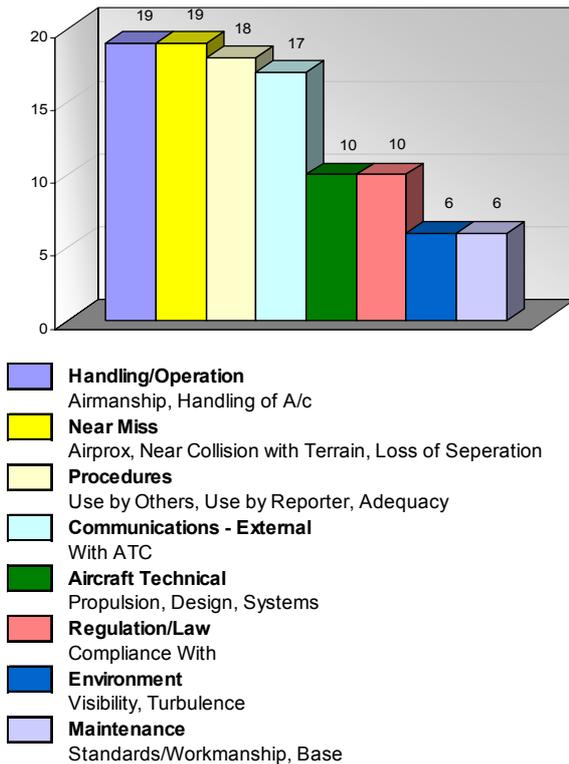


CHIRP FEEDBACK

Issue No: 29

Autumn 2006

Most frequent GA Issues Reported
12 months to July 2006



- Handling/Operation**
Airmanship, Handling of A/c
- Near Miss**
Airprox, Near Collision with Terrain, Loss of Separation
- Procedures**
Use by Others, Use by Reporter, Adequacy
- Communications - External**
With ATC
- Aircraft Technical**
Propulsion, Design, Systems
- Regulation/Law**
Compliance With
- Environment**
Visibility, Turbulence
- Maintenance**
Standards/Workmanship, Base

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Number of Reports since the Last Issue:

16

Report Topics Have Included:

- Close Encounter with Powered Parachutes
- PPR Clearances and Weather Diversions
- Pre-flight Check - Loose Spanner in Fuselage
- Air /Ground Operators - Responsibilities
- EASA Regulations for Scheduled Maintenance

REPORTS

ZONE INFRINGEMENT

CHIRP Narrative: Infringements of Controlled Airspace by GA pilots, particularly those in the vicinity of major airports, are a major concern to both NATS and the Civil Aviation Authority. In the first six months of 2006 the number of low risk infringements recorded by NATS totalled 165, a slight reduction compared with 366 in the whole of 2005; however, the number of medium risk infringements showed a significant increase, totalling 35, compared with 28 for the whole of 2005. The number of infringements assessed as high risk totalled 5 for the first six months, compared with a total of 11 for the whole of 2005.

The following report shows how easily an unintended incursion into Controlled Airspace can occur and offers some thoughts as to how to avoid becoming one of the statistics:

Report Text: I had invited a recently qualified CPL/IR colleague to fly with me to AAA (West of the London Heathrow CTA). He is used to twins with an RMI, but was unfamiliar with my aircraft, the proposed route and the area around our destination.

I had prepared a detailed printed flight plan and although the visibility was poor with a 1,300ft cloud base, it presented no problems for navigating on the outbound trip. After landing at AAA, while I went off on business he prepared the route home. This would be to the north of the London Heathrow Zone via BBB airfield overhead, the ### ADF and then eastward en route.

I was pilot-in-command in the RH seat. After take-off we set course towards BBB. On the earlier flight BBB had asked us to avoid their zone and we were both conscious that we would probably need to route around the zone on the return trip; this would position us quite close to the LHR Zone; after satisfying myself we were on course under the cloud at approx 1,200 feet, I went "head down" in order to contact London Information and also to amend the GPS route to make a refuelling stop.

A minute or so later the pilot said "I think we are too close to the zone". My response was to assume he

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A General Aviation Safety Newsletter

from *CHIRP* the Confidential Human Factors Incident Reporting Programme

meant the BBB airfield zone, so I looked at the printed PLog briefly, confirmed the magnetic bearing to avoid the LHR Zone, and carried on "heads down".

