655 Maintenance & Preservation Society

Issue No. 15 Spring/Summer 2006

# Plans for Wellesbourne Wings and Wheels 2006 are coming to fruition…….

*Lady in waiting – the better weather gives the volunteers more opportunity to work on the aircraft*

**IN THIS ISSUE……**





FREE ENTRY FOR 655 MaPS MEMBERS ON JUNE 18th 2006 RUN DAY

**ENGINEERING REPORT**
*By Derek Powell*

Before I go into the details of the work which has been done over the winter months, I would like on behalf of all the members, to say a very big “thank you” to the engineers and helpers who have put in so much effort right through an unpleasant spell of weather. There has not been a single weekend when the aircraft has not been worked on and that is really some achievement. While the workforce has survived unscathed the worst that Wellesbourne could throw at it, the same unfortunately, could not be said of 655.Long spells of freezing temperatures seeped into the aircrafts joints (same with mine actually) and we were treated to an ever increasing number of dribbles of what can only be described as ‘noxious fluids’ when thirty year old rubber seals declined to do so. Particularly badly affected were the PFCU’s and it was quickly realised that it was going to require a major effort to remove and overhaul all ten units starting with those worst affected. The work will have to be spread out over several months and fitted in around the many other jobs which need doing. Eric Ranshaw has undertaken to see the overhaul through and has been busy sourcing the many seals needed to do the job properly. Only one type of special seal eluded him but the **VOC at BRUNTINGTHORPE** came to the rescue and supplied the missing items. So far, three units have been completed with everyone helping with the removal and refitting of these very heavy pieces of equipment.

In the last newsletter, we mentioned that we planned to replace the jet pipe end caps which, being made from mild steel, have suffered from corrosion. There were three brand new caps for numbers 1, 2 and 3 engines at Bruntingthorpe which were no use for their 201 engines and it was agreed that these would be used on 655. In return, the end caps which we removed would go to Waddington to be repaired and fitted to 607. The units on 607 are in extremely poor condition and beyond patching and repair. Despite the bad weather, this task is now complete with the bulk of the work being done by Fred Barter and Richard Galazka with everyone else helping out as required. Richard is our newest recruit to the engineers and has already proved to be a great asset to the Saturday gang. The end cap replacement proved a fairly lengthy job, with the removal of the old units being the most awkward and which required a lot of careful work to remove many seized and corroded screws and bolts without damaging the units which were needed for Waddington. New gaskets were fabricated to fit between the end caps and the airframe and the units were offered into position. The new units come un-drilled and so it was necessary to precision drill the units to match the anchor nuts on the airframe. Needless to say the new end caps were thoroughly treated with rust inhibitor before fitting. A final coat of aluminium paint on the exterior completed the job.

During our last taxi session, David Thomas had given our nose wheel tyres a rather old fashioned look and although these tyres had been inspected and passed by Dunlop it was agreed that they should be replaced. Both wheels were removed and replaced by part worn tyre and hub assemblies. The old tyres have been removed from the hubs and will be scrapped while the hubs will be fully refurbished followed by the fitting of two unused tyres supplied again by **VOC at Bruntingthorpe.** These are ‘new‘ tyres but not airworthy, therefore cannot be used for 558, so the VOC agreed to release them in recognition of MaPS allowing the use of 655 for training purposes. The original refurbished hubs complete with new rubber will soon be refitted to the aircraft. The nose wheel steering mechanism seals also seemed to suffer from the cold weather and developed a small but persistent hydraulic leak. The same method as applied to the PFCU’s was used, with the unit removed from the aircraft and a complete set of new seals fitted. Incredibly, these seals can still be obtained commercially and are usually supplied by return of post. A small number of faults, such as a failed fuel pump, are still in the job queue but we are pleased with the work done over the winter period.

Some time ago, we fitted a de-humidifier into the cockpit with an enormous improvement in the condition of the equipment installed therein. So pleased are we that we decided to fit a similar unit into the power bay. This fairly small but absolutely vital area is situated in the fuselage directly under the fin and is the electrical nerve centre of the aircraft. Packed with literally hundreds of fuses, relays, contactors and miles of wiring, it is here that the power from the engine driven alternators is controlled and distributed throughout the aircraft. The installation is almost complete and will be ready for those hot and humid summer days. Really??

We are currently well on track to provide a serviceable aircraft not only for our fast taxi day on June 18th but also for the crew training for 558 which is scheduled to begin in early June. It is also likely that we will be required to provide training facilities for the ground crew who will be responsible for 558 when back in the air. This training is expected to take place towards the end of the year.

