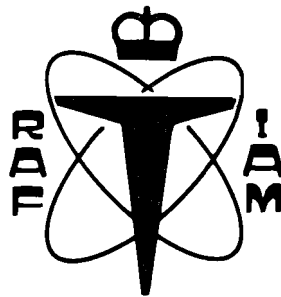


CONFIDENTIAL HUMAN FACTORS

INCIDENT REPORTS

FEEDBACK

Nº 4



Since the last FEEDBACK we have undertaken a review of our first year and come up with one or two interesting findings about the contents of our reports that we will try and get together for the next issue. However, one of the things we looked at was the distribution of reports throughout the year. It will come as no surprise to learn that you send the reports to us just after we have sent the FEEDBACK to you. It doesn't seem, though, that you respond to a specific item, more that the arrival of FEEDBACK and the ready availability of the form on the back spurs you to commit to paper the incident that happened a month or so ago. We know that it's a pain to fill in the form - especially if you have to find it first - so when you've read this FEEDBACK (and before you file it in the bin) why not rip off the back page and keep it your flight bag - your report really could make a difference. For example, you may remember that we published an interesting note about the two NDB's at Norwich having similar idents. This reminded one of our readers in the Canadian Department of Transport of an accident in Canada that had occurred because the wrong one of a similar pair of beacons had been tuned. Your report, with the Canadian evidence, may well stop an accident over here. Please send them in. HAPPY EASTER.

PRE - CHIGHT FLECKS

I was sitting on the jump seat in a supervisory position on this trip and prior to take off from XXX which was hot, we had discussed in detail length of runway, take off speeds etc, and the effect of heat on thrust and brakes in the event of R.T.O. During pre T/O checks V1 VR and V2 were calculated, discussed and argued over for final accuracy. During T/O roll, co-pilot shouted rotate at VREF for previous landing. At that instant I saw he had not reset his bug. The first words that came to my mind were stifled by another brain loop which did not want to say the wrong words in a crisis. By the time I got to speak the captain had responded to the false rotate command and we were airborne. The VREF was 110 knots. V1/VR should have been 131 knots. Stall speed at take off weight 120 knots (we were airborne on vectored thrust). Leaving blame aside, there was a train of minor trip wires not noticed. I did not see that the co-pilot's bug had not been set. Although I never saw the captain's bug, that may not have been set either. The co-pilot then called a speed he should have known was in error (if that analytical bit of the brain had been working). Then the captain responded to a call that he too should have known was in error. I was indeed thankful that British Aerospace put a lot of work into investigating minimum rotation speeds, and that the 125 is docile in such a manoeuvre, and has stall warning devices. I don't know what others can learn from this incident. Maybe just that one must be alert at all times, and that nasties are still under rocks that appear secure.

* * *

We were at the holding point of 15L waiting a T/off clearance with a really heavy storm a few yards from the runway threshold, moving eastwards. The wind suddenly veered from 180 degrees to 300 degrees/15 kts and the storm rapidly affected the airport with heavy rain.

Suggestion from the tower to taxi and T/off from runway 33R (into the storm) was rejected so we returned to the apron. During the storm passage we became very wet from water coming through the unpressurized cockpit windows. With no cockpit-ground communication and rushing to start for the second time so that the delay time for our VIPs is reduced, I forgot to switch ON the pitots. We took off in VMC, but following the SID which brought us back to the beacon, we entered IMC flying on the side of the storm for about 5-8 mins. During cruise.....we switched them ON!