He then said "I think that's Slough on the right". I looked up and agreed that to my right in the mist that could be Slough and instructed him to take a direct northerly course. A minute or so later London information instructed us to contact Heathrow Approach for a Zone Infringement of the LHR CTA.

On reflection, I believe the problem was caused by the pilot, being familiar with an RMI, either not fully releasing the DI fully or not ensuring that it was synchronised with the magnetic compass after the climb. Also, poor communication between us led me to assume that with his CPL/IR qualification he knew where he was; however, being unfamiliar with the CTA, in the misty conditions he was not.

A human factors problem that in little more than two minutes resulted in an infringement of the Heathrow CTA.

CHIRP Comment: This incursion was the result of a human factors error, which had several contributory/circumstantial factors that are worth examining in more detail.

Although the pilot-in-command (PIC) had prepared a printed Pilot Log for the flight, this flight warranted a detailed pre-flight briefing, particularly as it involved two qualified pilots unfamiliar with each other's capabilities, to ensure that there was no doubt as to the planned route of flight, the navigation aids to be used and each pilot's responsibilities for both normal operations and also in the unlikely event of an emergency. A detailed briefing might also have covered equipment with which the CPL/IR holder was not familiar such as the operation of the Direction Indicator. Also, it would have been good practice to have entered the complete return flight into the GPS before take off to avoid the possibility of becoming distracted in flight.

The PIC appears to have assumed that his colleague, being CPL/IR qualified, was competent to navigate in the relatively poor weather conditions and, having established that the aircraft was on track after take off, was content to allow the other pilot to fly, whilst his attention was focussed on the radio and the GPS. Amending a GPS waypoint/route in flight should be avoided, particularly in the case of models without a map display.

In the reported weather conditions it would have been relatively easy for even an experienced pilot to become uncertain of his/her position. The most appropriate course of action for the PIC would have been to have monitored the progress of the flight closely and assisted with lookout in what can be a very busy area.

A final point is that the planned track close to the CTA boundary left little margin for error. In the prevailing wind and weather conditions, a routing that would have permitted a larger margin of error, utilising easily recognised visual features and, where possible

prominent line features, would have probably averted the incursion.

CROSSED WIRES?

Report Text: The aircraft had just completed a C of A renewal. I experienced difficulty flying the correct speed, due to an apparent trim reversal. I managed to land the aircraft safely.

A subsequent engineering investigation revealed that the trim control cables had been incorrectly connected.

CHIRP Comment: The reporter confirmed that a full and free check of the flying controls had been performed prior to the flight, but that "they may have seen what they wanted to see" and not verified that the trim tab had moved in the correct sense. The incident serves as a useful reminder to be vigilant during pre-flight checks, especially following significant maintenance, as in this case.

The reporter handled this difficult situation well. A general point worth remembering is if moving any control appears to have the opposite effect to that desired, then either stop moving it, or move it carefully in the opposite direction, until the desired condition is achieved. Land as soon as practicable.

A HIRTA CAN HURT!

Report Text: Whilst flying from Southern England to South Wales in my R44, I passed about 1-2 miles to the east of the Rampisham High Intensity Radio Transmission Area (HIRTA). I felt an intense feeling of what felt like static and almost immediately the governor which was ON, cut the engine to idle. I turned away from the site and manually overrode the governor. The governor then took over and ran normally for a few seconds before cutting again. I again overrode the governor all the while flying away from the site. The governor then took over again and thereafter performed correctly.

On both occasions that the throttle was cut, the rotor warning horn sounded and I had to lower the collective before sorting out the engine revs. While it is clear that I flew too near to the site, I am surprised that the radio transmissions had such a potentially serious affect on the governor.

CHIRP Comment: Our follow-up enquiries with the CAA (Directorate of Airspace Policy) regarding the size and shape of HIRTAs, in relation to their potential effects on GA and Public Transport aircraft flying in the vicinity of such areas, failed to clarify what the basis is for the currently promulgated areas. Subsequent to our enquiries, we have been advised that CAA (DAP) has initiated a review of the HIRTA policy.

If you fly an aircraft with electronic control features, the safe option is to keep well clear of such areas. If you should experience any untoward symptoms,

submit a Mandatory Occurrence Report, as this reporter subsequently did.

TOO GOOD TO BE TRUE?

Report Text: Set off in a turbine-powered helicopter, which had been parked, having last flown 2½ days previously; the fuel was reading almost full prior to take off. Landed 20 minutes later, as planned. No problems in flight or landing.