All in all we have had a very fruitful winter session and we feel that some steady progress has been made despite the rather doubtful conditions.

My thanks again to everyone who has turned out and put in the hours over the last few months. I am sure every one of our members appreciates the total commitment involved.

A ‘Stop Press’ item in the last newsletter announced the purchase of a Douglas ‘Tugmaster’ from the Britannia Restoration Trust at Kemble. This is a genuine 1950’s piece of kit which was specifically designed for towing V Force aircraft. It still had the Coventry Victor 4 cylinder engine driving a 115v DC generator which plugged into the Mk 1 bombers. The Tug will require many man hours to bring it back to a condition suitable for use and presentation. This will go on as a background exercise over the coming year or so, although we do expect to use it to tow the aircraft on the taxi day. Some work has already been done including the un-jamming of the winch assembly and replacing a badly damaged front wheel. The aforesaid DC generator has been removed along with the Victor engine. The whole assembly was completely seized and was of course, no use at all on the AC system on 655. Into the space vacated we are going to install our spare Palouste air starter for 655 main engines. This will be a useful standby should we have problems with our ‘Camper Van’ starter. Thanks to the BRT and a little searching in the internet we have a set of maintenance manuals for both the Tug and for its straight eight Rolls-Royce engine, so we should be able to carry out the restoration work needed. If anyone out there would like to do some mechanical engineering, please let us know.


Our new tug arrives – courtesy of John Snape Transport © Fred Barter

## Mark and Jan

Congratulations are in order to Mark our Crew Chief and Jan our Secretary, who were married (to each other!) in Coventry on April 13th. I know everyone from 655 MaPS will join me in wishing them all the very best for their future happiness.

## 655 STILL PULLING THEM IN

The winter is usually a very quiet time for visitors to the aircraft but this one proved the exception with a number of both Vulcan aircrew and ground crew coming to see us or to get in touch with us. **Bill Beacham** who was a Nav Radar and is a long standing member of MaPS has put pen to paper and written an article for us which will appear in the next newsletter. **Alan Moffatt** who was a pilot with 9 Squadron also paid us a visit along with some members of his family. Alan expressed his pleasure at seeing the aircraft being so well looked after. **Jim Connolly** who was a Chief Tech with 230 OCU, 9,12 and 44 Squadrons just ”happened to be passing” and felt obliged to visit an old friend.

I must admit a particular pleasure when we are able to re-unite ex-Vulcan people with the aircraft. The look on their faces and the invariable comment ‘it smells exactly the same’ makes it all worthwhile.

# WELLESBOURNE WINGS AND WHEELS 2006

655 Maintenance and Preservation Society are pleased to announce that this year's event will take place at Wellesbourne Mountford Airfield on Sunday 18th June 2006 and once again, MaPS Members will have free entry (using the enclosed pass). Gates open at 10.00am and close at 5.00pm. The entry charge will be £5.00 per adult and children under 12 will be free – car parking is free of charge.

Following on from the success of last year, Avro Vulcan XM655 will perform two taxi runs on the day, the first at low speed to relocate the aircraft on the airfield at 11.30am and the second at high speed at 2.00pm so that everyone can enjoy the sound and spectacle of this magnificent Cold War bomber*.

Forming a strong support to XM655 will be a large display of classic cars and other vehicles spanning several decades. Exhibitors will include representatives from the Rootes Group, the Triumph Stag Owners Club and the Audi Quattro Owners Club. Their owners will be in close attendance and will be pleased to answer any questions that you may have.

Our friends from Air Atlantique will have a DC3 and their De Havilland Dove/Devon on static display and will also be operating pleasure flights on the day. We are hoping to have other aircraft on the day including a rare Curtis P40 Kittyhawk and a Boeing Stearman biplane. The Army Air Corps Blue Eagles were a resounding success last year but due to operational commitments the team will not be able to join us this year. However, they have indicated that they will send the Lynx and a single Gazelle, plus we are delighted that the Army Air Corps Historic Aircraft Flight will be sending their de Havilland Beaver and Auster AOP Mk9. There may be other aircraft that will join us on the day*.

Away from the aircraft theme, we will have a range of stalls and refreshments will be available. The Royal Air Force Association will also be present and we hope to have a Folland Gnat cockpit. At least two re-enactment groups will be present and we have been able to secure Corporal Jones' butchers van as used in the Dad's Army TV series. (Who can forget 'they don't like it up 'em' and 'Don't panic!'). We're also expecting a display from the Central England Reptile Rescue and Bird of Prey Sanctuary again. Children will be able to make use of a bouncy castle which will be available during the day.

