture was taken in a special exhibition set up for the occasion at Rochester. Rod and I were both in Inertial Navigation Division at the time, working on the Nimrod Central Tactical System, but prior to that I had been in the Airborne Computing Division and had spent two years at BAC Warton as a programmer on the Jaguar flight trials. Rod had worked on the Jaguar Inertial Navigation system in IND and previously worked on the TSR2 AFCS.

It was a very memorable day in our lives. Rod and I had taken the day off work, as were going to visit my parents and announce our engagement!. Brian Paxton turned up at my house and said that it had been decided that two people who had worked on the Jaguar project should receive the award instead of Peter Hearne. We had to hurriedly get changed and rush to Rochester."

Mandy kindly sent in a newspaper clip from the day.



THE Lord Lieutenant of Kent, Lord Astor of Hever, presented Marconi Elliott Avionic Systems of Rochester with the company's fifth Queens Award to Industry in September.

The company has won the award for technological innovation in the advanced navigation and weapon aiming system developed for the Jaguar aircraft, now coming into service with the RAF.

The presentation was made to Mandy Clarke and Rodney Pearson on behalf of the company; both work in the Inertial Navigation division, which produced the sophisticated system for the Jaguar. Distinguished guests at the presentation included Lord Selson of Stafford, chairman of

GEC: Wing Commander Carlton, who commands the RAF's Jaguar squadron; I. R. Yates, director of projects at BAC, who were responsible for designing and building the Jaguar; and local city officials, MPs, and senior defence ministry executives.

This is the fifth Queen's Award that Marconi Elliott Avionic Systems has won. Of the other awards, three have been for export achievement and one for both technological innovation and export success.

The picture shows Mandy Clarke and Rodney Pearson with the Queen's Award and the Grant of Appointment signed by the Queen and the Prime Minister.

F-16 Head Up Display

'A tribute to the GEC-Marconi engineers who designed the LANTIRN HUD, completely functional examples have been retrieved from crashed F-16's'

From 'F-16 Net The ultimate F-16 site'
http://www.f-16.net/f-16_armament_article2.html

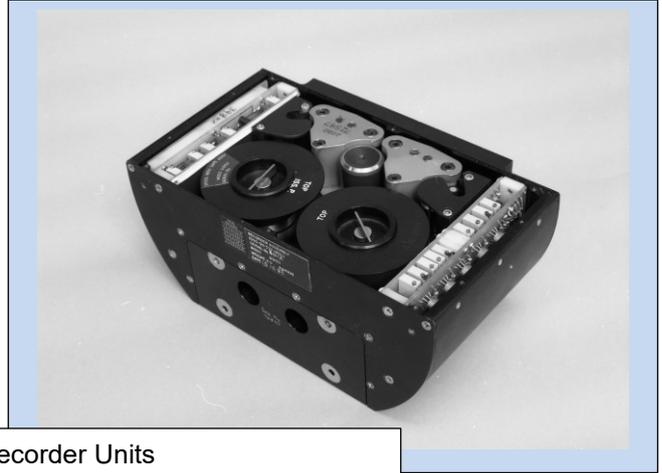
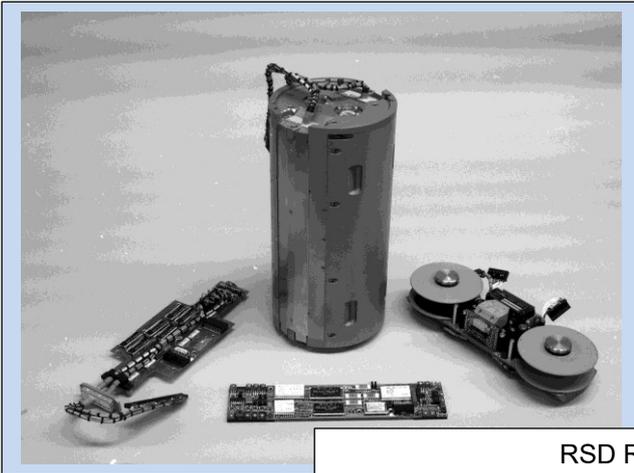


Fisher Valves

A view of Fisher Valves in the 40' Hanger around 1970. Leon Bagrit established an agreement in 1949 with the Fisher Governor Company of Iowa for the manufacture of oil control valves and production commenced at Rochester in 1950.

Around the Divisions- Recording Systems Division

This Division was located at Nailsea near Bristol in a 17,000sq ft facility; around 1985 it had 80 employees. The Divisional Manager was Mr D. Hooper and the Chief Engineer was John Talbot. The products were Data Recorders using Solid State, Optical, Linear Magnetic Tape or Helical Magnetic Tape and they were designed for all environments from the Office to severe crash survival. The linear magnetic tape unit was basically a ruggedized cassette recorder using the standard cassette tapes. The picture on the right shows a compact 16 channel high density Recorder and replay unit with a magnetic tape deck. The cylinder in the left-hand picture is probably part of a 32 track digital or FM Data Recorder shown with a couple of circuit boards and a magnetic tape deck. The Data Cartridge Unit, C0216 in our Collection, is another typical product of RSD.