Realised fuel gauge must be reading incorrectly, based on the distance flown. We released the fuel cap - there was a rush of air and the fuel gauge dropped to a quarter full! The air vent release valve had failed to operate causing an air blockage and giving an incorrect fuel reading.

CHIRP Comment: Our follow-up enquiries confirmed that a pre-flight physical check of tank contents by 'dipping' the tanks is not possible on this type of helicopter.

Whilst this failure might be specific to the type involved, the underlying message is that fuel consumption/contents should be regularly monitored during flight to permit abnormalities such as that described to be identified and corrected prior to further flight. The reporter was advised to report the incident through the CAA MOR Scheme, to allow the component failure to be formally investigated.

COMPLEX SYSTEMS - SETTING THE RIGHT PRIORITY

Report Text: The flight was a private flight to AAA. The front seat passenger was a student nearing the end of his IMC course, but since I don't hold a multi-engine instructor rating, and my student does not hold a multi-engine rating, it was not an instructional flight. Accordingly, I was in the left hand seat (the only seat with the EFIS and other controls which are used to drive the auto-pilot), and was the handling pilot for most of the flight.

I wanted my student to get some benefit from the flight, so I allowed him to handle the controls when the instrumentation he had in front of him was suitable, and at other times I explained to him what I was doing, and used him to help me manage the flight. I also took the opportunity to explain to him many of the avionics features of the aircraft which were completely new to him, but which were also quite new to me - two GPS units, an autopilot, weather radar, EFIS displays, and so on.

We had filed a flight plan to AAA, and had been receiving radar vectors for the majority of the flight. As we neared AAA, ATC cleared us direct to the NDB. The DME showed that we were out of the range of the beacon, so after steering an estimated heading to the beacon, I used the "Direct To" feature of the GPS to get a more accurate heading, and then coupled the autopilot to the GPS.

ATC cleared us to descend to 3,000', and, as we left Controlled Airspace, gave us a RIS. They promptly

informed us of traffic in our half-past-nine, on a converging track, indicating 2,500' unverified. We were in good VMC, and it was around dusk, but we could not see the traffic. I told the controller I was "looking". He gave us another update on the traffic, but we could still not see it.

As we passed 3,600', the controller suggested we stop our descent at 3,500' due to the traffic. I decided to follow the controller's advice, but assessed that the autopilot would not be able to level off correctly with just 100' to go, so I disconnected the autopilot and manually levelled off, whilst still looking for the traffic. Several more updates on the position of the traffic followed, but at no point did we see the other aircraft.

The controller then informed us that the traffic was believed to be receiving a FIS from AAA, and had indicated to them that he would remain clear of our track. He then told us to contact AAA Approach, and at around that time we entered IMC.

On contacting AAA Approach we were immediately cleared beacon outbound for the procedural ILS. It was at this point that I realised that I had become totally pre-occupied with the other traffic, and had not been monitoring the position of the aircraft. We were, in fact, just a mile or two from the beacon at AAA, still at cruise speed, and I had not even located the let-down plate for the approach, let alone had a chance to study it. The autopilot was still switched off (I hadn't had a chance to figure out the sequence required for re-engaging it to hold our new altitude), and I was still hand-flying the aircraft, now in IMC.

I instructed my passenger to locate the plate and give me the track for the outbound leg, whilst I began slowing the aircraft down. We had already passed the beacon when he gave me the required bearing, but I worked on intercepting the bearing, still slowing the aircraft. Once established, I asked my passenger for the platform altitude, and began my descent. My passenger then noticed that he had misread the plate; he had given me the track for a Cat C/D aircraft, and not for a Cat A aircraft, so again I had to manoeuvre the aircraft to intercept the correct bearing. I managed to complete my pre-landing checks, and have a quick look at the plate, just before we reached the base turn.

As I began the base turn I looked to check the localiser and glideslope for sensible readings, but the localiser was not reading as I expected it to and I could not see a glideslope indication on the EFIS display at all. I scanned all the instruments, and eventually realised that I had left the system in "GPS" mode from when I was using it to track to the beacon and had never switched it back to "VLOC" mode in order to see the ILS indications. On pressing the appropriate button, the localiser and glideslope indications immediately appeared where I expected them, and I was able to make an uneventful landing.