This year there will be a 655 MaPs tent providing information and background and information about the group and the aircraft itself. Our merchandise stand will also be manned thorough out the day with the usual wide range of items. We do hope that you will be able to join us on the day and help us in our efforts to keep XM655 alive and well. The aircraft is supported entirely by contribution, particularly on days such as this which is our main fundraising event.

The enclosed poster confirms the details for the day – please feel free to ask your local shop, library, sports centre etc. who may be able to display it for us.

* All activities are subject to aircraft serviceability.

## EW DURING THE V-FORCE ERA – PART 2

*Wg Cdr Rod Powell joined the RAF in 1963 as a direct entrant AEO and as such he flew in Vulcans with Nos 83, 9 and 50 Sqns. He is a graduate of the GD Aerosystems Course and has occupied a number of posts associated with EW, including work with the Central Trials and Tactics Organisation (CTTO), OC Ops Wg at the Electronic Warfare Operational Support Establishment (EWOSE) and as OR 53 at MOD. He left the Service in 1994 and, after working as an aerospace systems consultant for seven years, took up his current appointment as Marketing Manager with FR Aviation.*

This is the concluding part of Rod Powell's article, following on from our Winter 2005 newsletter.

Another factor that we should have thought more about was the radiation patterns of our antennae which had been optimised for the high level case. Not surprisingly, therefore, they radiated downwards. The RED SHRIMPS, for example, radiated in roughly a 45° semi-angle cone beneath the aircraft such that the footprint of the jamming on the ground was a circle whose diameter was determined by the aircraft's height. At low level the aircraft had barely any 'height' so the jamming footprint was probably about the size of the aeroplane! Furthermore, apart from pointing downwards, the aerials had no other directionality, so our jamming was radiated throughout the entire 360°.The upshot of all this was that, while our jammers did have lots of power in theory, the combination of the 'lossy' transmission cables, barrage jamming and the generous antenna radiation pattern severely reduced the impact on a threat radar. We could have done something about this, but we never did. When we adopted low level tactics we did not change our ECM procedures nor did we adjust our antennae. Our route plans still required us simply to switch on all of our jammers as we entered enemy airspace. In fact I seem to recall that there was a red line drawn on the maps annotated 'ECM Switch On Line'. The brief was to leave the jammers on in enemy territory and switch them off when exiting - if we ever did.

As I look back on this now I simply cannot imagine why no one seems to have commented on such a blinkered approach and, if anyone ever did, why nothing was done about it. To be fair, despite what I perceive to have been a general lack of application, some effort was made to provide some aircraft with a more effective jamming capability. About thirty late-production Vulcans were fitted with an X-Band jammer; that would be I-Band today. This had a selectable fore and aft directionality to its jamming pattern, its antenna being located on the centre line just forward of the ECM bulge on the lower rear fuselage. It also had a modulated jamming output against specific threats, a 26 Hz modulated signal against the SA-3's LOW BLOW tracking radar from the forward antenna and a conical scan from the aft antenna to counter fighter AI radars.

Turning to a different aspect, the V-bombers were provided with a radar warning receiver. The first was ARI18105, more generally known as BLUE SAGA. It was very much a first generation passive warning receiver with four sets of small stub antennas mounted 'quadrangularly' on the upper surface of the nose and the lower tail. It received signals in the S-, C- and X-Bands, roughly 2.5 to 12 GHz. Its display comprised two orange lights, one for S-Band and one for C/X-Bands, which illuminated when a signal reached a pre-determined threshold of PRF or pulse width. At the same time the AEO would monitor the PRF audio tone in his headset and switch between the four sets of antennae to determine the quadrant from which the signal was being received. This was a pretty 'manudraulic' device and it was slow by today's standards but, with practice, the AEOs became quite adept at detecting, identifying and taking action on incoming threat signals.

The situation improved in early 1970s when the Vulcan was fitted with what was then a state-of-the-art radar warning receiver, the ubiquitous ARI 18228, which is still in worldwide service today, albeit in slightly modified versions. Manufactured by Marconi, the 18228 does not appear to have been allocated one of those curious coloured codenames but it certainly provided a quantum jump in performance compared to the old BLUE SAGA. It covered 2.5 to 18 GHz, thereby accommodating new J-Band threats as well as all the old threat systems and it was also able to handle CW signals, which was another innovation. The ARI 18228 has an easy-to-interpret polar display on a CRT of about 4 inches diameter. This presents an incoming signal as a strobe, indicating its relative bearing.



