CONFIDENTIAL HUMAN FACTORS INCIDENT REPORTS

FEEDBACK Nº5

Welcome to FEEDBACK 5. We haven't tried to cover much new ground in this issue, but we have tried to put some new reports together which could serve as reminders about problem areas that arise frequently. We make no apology, therefore, for including another section of reports on sleep and fatigue, as this is clearly an area of concern for many of you. Similarly, the misunderstanding of communication with ATC or between crew members is an area of obvious importance.

However, our first report (over page) describes a very topical helicopter incident. We were especially pleased to receive this one as it helps a lot in understanding the actions of others who may not be quite as lucky. The issue of helicopter human factors is a very live one at the moment following the recent publication of the CAA's Helicopter Airworthiness Requirements Panel report. Recommendation 1 of this report calls for the CAA "...to initiate a special study into the detailed causes of helicopter accidents attributed to "human error" to see where technology might contribute to useful improvement..." CHIRP represents your chance to have a real say on these issues and/or any others that you see as important. Don't delay, send us in your report - it really can make a difference. We'd like to have a section of the next FEEDBACK devoted to helicopter reports, so get your pens out now.

CHIRP, dare we say it, seems to be going well at the moment. Since our last FEEDBACK we have received a gratifying number of reports which have impressed us enormously with their quality. We celebrate our second birthday at Christmas, and the system will be reviewed to try and decide whether it's been worthwhile, whether it's worth keeping, and if so, how it can be improved. If you've got any comments on these matters do let us know. It's dead easy: use our FREEPOST address (on back page) and you don't even need a stamp.

As in previous issues all sections in italics are, as nearly as is possible, in the reporters own words.

AUGUST 1984

I ONLY LOOKED AWAY FOR A MOMENT AND. . .

The type of approach being made was a radar/NDB approach. The weather reported by the installation was 300 feet cloudbase and about 3/4 NM visibility, wind calm. The sea was as calm as a millpond and the surface like a mirror. Other helicopters had already made successful approaches and landings in the same vicinity. On reaching our minimum descent height, we could see the surface, but forward visibility was nil as we were still marginally inside the cloudbase. Knowing that if we overshot on the approach we would have to go to our diversion, I told the co-pilot that I was resetting my radio altimeter warning light "bug" 50 feet lower and continuing to descend. Almost immediately thereafter we saw the installation about 1/2 mile ahead in haze with no discernible horizon. I ceased to scan the instruments for a few seconds while looking at the installation to assess how best to make a landing. Shortly the co-pilot warned me that we had descended below 50 feet and I am still shocked at how quickly I descended so low without perceiving it.

This helicopter incident speaks for itself - reports in a similar vein will be received with enormous interest.

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LADIES AND GENTLEMEN, WE'LL SHORTLY BE LANDING AT. . . . .

. . . . . "WHERE'S THAT?!"

It's sometimes said that perception is 50% information and 50% expectation. These two reports illustrate just how powerful the expectation element can be.

I was a fairly experienced co-pilot flying with a relatively new but entirely competent captain. I had been to Miami many times, the captain had been once before. Radar was giving vectors for a left hand approach to the easterly runway at Miami International. We broke cloud at 5000 ft into excellent VMC, heading SW, with the lights of South Florida below. Looking across the cockpit, I saw the airport lights in our 10 o'clock; radar confirmed the bearing, but gave no range - and cleared us for a visual approach. The captain needed some assistance to recognise the airport lights, but proceeded to make a visual circuit. As we rolled onto finals at 4 miles, the ADF needle and ILS indications were clear evidence of my error; the airfield ahead was Opa Locka, about 8 miles north of Miami International! Radar did not sound surprised when I called for vectors, and we landed at Miami a few minutes later after some positive right and left turns. The captain hoped that I would not be his co-pilot for his basecheck the following week.

I was sitting P3, having recently joined the airline and just passed my final check on the aircraft, thus this was one of my first trips on the line. Captain was a very experienced training captain. Right hand seat occupied by a senior F/O with much experience on type. With P2 handling we were cleared a visual aproach to O4R at Copenhagen on a lovely morning with no wind, a little haze but flying directly into sun. We saw the airfield well out and the aircraft was positioned on long finals for what P2 thought was O4R. He had however misread a taxiway for a R/W and was lined up with O4L. I became uneasy at about 3000 ft but being a "new boy" and unfamiliar with the airfield said nothing until 800 ft. An overshoot was executed and during the overshoot we were horrified to see that there were vehicles on O4L carrying out runway repairs. The moral of the tale is, no matter how junior you are, if you are not happy, say something!