* * *

I was flying the sector, the plane was quite heavy and the configuration for take-off at that weight was 5 degrees flap and wet power. V1/VR = 94 kts V2 = 98 kts. The take-off run was quite normal and at 94 kts I rotated the plane, it lifted off and then seemed to sag and was reluctant to climb and it also yawed slightly. I told the captain that something seemed to be wrong and that I suspected an engine malfunction. However the plane recovered and climbed away normally, at 500' I asked for the flaps to be retracted and we then discovered what the problem was - I had forgotten to select flaps and the captain hadn't noticed. I had been distracted by being given the airways clearance as soon as we started to taxi which is when the flaps are usually selected, but the check list calls for flaps to be checked at a later stage which I must have failed to do, also we were kept waiting at the holding point for 5 minutes when I could have double checked everything instead of looking out of the window. However in my defence I must add that in the previous week I had flown a lot with another captain who always insisted on selecting flap himself despite it being the co-pilot's job - perhaps I had got out of the habit of doing it myself.

During the external pre-flight inspection the bleeding of both fuel filters and micro filter is called for. This is completed by switching on the Master switch and the 2 Supply tank pumps, pressurising the systems.

To bleed the fuel filters a spring loaded bleed valve (Valve can be locked in the open position) is pushed up releasing a quantity of fuel and any water trapped. The fuel is drained from the engine bay by fuel drain lines. This, to say the least, is a messy task often resulting in soaked clothing. On this occasion I had completed the draining of the No 1 system and was in the process of draining the No 2 system when my passengers arrived. For some reason I pushed up the valve locking it in the open position and switched off the battery. After loading the passengers' baggage and closing the engine covers and start up I noticed the No 2 fuel pressure low but did not mentally link it with the fuel valve being open.

After a flight of approx 20 mins I landed and was informed by the ground handler that fuel was flowing from the underside of the Ac. On inspection I discovered the fuel filter valve open. Luckily the fuel had not ignited during the flight.

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We put these reports together because all of the problems described could have been avoided by careful pre-flight checks. Everybody knows that it makes sense to check the aircraft in slow time before going flying, and it's much more important to do so, of course, if the aircraft has just come out of maintenance. We wouldn't wish to harp on about something you already know, but we get quite a few of this sort of report from both novice and experienced crews. Any of the guys in the incidents above could have ended up being killed, so it has to be worth doing the checks properly and having a strong enough will not to let the arrival of passengers, getting your clearance, or being asked to expedite make you cut corners or forget things.

* * *

I'M NOT WORRIED AM I?

In Feedback 3 we printed a letter from a pilot who felt that he had been left too much in the dark by his AME, and this worried him. It was not appreciated that the number of possible doctors to whom this letter referred is very limited (in fact two), and we'd like to make it clear that we had no intention of calling into question the competence of either of them. The point we were trying to make is that the doctor can't read your mind, so if you're worried, or not clear about a point, ask him. We are assured that he will be pleased to help.

MIND THAT AEROPLANE

On descent into XXXX at 5000 feet I made visual contact with an aircraft to my right showing flashing strobe lights. The aircraft was in a left turn (turning towards me) and below me. I did not know whether the aircraft would come out of the turn or not, and decided that the safest course of action was to level off and maintain heading thus keeping the conflicting traffic in view. It was in fact a large aircraft and passed approximately 250 feet below us. The other aircraft was working YYYY Radar and had been told to hand-over to ZZZZ Radar. He was at 4000 ft and was negotiating his handover at the time of the incident. We were "working" XXXX who had cleared us down to 2500', the initial height overhead XXXX NDB for the ADF let down to R/W 24.

There were several contributory factors which led to this potentially dangerous situation, in my opinion. (1) The first is that I'm sure both aircraft believed that they were safe from conflicting traffic because they were working RT frequencies and being given instructions - separation is not necessarily guaranteed. (2) I think the other a/c should have called XXXX even though he was above the airfield traffic zone, but he may not have been certain of his position if the flight was carried out on various radar headings. (3) Strobe lights can be confusing when trying to judge distance and direction of

conflicting traffic but maybe I would not have sighted him at all without them.

I have learnt from this incident that a good lookout is still important particularly when operating into an airfield which does not have a special rules zone, and filing a flight plan does not make one immune from collision.

I would also suggest that when flying in the vicinity of an airfield it is a good idea to call them up even if you're flying above the Air Traffic Zone.