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The frequency band is indicated by the strobe's being dashed, dotted or unbroken and its length is proportional to the strength of the received signal, which may be interpreted to provide a crude assessment of range. In short, this piece of kit provided a level of situational awareness which is still quite respectable today.

Apart from visual cues provided by the 18228, one could also 'hear' the PRF (Pulse Recurrence Frequency) in one's headphones. Put crudely, a high-pitched PRF implied a high threat so, depending upon the circumstances, we could direct the pilot to turn away from or towards the threat. One drawback was that the receiver was located on top of the fin; hence the square tipped fin that was characteristic of latter-day Vulcans. This was probably the ideal place for it in the low-level environment but at high-level the vast area of the Vulcan's wing must have caused a considerable degree of blanking. Perhaps we should have had switchable upper *and* lower aerials.

Moving on, the Vulcan could dispense large quantities of chaff. It was stored within the wing, just aft of the main undercarriage legs, in what were inevitably known as 'window boxes', two per side. In all we had four thousand packets of chaff, each packet being about a nine inches long by three inches wide and half-an-inch thick. It was pre-cut to various lengths giving us wideband frequency coverage. It was dispensed through apertures in the underside of the wing which looked rather like letter-boxes. If we dropped chaff on a training flight, on leaving the area we were supposed to lower the undercarriage to create turbulence across these apertures in order to suck out any chaff that had got stuck inside. This was because our Auxiliary Power Unit (APU) was in the starboard wing just behind the main undercarriage leg; if we fired it up before clearing the stray chaff it could be ingested by our little Rover gas turbine which would do it no good at all. In practice we often left this precaution until we were approaching the circuit when we had to lower the undercarriage and start the APU anyway. Some of the residents of the Gainsborough area may have got a bit fed up with having chaff dropped on them from time to time, but they never seemed to complain. There were some people who did, however. We were allowed to drop chaff quite happily on the range at Spadeadam and the farmers would often phone in to blame us for their sheep dying because they had allegedly been eating aluminium-clad fibreglass filaments. The boffins eventually decided that the stuff wasn't actually toxic, not, at least to sheep, and that the farmers were simply trying it on in the hope of persuading MOD to pay out in compensation.

In addition to chaff we were also well provided with flares, 192 of them in all. They were made of a compound called MTV - Magnesium Teflon Viton - which allegedly had sufficient of an IR signature to seduce a missile away from our jet pipes. Incidentally, the same material, MTV, is still used by today's Tornados and Jaguars. A minor inconvenience with our flares was that a substantial metal pin about two inches long was ejected whenever you fired them. This sort of projectile could do substantial damage when it hit the ground; hardly a problem over enemy territory, but in peacetime we could dispense flares only over the sea and only then after carrying out a clear range procedure to ensure that we were not going to sink any ships. That did tie our hands somewhat for training purposes but I did manage to fire a couple at night, and, my word, did they light up the sky?! I can assure you that it was quite spectacular!

The final element of our EW suite was the tail warning radar. The first version, RED STEER Mk 1, is said to have been derived from an early AI radar. Mounted in the tail cone, it had a conical scan, again, I think, about a 45° semi-angle. The scope was mounted right in front of the AEO but its presentation was a nightmare to interpret. The maximum range of the system was about 10 to 12 miles; on the scope, maximum range was in the centre and minimum range around the periphery. A target directly behind presented as a full circle; if it was offset it would be only an arc. Bearing in mind that one was facing backwards, in order to determine where the fighter actually was one had to turn one's mind around laterally and upside down and almost inside out, but, with practice, it could be made to work. Salvation eventually came in the shape of RED STEER Mk 2 – see Figure 4.

This was a much better radar, employing an 8-bar raster scan sweeping through ±70° in azimuth and ±25° in elevation; it had a range of 25 nautical miles, the presentation being on a conventional B Scope and you had the option of locking on to a response. Combining this visual information with the tone in your headset, one had a pretty good idea when the fighter was about to loose off a missile so you could hit the action button to dump a load of chaff and/or flares at just about the right time.