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IT EVEN HAPPENS TO ASTRONAUTS

It is very difficult to know what we can say about the first two of these three reports. They both concern pilot incapacitation, and we've included them so that you can read, straight from the horse's mouth, how unpleasant it can be. Perhaps the only action that you can take is to be quite clear in your mind now what you will do if it happens to you.

I was operating a scheduled service with about 5 passengers. In addition to this being a single pilot flight, the auto-pilot was u/s. At the relevant time therefore I was hand-flying in smooth air. Without any warning, I experienced very strong sensations of rolling, to the extent that I moved the control wheel rapidly in alternating directions, involuntarily. Fortunately, as it proved, I recognised these sensations as being similar to those associated with a viral labyrinthitis infection which I had had some 5 years previously and I knew that by concentrating VERY hard on one spot, (in this case, the Attitude Director), I could mitigate the effects of the vertigo. I did this and within a few seconds, the vertigo receded. The flight was continued without further incident. The relevant part of this incident from a human factors point of view is what I did after landing. As might be imagined, I had been more than a little alarmed, not least by the possibility of a recurrence before I could land, so I was initially reluctant to operate the return flight, but as it would be both difficult and expensive for my company to fly out another pilot to replace me and the return was not due to depart until that evening, I decided that if there was a recurrence in the next few hours, I would contact my company, but if not, I would operate the flight. Subsequent tests diagnosed Meniere's Disease resulting in the loss of my licence. Had I known this at the time, I certainly would not have flown the return sectors, but I was influenced by the financial pressures on my employers and also by the desire not to inconvenience other pilots at an awkward time of the year.

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I had been doing this job for sometime working continuous nights 11 pm - 6 am single crew. Not only did I have to fly the aircraft but I had to load it as well, on and off at one ton a time. It was working out at 25-30 hours flying and handling 10 tons freight per week. I was getting no social life. It was work at night and sleep during the day which I still wasn't used to. I arrived for work at midnight, I was quiet and often had the shakes. But I found it hard to turn down the work. I got airborne at 0230 GMT. The weather at FL 210 was 5/8ths cover, light ice -32 deg C. The temp in the cockpit was only +1 deg C as it had no heater and the auto-pilot's only function was that it could keep the wings level. Passing through FL195 I was looking out the window and found that I felt weak and slightly disorientated. I then looked back in the cockpit and found that I didn't trust the instruments. There was no dawn horizon for another 50 mins so I had to think of something. Till then, I found myself changing the environment in the cockpit - red lights on, white lights on, headset off then back on. I could feel panic starting to set in, but I knew in the back of my mind that if I gave in, it would be the end of my life! I then had to urinate in the coffee flask because of the panic. After this, dawn broke and I flew the rest of the sector visually. I consider myself to be very lucky indeed that the weather at destination was CAVOK. Doctors put it down to overwork, being tensed up, lack of confidence, and rushing around too much. I am much better now and am flying two crew on a multi turbo-prop a/c doing passenger flights during daylight hours, but am still very wary of single crew operations. Especially at night.

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It was an hour from touchdown and I needed to visit that haven for all bursting co-pilots. Unfortunately, so did all 400 of my fellow travellers. The queue seemed endless - 59 minutes on I emerged and just made it back to my window seat next to the captain before the wheels gently crashed onto the concrete. I sat there thinking of the lack of lookout and monitoring that had transpired all for the want of a "please give priority to crew" notice on the loo door! Perhaps one day the company would see sense.
MORAL. There is many a true word spoken in jest...

SEND THREE AND FOURPENCE. . . .

All of the reports on these two pages make some sort of a point about communications difficulties. It's clear that misunderstandings don't only happen in jokes (Irish man "Giss'a job mate", Pilot "OK you can paint my porch" - A little later - Irish man "Oi've finished da paintin' but Oi'm sure dats a Mercedes you've got dere, not a Porsche." - Sorry Aer Lingus). However, these reports illustrate that truth is always stranger than fiction.