* * *

Returning to Base after a previous 3 hr flight, weather was reported fair, VFR, but occasional heavy snow showers passing through. We coasted in at 1000' with a clearance not above 1500' special VFR.

Just after coasting in, we encountered a heavy snow shower and reduced height to 500' to maintain visual contact with the coastline.

Outbound was another a/c. It also had reduced height to maintain visual contact with the surface.

Both a/c reported at visual reporting point at almost the same time with about 50' height separation, according to the radar altimeters, and neither was visual with the other. The reporting point is a small village consisting of a few houses spreading just a few hundred yards, so we weren't far apart!

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One of the problems of incident reporting in the UK is that there are too many places to report to:- there's the CAA Occurrence Reporting Scheme, there's the Joint Airmiss Working Group, your own company, and now us (CHIRP). We don't set out to attract reports that could have gone to one of the other schemes - we're here to enable you to report those personal cock-ups which you might be embarrassed to report at all otherwise. We do, however, receive just the occasional report - such as the one above - which should perhaps have gone elsewhere. If you feel that you should send a report to ORS, the Airmiss Group or your company, please do so. If, however, you wish FOR ANY REASON to send it to us please go ahead, we'll be pleased to receive it, it will be dealt with personally, and we won't drop you in it.

WHERE ELSE CAN I PUT IT?

DC 10

Forward of the throttle quadrant on the main systems panel is a clear space between the two VHF boxes. I noticed that after the take off briefing (during which the TAPS charts were consulted) that the captain put the TAPS charts down on this clear space between the two VHF boxes (ie forward of the throttle quadrant) and I thought no more about it. The take off was normal as the captain advanced the throttles, and I took over and advanced the throttles to the de-rated N1 calculated for this T/O. I was unable to get exactly the N1 I wanted and I thought the throttles seemed a bit stiff, however, the aircraft was light and we were soon through V1 and

airborne.

As we climbed through about 500 ft, I looked away from the N1 gauges etc and it was then that I saw that the reverse thrust stems had jammed against the TAPS charts. I realised that if I'd have needed to advance the throttles any further, it would have been impossible. All throttles were physically limited to quite a lot less than max N1! The captain and F/O were unaware of any problem during the take off and power was almost immediately reduced for noise abatement purposes. If we had needed full power from 2 engines at some early stage past V1, however, I think we might have had a serious problem.

* * *

We realise that many aeroplane manufacturers seem to give scant consideration to the stowage on the flight deck of small items like approach plates and coffee cups, let alone bulky ones like the crew's bags and wallets. We included this report because it shows how easy it is for a badly stowed item to cause trouble. If you've run a DC10, how about benefitting from this chap's experience and making the area forward of the throttles sterile? Even if you don't own a DC10, are you sure it couldn't happen on your aeroplane?

* * * * *

I was positioning the aircraft to Destination one afternoon on a day when moderate to heavy snow showers covered the country. The fuel state on take off from last point of departure was 1/3 1/2 1/2 1/2, which allowed the flight plus 45 mins holding and return to last point of departure with reserves. I took off with the latest Destination 10K vis with snow showers in sight. By the time I arrived, so had the snow shower which was reducing vis to 800 m or 200 m as it liked, and causing a traffic jam with me holding at 7000' No 6 to land.

One or two attempts were being made to land by the aircraft at the bottom and I diverted back to last point of departure. There the weather proved to be 300 m in a snow shower (just arrived), so I diverted again to the Alternate. The fuel state was now just under 1/4 tanks except the Stb outer which showed 1/3+. I selected both engines to this tank to balance up and facilitate using up all the

fuel in the outers. On the approach to the Alternate o/head the aircraft suddenly began lurching about, and I was hypnotized for a couple of seconds by the sight of the slip ball going completely from one end of the tube to the other. Finally realising that the engine was intermittent due to fuel starvation I selected both inner tanks and all was well. I now became a bit paranoid about the gauges, since they all read just under 1/4 full, and as far as the Stb outer was concerned, that meant empty! So I declined the Alternate's somewhat long-winded plans for landing and carried out a forced landing pattern from overhead, becoming visual at about 1800'. It transpired that the Stb fuel gauge was u/s, (i.e. even worse than normal) and there was plenty left in the other three tanks.