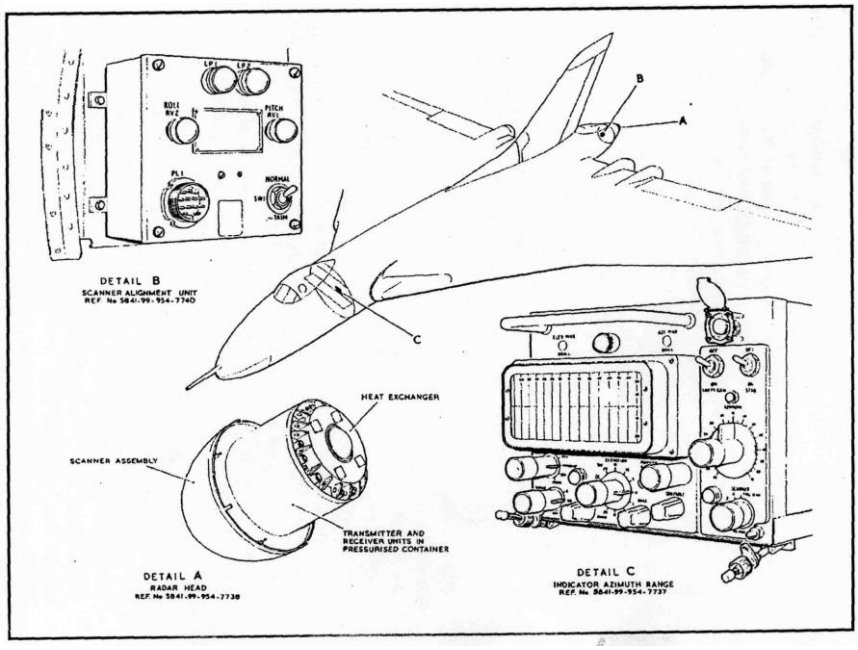


*Fig 4. The RED STEER Mk2 installation (AR1 5952) in the Vulcan B.2.*
*Note the square scope, compared to the circular one in the photograph at Fig 3.*

So, having outlined the various components of the EW suite, how did we know whether it was working? This was done by carrying out an ECM monitor run which involved flying the aircraft through a calibration facility operated by No 81 SU at Stornoway. It was a fairly straightforward procedure; starting about 90 miles north of the site, we flew towards it at a little under 40 000ft switching specific pieces of kit on and off at predetermined ranges. The clever stuff was being done on the ground where they were able to assess the power output, the effectiveness of each mode, the amplitude of modulation and so on. The results were signalled back to base, any remedial action, from box changes to tweaking, being implemented on our return. I think that I am right in saying that each aeroplane was supposed to be run through Stornoway every 90 days. When I did a tour in Cyprus that turned out to be very convenient as it meant that we could come back to the UK every three months or so to stock up on coffee and other goodies that were relatively expensive at Akrotiri. I imagine that the main reason for locating No 81 SU in a spot as remote as Stornoway was that it permitted us to operate our jammers with impunity. The problem was that the Soviets used to station a picket ship up there so that they could monitor our transmissions as well. As a result, the range was often inoperative but I suspect that the Russians probably still knew as much about the operating parameters and efficiency of our kit as we did ourselves. I am sure that, had we put our minds to it, we could have come up with a way of calibrating our equipment without having to broadcast to the opposition. There were other factors which contributed to sustaining the system, however, not least an ECM Trophy which was among the pots awarded as a spin off from the Annual Bombing and Navigation Competition; the winner was decided largely on the basis of the results of monitor runs.

Finally - training. While monitor runs were really rather boring, training could be quite good fun and as this increased in sophistication, once we began to develop a more tactical approach to flying, so too did we begin to develop some awareness of where our deficiencies lay. High on the 'good fun' scale were detachments to the USA where we were permitted to fly at low-level over the Mid-West using routes sponsored by SAC. This was all valuable experience, of course, but I am not sure that it was all that representative of an operational mission and it certainly provided no scope for using EW. Far less exotic, but of far more real benefit was the exploitation of the redundant BLUE STREAK test site in Cumbria to create a dedicated electronic warfare training facility in the 1970s. This was No 71 SU at Spadeadam, and it is still there today.

Operating at Spadeadam at low-level we were able to manoeuvre and to use our jammers and chaff in an attempt to counter systems replicating Soviet equipment, including, for instance, the FAN SONG, LOW BLOW and GUN DISH radars associated with the SA-2 and SA-3 missiles and the ZSU-23 AAA system. It was in the light of this experience that we slowly began to grasp the practical limitations implicit in trying to employ our essentially 1950s-technology high-level kit at low-level in the 1970s.