First Officer was carrying out the take-off with myself monitoring and making the "calls". The Company standard silent procedure was in force, that is: In the absence of any malfunction the first call is made at 80 knots and is "80 both". For some unknown reason I called "both 80" whereupon the First Officer rotated the aircraft and we became airborne at a speed 17 knots below V2. The principal fault was mine for giving a wrong call but I had to point out that, hearing what he thought was "rotate", he should have known his speed. I do believe that the modern policy of a handling pilot and a monitoring pilot is tending to debase basic airmanship.

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747 Captain. During the approach for landing with 25 degrees flap the co-pilot called "Speed" and I could see nothing wrong other than that I was about 7kts on the high side and the company required a call if speed was more than 5kts high on the final approach. His second call "Speed" shortly after the first call caused me to query the reason for his calls when he pointed out I was 3-4kts slow. This proved to be due to my wrongly setting the final approach speed 10kts too low. (You see - we double check and still go cross-eyed on a vital thing like the final approach speed). The cause here is obvious - an error in the company requirement to call "Speed". It should be "Speed high" or "Speed low" to stop such misinterpretation.

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The whole point of calling at Decision Height is to ensure that crew members are agreed on seeing the runway rather than any other piece of scenery. When the visibility is good I like to ensure that this agreement is made in plenty of time, so that any discrepancy can be adjusted calmly, and after checking that we are both aiming for the same place I see no point in concealing until Decision Height the intention to land. So when the co-pilot is flying the aircraft I ask him if he has the runway in sight and if he is landing. I fell into the habit of saying "I trust you're landing?" until one day one particular co-pilot replied "You know, that's very kind of you, not many captains express their faith in my landings before I do them". I had never realised....

You may have heard about the controller who asked a 747 for an orbit. The Captain replied "Do you realise it costs 500 dollars every time we turn this aircraft through 180 degrees?" The unperturbed controller simply responded "Well give me a 1000 dollar turn then". The rest of the reports show that there is enough room for error between flight deck and tower without people trying to be difficult.

Our flight was cleared to FL 260 by ATC direct to the XXX VOR. As we passed FL 250 I said to ATC "C/S passing 250 for 260 requesting higher". ATC said "Roger" (I think). We were at about 25700 feet when a large four jet flew close in front of us on a southerly heading obviously at FL 250. I asked ATC for an explanation and he said that he thought we had called level at FL 260. Unfortunately,the Captain was obtaining other clearances on another frequency and was being monitored by the Engineer so I had no one to confirm the exchange with ATC. I thought ATC would have checked from our transponder readouts before permitting a conflict that close.

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This deals with a problem of ambiguous ATC clearances similar to your Sampton / Seaford departures. I have heard (on a number of occasions) foreign operators - having been cleared to turn to the Eastwood holding point or to enter the holding point at Eastwood - actually turn to Eastward - onto a heading of 090 degrees. I am sure the ATC controller would say 090 if this is what he wanted, but foreign operators obviously may be mistaken.

. . . WE'RE GOING TO A DANCE *

During the approach (VOR to runway 28) which is a lengthy one, the controller displayed signs of impatience. He asked us for our position several times; and when in reply we stated "On finals", he demanded that we put our lights on. The captain complied with this request, although I objected to it (I was "operating"). My objection was twofold 1. I didn't like the glare they gave and 2. I had a feeling that he was wanting to use his Mk 1 radar (eye balls) for co-ordination purposes (nothing ultra wrong with that, but he was gabbling away in another tongue to some one, and I could not make out where this other station was) rather than procedural separation. We landed. Towards the end of the landing roll another stream of Spanish shattered the ether, and was replied to in Spanish. About 10 seconds later as we were just clear of the runway, I called "Clear of the runway" and looked back and saw an aircraft (a big one) which was at some stage in its take-off "roll". There were no other R/T calls either in Spanish or English until this aircraft was well airborne. I conclude that he was cleared for take-off whilst we were still on the runway. I know the runway is a long one, and like others, I've landed and taken off with over 20 aircraft "on" at the time, but surely...?