After the flight I had time to analyse what went wrong. The main cause of the incident was clearly

my incorrect prioritisation of the tasks. I devoted far too much time to spotting the traffic, to the detriment of the overall safety of the flight.

This was compounded by other circumstances - the weather conditions being VMC and turning into IMC (had they been entirely VMC I would have seen the airport and been aware of my position, maybe even carried out a visual approach; had they been entirely IMC I would not have bothered looking for the traffic); my need to disengage the autopilot to comply with the controller's suggestion of stopping the descent early; the fact that the traffic alerting system on the aircraft was not working; my lack of familiarity with the aircraft systems (not immediately realising the need to switch back to VLOC mode, and also my inability to re-engage the autopilot under high workload).

I can't help thinking, though, that the controller also contributed to the incident by providing me with so many continuous updates on the position of the traffic. With hindsight, I was VMC and 1,000' above the indicated altitude of the traffic. Surely the controller had now done his duty to inform me of the position of the traffic? But I think it is human nature, when told continuously about the traffic to continuously look for it. I wonder if the controllers at BBB are perhaps not very experienced at providing radar services outside controlled airspace, being more used to directing airliners around into and out of their control zone?

The other thing which occurs to me, again with hindsight, is that I should not have begun the approach before I was ready for it. When cleared for the approach by AAA, I should have asked to enter the hold whilst I prepared myself. Of course I hadn't briefed myself for the hold any more than I had for the approach, but flying an incorrect heading in the hold whilst getting myself sorted out was far less likely to end in disaster than a similar mistake on the approach.

However, the incident has certainly made me more aware of the importance of prioritising tasks correctly, and not becoming distracted by ATC. I hope that others can learn something useful from it too.

CHIRP Comment: **The reporter has correctly identified the key lessons to be drawn from his incident.**

First, it is most important to learn the basic capabilities and operating characteristics of complex navigation and autopilot systems before attempting to use one 'in anger'.

Secondly, the report shows the importance of pre-flight planning, which should include a destination briefing, and also prioritising in-flight tasks to minimise the risk of becoming distracted.

Finally, remember that ATC is there to assist you; if you are not ready to commence an IFR procedure, let ATC know as early as possible.

The CAA has recently issued an Aeronautical Information Circular [AIC 32/2006 (Pink 99) - 2 March 2006] which recommends Differences Training and Airborne training for pilots converting to an integrated EFIS Display for the first time.

Some other examples of similar problems reported to the US NASA Aviation Safety Reporting System (ASRS) programme are reproduced below.

Use of Complex Navigation and Autoflight Systems

1. "While I was trying to get everything set up with the GPS and the autopilot, I lost altitude, due in part to focusing too much on the automation. Once I quit trying to get the autopilot to bail me out and I was able to get the GPS to do what I wanted, I was able to fly the approach. One valuable lesson I learned from this experience was: Know the equipment that you will be using; nothing is worse than being in a bad situation and not knowing how to use the tools available to you to resolve the problem!"
2. "Navigating by GPS (new Garmin 430) while on descent and radar vectors, went to Garmin 430 to put in approach. Since this unit was new to me it was not doing what I thought it was supposed to. It took my attention away too long and I inadvertently descended below my cleared altitude. Once I let the 430 go, I flew the aircraft with no further events. I probably need much more training on the Garmin 430 before next IFR flight. You can practice a lot with the CD on a computer, but it is not like when you are flying with other duties. Simply put, I was having tunnel vision focus on what the Garmin 430 was doing and not doing and not paying attention to flying. It should have waited until I levelled off, put alt hold on, and then worked on setting up the 430 for the approach."
3. "We continued on the assigned heading expecting to intercept the localiser, with no success. ATC asked us if we intended to land runway 36 and we responded yes. ATC said that our position was 3 miles right of the runway 36 centreline. Realising the radio navigation troubles, we cancelled IFR and landed safely using visual reference. We discovered the Garmin 430 to have been selected for GPS, instead of the desired VLOC setting, with only one button separating success from failure. Better pilot understanding of the Garmin 430 would help to avoid this problem in the future."

CHIRP Comment: **We would be interested to learn of any similar incidents involving new generation flight systems.**

ACCIDENT TO REPORT?

Call AAIB on 01252 512299

AIRPROX TO REPORT?

Call UK Airprox Board on 01895 815121/2/5

OCCURRENCE TO REPORT?

Call CAA Safety Investigation & Data Department on 01293 573220