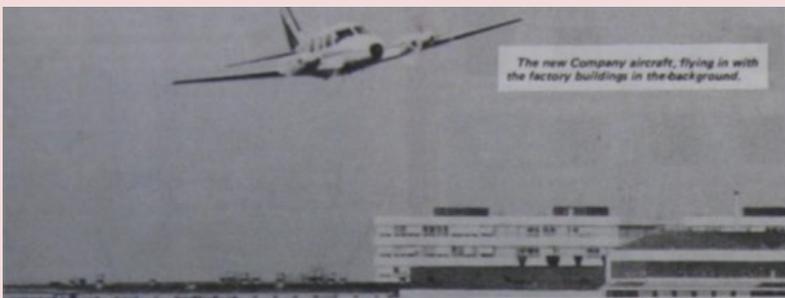


RSD Recorder Units



Oops!

In March 1987 the Company Piper Navajo aircraft accidentally went off the taxiway into the rough. The wheels dropped into a hole and as you can see this resulted in both propellers being bent. The repairs were very expensive as both engines had to be repaired. Many will know who was responsible but even with the time that has passed, a decent silence is polite! The 7 seater Navajo C, registered as G-ECMA, was acquired by Marconi Avionics in 1978 (the rather poor picture below shows it arriving at the site). A reception was held to mark the handover from Mann Aviation to the company. The Chief Pilot was Eric Taylor, who with Barrie Allen, piloted the company fleet. Since 1962 the company aircraft fleet had flown over 2million miles equating to 5.9million passenger miles. The fleet previously had two Aerocommanders and these were replaced with the Navajo and a Piper Aztec.



An amusing aside

I was idly perusing a write-up of the new Baywatch film, which is noted for being rather poor, when I discovered that a similar clothing range comes with 'BAE WATCH' in white on a red background. I assumed that this was a brilliant new company recruitment drive but sadly BAE is Urban Slang for "Baby," and is also an acronym for "Before Anyone Else"! (Ed)





Concorde Stick Force Sensor (C0660)

The Concorde Stick Force Sensor

Thanks to John Campbell for the following notes: 'It was quite late in the Concorde development that the Aerospatiale failure analysis uncovered a failure case that could result in a total jam on the control runs. I am not sure who actually found it or who suggested the solution of going directly from the force applied by the pilot on the jammed control wheel to the electro-hydraulic valves on the main jacks – actually this was fairly obvious because, after all, Concorde was the first fly-by-wire aeroplane! Aircraft were well on the way down the production line so the solution was needed quickly and we were asked by Aerospatiale to produce the force sensors. I am not certain now who in FCD did the design but I suspect that Staff Ellis and Ian French were involved. I was then a Project Leader and was asked to get it made and quickly. Like everything on Concorde it was to be short production run. The mechanical parts were to be made in house and the strain gauges were to be supplied and fitted by Pye Dynamics – then at Watford but since c1995 no longer in business.

Production was quite straightforward after a problem of cross-linking of roll into pitch had been resolved. Thereafter, the only real difficulty was the transport of the device back to Rochester after the strain gauges had been fitted but still without limit stops. In this state the device was very susceptible to breakage. The solution was a very large packing case and a lot of foam packing. Two would only just fit into my Volvo.

Many years later I heard that the postulated fault and control jam had occurred in flight and the Stick Force Sensor had been used in earnest to bring the aircraft home. I doubt that its handling characteristics were good but it got home in one piece.'

Inertial Platform

Elliotts had started work on Inertial Navigator systems back in 1951 with the system for the 'Red Cheeks' air to ground missile. Two years later the company developed a Heading Reference system for the V Bomber force called MRG'B'. Back in 1955 work began on the Navigator Unit for the Blue Steel rocket powered stand-off missile and a production contract was awarded in 1960 to the Inertial Navigation Division. However the Navigator Unit weighed over 500lbs and the Inertial Platform alone weighed 180lb and was nearly 2ft in diameter. The technology was thermionic valves, germanium transistors and magnetic amplifiers.

What was wanted was a light weight, (under 30lb), compact unit capable of using a range of gyros and driven by modern transistor circuits.

The E3 Platform was flown in 1961 on a Gloster Javelin from Cranfield. In 1964 it went into service with the Royal Navy and later that year the Ministry of Aviation began trials of the system in a Comet 4C at Boscombe Down. A further trial took place in a regular passenger service on a BOAC Boeing 707. In 1965 the E3 Heading Reference system was selected for the Nimrod programme.

Onwards to the E3R IN Platform

The company research lab FARL was formed in 1961 and one of their first tasks was to design a new compact IN system. The Chief Engineer was Dick Collinson and the Chief Designer was Staff Ellis. The design they came up with was quite novel and in 1967 based on this earlier in-house development work commenced on what became the E3R IN unit. This ultimately went into production for the Jaguar NAVWASS and various other programmes