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An incident with me as F/O, acting as F/O, departing London for Nairobi, direct. Up to the gunwhales with bods and fuel, rush hour at Heathrow on a clear, moonless, winter's evening. Aircraft at light weights are using a shorter length of the runway, heavies like ourselves going right to the end. About a dozen aircraft were taxying out, so there was - for Heathrow - a fair amount of radio chatter giving ATC directions and take-off clearances. We received ours together, just short of the holding point and went through the checks, electing to carry out a rolling start. As we completed the checks I looked up and across the cockpit and thought I saw a silhouette of an aircraft entering the runway ahead of us. By this time we were at full power and I yelled "Abandon!". A 737 had mistaken our take-off clearance for his own and entered the active. Had I looked up some 2 or 3 seconds later the only evidence of this aircraft would have been his tail-light, masked against the horizon of bright lights at eye-level like many airports near cities. (This was 10R which is the worst at Heathrow, from this point of view).

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My F/O was doing the R/T and taxying the a/c. We received our push back and taxi clearance to the holding point of 27 for backtrack on 22 on ground freqency, F/O read back "27 for 22" which was not queried. After passing the control tower and in full view of it, we were given airways clearance (on ground). I read back the clearance, checked it on our SID pages and put the "squawk" on the transponder. Up to now I had been glancing out of the F/O's window for possible traffic but was into sun, then we were told to change to tower and "hold at the holding point." There was an a/c holding on the middle of R/W 27 waiting to backtrack on R/W 22 and we all assumed that we were supposed to hold behind him at THAT holding point. However, just as we began to enter R/W 27 the a/c entered 22 to backtrack. I glanced out of the F/O's window and just coming into view was an aircraft at about 200' finals for R/W 27. It was too late to stop and the a/c had to break off his approach saying, "What's that aircraft doing there?". We had been listening about for about 5 or 6 seconds and had heard nothing else and were just about to talk to tower, thus we did not know the traffic pattern in the circuit and the fact that there was a last minute change.

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* For the benefit of our non-English speaking readers in the US and Australia, we feel we ought to explain that our title arises from an apocryphal misunderstanding of a WW1 message, "Send reinforcements, we're going to advance".

WE HOPE YOU'RE NOT TIRED OF THESE.

We thought that this first fatigue report made a couple of interesting points - not least being the suggestion that increasing age leads to less flexibility in sleep patterns. Any thoughts on this?

This is in the nature of a general comment on the Company's policy of rostering blocks of several night flights in a row. To do them justice, night blocks are flown by volunteers and as I wanted the generous allocation of days off either side of the night duties, I volunteered. I never became involved in any incident but I will frankly admit that occasionally either pilot would get his head down for a while so that he could get through the night! It is very difficult for anyone to adjust to resting during the day and flying at night and perhaps I have passed the point of body adaptability when such long blocks of night flights can be successfully carried out.

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I know that several times this last summer I was in that dazed - almost on the point of sleep - condition described in some of the letters of your last issue and I feel that this is totally wrong. (If I were driving when this condition came on, I would stop and sleep in a lay-by.) To go "crew fatigue" is commercially impossible and the pressure to continue is formidable. Indeed the whole question of crew duty times and discretionary extension of these duties needs to be re-examined in the light of the CAA's relaxation and virtual scrapping of the Bader committee's flight time limitations recommendations.

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Some of the sleep reports that we have received have included very thoughtful and constructive comments about solutions - especially "napping". The following is an example.

1. Your CHIRP Bulletin No2 has highlighted a longstanding flight safety problem. Since dropping off on final approach (P3) twenty-five years ago at the end of a long tiring night flight I've thought a lot about this problem.
2. Presently I command a 747, on some very long haul flights; the crew is, 2 pilots, F/E, normally. Many late evening departures are scheduled.
3. Prior to take off I always question my crew on the amount of preflight rest/sleep achieved. At some early stage of the flight I always brief the crew that if at any time they feel sleepy and wish to take a ten minute nap, that they so advise. What often happens is that one crew member during the cruise rests in his seat whilst the other two crew members share the resting crew member's duties, no great burden during low workload cruise. When feeling sleepy I hand over CONTROL of the aircraft to the co-pilot and catnap in my seat.
4. This may not be what the public likes to imagine although it accepts the Captain of a ship 'going below' for eight hours, but it does result, in my view, in a safer overall operation (applicable, of course to 3 man crew ops) and an approach at the end of a long night, with a crew less liable to make serious mistakes.
5. There are some psychological, "macho" overtones to this problem which I can't understand, for many crews operate without adequate pre-flight sleep, yawn their way through the flight and will not accept the procedure I've described. What we're talking about is one, perhaps two, very short periods of sleep, on the flight deck, during a nine hour night flight. In my case this works wonders, maybe for others it does not help - I hope these comments will.