I later wondered what would have happened if I had responded to the first (Stb) engine failure with immediate full left rudder, when the second (Pt) one then failed and the Stb started up again! A horizontal stall turn perhaps?

ODDS AND ENDS

QNH

A/F APPROACH PROBLEMS. (Not UK!)

Cleared to FL40 by the approach controller after handover. QNH about 993. Clearance was to report overhead for ILS.

When overhead, turning outbound, calling for flap setting, starting stopwatch, commencing descent, and controller demanding to know our time of entering the zone, allowed all three crewmen to miss setting QNH. When this was finally accomplished the altitude was below MSA.

In my view this potentially dangerous situation was brought about by the lack of radar or DME and a mickey mouse approach pattern with an absurdly low transition level and an amateurish or light aeroplane mentality of the ATC controllers.

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One study of the errors made by pilots came up with the finding that mis-set altimeters were the single most common mistake (with or without Mickey Mouse approach patterns).

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WHICH HAND?

Whilst teaching a student to hover and using a split control technique i.e. giving the student one control at a time while retaining the other two, it was apparent that like most students in the early stages of hovering he was overcontrolling on the lever in attempting to hold a steady height.

I took full control of the aircraft and used a demonstration of putting on extra lever friction, establishing a power setting to maintain a steady hover height. Took my hand away from the lever showing the student that, providing external effects (i.e. wind) remained constant the aircraft would remain at a steady height above the ground. I emphasised the fact that it was not normal practice to remove one's hands from the controls in the hover and this was purely a demonstration.

I then gave the student control of the cyclic and rudder pedals and monitored the lever.

The student appreciated the point and I took back control of the aircraft. I then released the extra friction that I had earlier tightened for the demonstration. At that point in time the aircraft descended rapidly (probably because I took off too much friction). In attempting to control the situation I flew the aircraft into the ground.

The problem was one of control reversal (known to early Sycamore pilots but lost in the fullness of time). There is only one friction control in this helicopter and for the instructor to use it he must change hands on the controls. For an experienced pilot this represents no problem even in the hover, until something happens suddenly. The brain then sends the correct response to the hands but if they are on the wrong controls the aircraft response is wrong. The brain cannot assess why the correct response is being made and emphasises the control movement thus making the situation even worse.

** * **

This probably isn't a very common problem, but is an interesting one. Established habits die hard, and it's well known that at times of stress you are likely to do what you usually do - even if your hands are on the wrong controls at the time.

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1-11s AGAIN

Your highlighting of the BAC 1-11 LP fuel cock prompted us to fit bright yellow rubber sleeves on the LP fuel cock switches of our aircraft. The switches in question are in an area of the fuel panel where frequent routine hand switching takes place. Although the switches are different from those which immediately surround them on the fuel panel, they are identical with other switches in frequent use in other parts of the cockpit, eg the "HI and LO/LO Relight" switch and the "Safety Valve" switch. After our own minor modification, we have two highlighted switches which look and feel different from any other switches on the aircraft.

** * **

What a good idea.

CORRIGAN RIDES AGAIN

Crew change to offshore rig from base.

Return fuel carried with offshore reserves plus fuel for rotors running turnaround, no offshore fuel available. Flight track is a orientated East-West with a distance of 90 miles each way. Slight wind from the East.

I flew out, and on arrival turned into wind to take advantage of any extra power available, landed on, crew change as normal. Captain flew the aircraft on the return leg. Track required was 083(M), I involved myself in the paper work necessary for the flight, and the departure radio calls.