The Vietnam War had seen considerable advances in EW techniques and we had simply failed to keep up. It is true that some effort was made to acquire jamming pods from America for, at least some of, our fast-jets but the lack of investment in the Vulcan's EW capabilities during the 1970s contrasted sharply with the USAF's constant upgrading of its B-52s. The B-52, incidentally, is currently expected to remain in the inventory for at least another thirty years and when it is finally withdrawn, it will probably have a 2030 state-of-the-art ECM fit.

Nevertheless, while Spadeadam may have shown that we had more weaknesses than strengths, this was in itself vital information. Furthermore, apart from its specific benefit to AEOs, using the range had helped the whole crew to break out of the procedural straightjacket that had cramped the style of V-bomber flying for many years. The key to traditional V-Force operations had been to stay precisely on time and on track at all costs because to stray from the path during a tightly scheduled and co-ordinated nuclear offensive (and that was really all we were about until the end of the 1960s) invited being blown up by someone else's atom bomb - or worse, your blowing up one of your colleagues. After fifteen years of that sort of rigidly disciplined approach, it took time to adapt to a more relaxed regime and to adopt a more tactical approach to operations.

Harking back to a comment I made earlier, regarding our failure, and by 'our' I mean in particular AEOs, to grasp the nettle represented by the limitations of our EW kit, I think that this can also be explained, at least in part, by the discipline which was key to V-Force operations during the years when we constituted the UK's deterrent. The QRA concept was predicated upon adherence to plans and procedures and instant obedience. This sort of culture did not encourage questions, especially not from junior members of aircrews - and a lot of AEOs were pretty junior. If the plan said 'switch on the jammers here', we rather took it for granted that someone who knew what he was about (one of the experts who lurked at 'Group') had thought about this and that it was the right thing to do. That is, I think, probably why it took us so long to begin to ask questions and by the time that we began to devise answers, the Vulcan was rather too long in the tooth to attract much in the way of development funds.

Returning to Spadeadam, we learned that the best answer to enemy systems was to avoid them, rather than to attempt to deal with them. Instead of sticking slavishly to track, our pilots began to weave and dodge and to take advantage of the terrain to hide from threat radars. As crews we became more and more interested in survivability and to do this we needed to fly in increasingly hostile EW environments. The most sophisticated facilities of this kind were in the USA and some of us were fortunate enough to be detached to Nellis AFB in Nevada to participate in RED and GREEN FLAG exercises.

By 1982, with the Tornado becoming established in service and the four remaining Vulcan squadrons on the verge of disbandment, the UK went to war with Argentina. Since it was the only RAF aeroplane with a significant range capability and an ability to carry a worthwhile load, the Vulcan was briefly reprieved. It stands as mute testimony to the lack of investment in the aeroplane that it was necessary to provide it with some sort of realistic ECM capability by borrowing ALQ-101-10 pods from the Buccaneer force. Somewhat surprisingly, the Vulcan was eventually pressed into service in the SEAD (Suppression of Enemy Air Defences) role, something that can hardly have been envisaged by Roy Chadwick back in the 1940s. Having flirted briefly with MARTEL, the Vulcan was eventually armed with AGM-45 Shrikes acquired from the Americans and these were used successfully to disrupt the operation of a TPS-43 surveillance radar and to neutralise a Skyguard fire-control radar at Port Stanley. During the recovery from the second missile-launching sortie, the aeroplane had a refueling problem and finished up diverting into Rio - but that, as they say, is another story.

**This article was first published in the journal of the Royal Air Force Historical Society and we are most grateful for their permission to reproduce it here. The journal carries a series of extremely interesting articles on a wide range of aviation subjects. Chairman of the Society is AVM Nigel Baldwin who is a long standing member of 655 MaPS.**

**If you are interested in joining the RAFHS you should contact the membership secretary:**
**Dr Jack Dunham**
**Silverhill House**
**Wooton-under-Edge**
**Gloucester GL12 7ND**

# 655MaPS VISITS MIDDLE WALLOP

Following the very popular attendance of the Army Helicopter Display Team "The Blue Eagles" at our taxi day last year, and the promise of at least the Lynx this year, we felt it appropriate to present a framed photograph of 655 to Major Bacon the team boss. Accordingly we were invited to Middle Wallop to make the presentation. Richard Dick made the presentation following a very interesting film detailing the work of the various helicopter units based at Middle Wallop.

Formalities over, we were invited to see the Apache helicopter. The importance which the Army places on the Apache was clear from the fact that the whole of the area housing the servicing facility was surrounded by a 20 foot high electrified fence and warnings that contact with it was certainly going to spoil the rest of your visit.