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The obvious problem with "napping" in a 3-man crew is that if one person wants to go to sleep, it probably means that the two others are tired as well, and with one asleep, there are fewer people monitoring one another. Thus, by allowing one to "nap", is the probability of the whole crew falling asleep increased? The report on the next page makes interesting reading in this respect.

Crew report early afternoon to find the a/c u/s, "Be fixed in one hour," and so on, until we're at last off before Gatwick's jet ban: My leg, I flew S.I.D. and as a/c accelerated through 250 kts/10,000 ft. I selected autopilot on - to do this you have to select yaw damper on, it's the first movement of the autopilot selector. The yaw damper malfunctioned and put on full rudder - not good. Yaw damper deselected - talk to Company "Could we carry on without autopilot, we'll fix it on return tomorrow". The flight to North Africa, refuel and climbout for next stop all uneventful. A couple of hours later I'm flying - Captain asleep - all fuel checks done - INS updated - nice and warm - starlit sky - dark Sahara below - nice dark flight deck - I fell asleep, arms on armrest - 100+ tons at .80 Mach aircraft in my hands. The Captain awoke first, punched me in the shoulder, scared the hell out of me. We all awoke, very sheepish, I made some soup and we all compared notes. However, as we had all had disturbed nights/mornings before this trip half an hour later I went to sleep again - I awoke with a start to find Captain and Eng both asleep - got my own back by punching Captain's shoulder. A very shaken crew carried on to our destination. It's a very real problem, the only fix that we eventually operated was to keep the cockpit flood lights on. We found that way the off-duty crewman could read a book etc. and when a sleep was required the crew member turned down their own side of the cockpit and dozed - we found that a 10 minute 40 winks was all that we needed to keep us alert for our next watch.

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NOTHING BEATS A GOOD CHECK

Another rushed departure. First Officer had prepared take off data and card which Captain looked at and then asked me to check whilst he got clearance. I cross checked and nothing tied up with my prepared figures (we always carried out an independent check). I looked at the performance chart which the F/O had used and it was for 08 Stansted instead of 08 Teneriffe! We soon sorted this out and commenced our T/O roll. I became aware of sluggish acceleration although we would still reach our V speeds without difficulty. The N1's did not reach their target on auto throttle until I nudged them and EGT was slightly high accompanied by more than usual fan noise. There was never any question of difficulty in becoming airborne as the day was fairly cold (January) and we were not all that heavy, so off we went. At first power reduction, I turned to switch on the air conditioning packs, only to find that I had not turned them off prior to our "BLEEDS OFF" TAKE OFF!! Hence all the other 'extras' referred to above.

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Late departure, all ready to go and ships papers arrived. Called for push back and we all looked at the load sheet and set the stabiliser trim to approx 4 divisions nose up. We taxied out, and the First Officer (Handling Pilot) initiated the auto throttle and take off run. The stick was held forward to 80 kts and a 'controls free' check by placing stick at neutral between there and 100 kts. At rotation, the a/c nose reared up very rapidly and was immediately corrected and trimmed out by the F/O. The Captain and I both noticed the trim setting as this occurred and we later confirmed in the cruise that not only had the load sheet been incorrect, but all three of us had (in the rush) accepted the spurious setting which was usually never more than one and a half degrees to two degrees nose up. NO EXCUSE - WE MISSED IT!

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Prior to T/O the 3rd crewmember was preparing the T/O data card. At the top of the card he wrote down the flight number as a reminder of the R/T call sign. He subsequently used those figures instead of the gross weight figures, and the resultant power setting would have been just insufficient and the speeds just too slow in the event of engine failure. Although the figures were close to the "rule of thumb" used as a rough check, the error was detected on cross check. A simple case of just too many numbers?

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Thanks for reading us again. We'll be back in December. There's a form over the page - why not fill it in and send it to us?

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TYPE
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THE FLIGHT
DATE
FROM :-
TO :-
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TYPE OF OPERATION

THE INCIDENT
TIME (PLEASE STATE LOCAL/GMT)
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