Captain took off into wind, turned and headed west. I was still involved in paper work while this was going on, climb to 3000 feet, after take off checks carried out perfunctorily, (including compass check). Having finished the necessary administration, developed a growing sense of unease 'something was not right' syndrome. Ten mins into the flight and still waiting for the coast to show on the radar, adjusted the tilt of the scanner to try to get a better return. Dialed the base NDB frequency, the tail of the needle pointed upwards. Rapid 180 deg turn, managed to land on rig 17 miles from base which was almost on track. Landed on rig with very

little fuel. Too involved in unnecessary paperwork and administration to notice the passing of an important phase of flight.

* * *

From ASRS Callback

After landing it took about five minutes to get the APU on line. After engine start, difficulties were encountered getting the engine generators on line with much switching of busses. Normal takeoff and departure was made, via airways to a destination due east. About 65 miles from departure I switched to a VOR 150 miles from the departure airport and was unable to receive. I then discovered that both the No.1 compass and the No.1 CDI were in error by 180°! I switched to No.2 compass system, which was operating normally. Result was about 80 miles WEST of the departure point, instead of 80 miles EAST. Center was notified of our problem and intentions and a new ETA for the VOR. I believe factors involved in this incident to be: 1. Electrical malfunction which may have caused the compass and CDI to swing 180°. 2. Pilot fatigue - crew had about a six hour call-out for a flight that departed at dawn. 3. Captain's (myself) improper scan on takeoff in not recognizing the instrument error.

* * *

The first of these two reports came in to us a little while ago and the second we pinched from our friends at ASRS. "ASR what?" you ask. The US equivalent of CHIRP is the Aviation Safety Reporting System - just the same as us except that their database has about 100 times as many reports as ours. Still, quantity isn't everything.

By the way, CORRIGAN took off from New York in 1938 for San Diego, landed the next day in Ireland. Here's a bit more from CALLBACK.....

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... checking out a pilot in a small airplane when I noticed he had considerable power on just before touchdown. What I thought I was saying to him was, "Back -- on the power." But he interpreted my instruction as, "Back on -- the power." He went forward on the throttle and flight became very squirrely before I could get the aircraft under control.

You haven't heard the old version? Captain said, "Takeoff power", so I did. Couple more: Captain says, "Feather Four." New copilot responds. "All at once, Sir?" FINAL example: "Feather One", says the Captain. "Which one," says the copilot. Stand by for some controller equivalents in a future CALLBACK.

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Don't forget, if you've had an incident, however small, send it to us at CHIRP. It couldn't be easier, there's a form overleaf and the postage is FREE. Thanks for reading this FEEDBACK - we'll be back in AUGUST.

GUARANTEE
 NO RECORD OF YOUR
 NAME AND ADDRESS
 WILL BE KEPT

NAME.....
 ADDRESS.....

 PHONE No.....

DATE OF RECEIPT AT THE R.A.F. INSTITUTE OF AVIATION MEDICINE

WE ASK THAT YOU GIVE YOUR IDENTITY ONLY TO
 ENABLE US TO CONTACT YOU IF WE ARE NOT CLEAR
 ABOUT ANY PART OF YOUR ACCOUNT.

IN ANY EVENT THIS PART OF THE FORM WILL BE
 RETURNED TO YOU, AS SOON AS POSSIBLE, TO
 CONFIRM THAT WE HAVE RECEIVED YOUR REPORT.

YOURSELF	THE FLIGHT	THE INCIDENT
CREW POSITION	DATE	TIME (PLEASE STATE LOCAL/GMT)
TOTAL FLYING HOURS	FROM :-	DAY/NIGHT
HOURS ON TYPE	TO :-	LOCATION
THE AIRCRAFT	IFR/VFR	PHASE OF FLIGHT
TYPE	TYPE OF OPERATION	WEATHER (IMC/VMC)
No. OF CREW		

PLEASE USE THIS SPACE TO WRITE YOUR ACCOUNT, USING EXTRA PAPER IF YOU NEED TO