Now, I will confess that the helicopter is not my favourite aircraft, thinking that I would only be glad to see one if I was on top of Ben Nevis, in a snowstorm and with a broken leg. As the pilot explained the workings and the capabilities of the Apache, it soon became clear that this was no ordinary helicopter but a very complex and comprehensive weapons system indeed. This was a mean machine in every sense of the word and the pride in his aircraft showed through as the pilot explained its role and purpose.

Next was a visit to the hanger of the Army Historic Aircraft Flight. Here we were allowed free reign to examine all the aircraft of the Flight at close quarters. The aircraft are all immaculate and superbly maintained by a small group of engineers. Despite being completely enclosed in the confines of Middle Wallop, the Flight exists as a civilian organisation and is self funding. We seemed to strike a chord with the Flight, so much so that they are sending three of their aircraft for static display on June 18th.

It really was a very enjoyable day and our thanks go to Richard Dick for organising it all.

Our own Richard Dick (right) presents a commemorative picture to
WO2 Barry Jones of the Army Blue Eagles Helicopter Display Team 



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## FINANCIAL REPORT OF 655 MAINTENANCE AND PRESERVATION SOCIETY FOR THE YEAR ENDING 2nd APRIL 2006

| | | | | |
|---|---|---|---|---|
| Donations | £804.65 | | £1,464.08 | |
| Subscriptions | £2,325.00 | | £2,071.00 | |
| Sale of Merchandise inc P & P | £1,005.81 | | £1,616.85 | |
| Run Day Income '05 | £7,474.23 | | £4,786.10 | |
| Run Day Income '06 | £80.00 | | £0.00 | |
| Bank Interest | £24.84 | | £37.80 | |
| | £11,714.53 | | £9,975.83 | |
| Merchandise Purchase | | £2,118.88 | | £786.03 |
| Aircraft Spares & Repairs | | £517.77 | | £482.39 |
| Open Day Expenses '05 | | £1,354.11 | | £1,904.96 |
| Open Day Expenses '06 | | £41.58 | | £0.00 |
| Ground Equipment | | £1,656.40 | | £389.42 |
| Transport | | £339.76 | | £0.00 |
| Membership Expenses | | £679.79 | | £712.76 |
| Buildings, Residence etc | | £330.84 | | £2,515.98 |
| Tools, Consumables etc | | £217.91 | | £233.23 |
| Public Relations | | £45.79 | | £6.09 |
| Misc Expenses | | £149.58 | | £109.99 |
| | | £7,452.41 | | £7,140.85 |
| **Surplus/(Deficit)** | **£4,262.12** | | **£2,834.98** | |

**Total Cash at Bank as at 2nd April 2006 £12,800.00**

**Non Run Day Items of Expenditure over £75.00 which required Committee approval:**

| | | | |
|---|---|---|---|
| 19/05/05 | £135.96 | Argos Ltd | Printing of 250 newsletters |
| 10/06/05 | £173.61 | Mr Derek Powell | Merchandise purchase |
| 19/06/05 | £800.00 | Ignite Creative | Initial Payment for DVD |
| 20/06/05 | £129.96 | Countryside Art Ltd | Merchandise purchase |
| 01/07/05 | £132.77 | South Warwickshire Flying School | Electricity Bill |
| 01/07/05 | £374.14 | Stitch Design Ltd | Merchandise purchase |
| 02/07/05 | £194.76 | Mr Derek Powell | Bomb hoist purchase & transport costs |
| 29/07/05 | £129.25 | Countryside Art Ltd | Merchandise purchase |
| 12/08/05 | £ 93.52 | Mr Derek Powell | Oil & Paint materials |
| 27/09/05 | £281.06 | Messier-Dowty Ltd | Manufacture of specialist seals |
| 15/10/05 | £ 81.58 | Mr Nigel Brown | Ground equipment & Tools |
| 29/10/05 | £169.51 | Mr Derek Powell | Battery & Aircraft parts |
| 06/11/05 | £800.00 | B.A.P.T. | Tug purchase |
| 25/11/05 | £250.00 | Cash | Transport costs for Tug |
| 14/12/05 | £ 76.98 | Argos Ltd | Printing of 300 newsletters |
| 28/12/05 | £ 89.49 | Mr Nigel Brown | Envelopes and postage for newsletters |
| 11/02/06 | £106.00 | Mr Eric Ranshaw | x2 Batteries |
| 04/03/06 | £ 95.24 | Ruth Powell | x2Tables & Miscellaneous items |
| 21/03/06 | £400.00 | Ignite Creative | Final Payment for DVD |
| 25/03/06 | £217.38 | Mr Derek Powell | New tyre for Tug |
| 25/03/06 | £108.26 | Mr Eric Ranshaw | Various seals for aircraft |



**FREE ENTRY FOR 655 MaPS MEMBERS ON JUNE 18th 2006 RUN DAY**

**Run Day Items of Expenditure over £75.00 which required Committee Approval:**

| | | | |
|---|---|---|---|
| 06/05/05 | £ 80.00 | Graham & Sons (Printers) Ltd | Printing of 1000 Run Day Posters |
| 19/06/05 | £ 90.00 | Mr Paul Bartlett | Royal Engineers Airborne Regt |
| 19/06/05 | £100.00 | Mr Ian Post | Bletchley Park Re-enactment Group |
| 19/06/05 | £115.00 | Andrew Photographic | Public Address Facilities for Run Day |
| 20/06/05 | £115.00 | Mr Nigel Brown | Crew Meal Costs |
| 23/06/05 | £120.56 | Mr Derek Powell | Run Day Advert in Stratford Herald |
| 23/06/05 | £ 97.35 | Mr Nigel Brown | Wine at Summer Meal |
| 23/06/05 | £150.00 | Mr Paul Hartley | Crew Accommodation |
| 02/07/05 | £141.96 | St John Ambulance | First Aid Cover for Run Day |

I confirm that the above is a true and accurate record of the financial activities of 655 Maintenance and Preservation Society for the 2005/2006 Financial Year.

Nigel Brown
Treasurer
c/o 57 Denholm Road
SUTTON COLDFIELD
West Midlands
B73 6PL

# 655 MaPS Annual General Meeting

**Notice is herby given that the 2006 ANNUAL GENERAL MEETING of the 655 Maintenance and Preservation Society will be held in the 655 Meeting Room at Wellesbourne Airfield at 1 pm on Saturday 15th July 2006.**

**Any member wishing to move a resolution at the Meeting must give notice to the Group Secretary no later than 5pm on Saturday 24th June 2006.**

**The 655 Meeting Room is located adjacent to where XM655 is normally parked on Wellesbourne Mountford Airfield, Loxley Road, Wellesbourne Warwicksire CV35 9EU, next to the South Warwickshire Flying School . As always, all members are Welcome to attend. Hot drinks and biscuits will be available.**

**Between 10am and 12 noon on 15th July, 655 MaPS volunteers will be on site with the aircraft where the cockpit will be open for members to view the 'office'.**


All contents supplied by Paul Hartley, Derek Powell, Rod Powell and Nigel Brown .

# XM655 MERCHANDISE

To help us raise funds to keep 655 alive and well, we are pleased to offer a range of tailored merchandise which is available via Mail Order and is listed below.

Please order items by indicating the number of each item required in the table below, adding the amount for Postage and Packing and then return it, or a photocopy, to us. We can't accept Debit or Credit Cards, so payment has to be by cheque or Postal Order. Completed forms should be returned to:

655 Merchandise
c/o 25 Binley Avenue
COVENTRY
West Midlands
CV3 2EE

| Item | Price (£) | Size | Quantity |
|---|---|---|---|
| 655 MaPS 100% Cotton Polo Shirt in Blue (S/M/L/XL) | 16.00 | | |
| 655 MaPS Bronze Note Pad with XM655on front cover | 2.50 | n/a | |
| 655 Carrier Bag Tidy with views of XM655 | 3.75 | n/a | |
| 655 Melamine Coasters (4 different views) | 2.00 ea | n/a | |
| 655 70mm x 70mm Candle featuring XM655 | 3.50 | n/a | |
| 655 Fridge Magnet | 1.20 | n/a | |
| 655 Bottle Opener | 1.30 | n/a | |
| 655 Baseball Cap | 7.50 | n/a | |
| 655 Key Ring | 1.00 | n/a | |
| 655 40th Anniversary Mug | 5.00 | n/a | |
| TOTAL | | | |
| Add Post and Packing | 1.95 | | |
| GRAND TOTAL | | n/a | |

I enclose my cheque / Postal Order for £…… payable to 655 MaPS and request that you send my order to:

Name…….

Address……..

…….

……..Post Code……

**Although we aim to fulfil all orders within 7 days of receipt, please allow up to 28 days for delivery.**