



Confidential Human Factors Incident Reporting Programme

FEEDBACK

APRIL 1993

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What the ...?

Back in FEEDBACK No. 26 we asked "when is a human factor not a human factor?" And some readers have commented that our content is not only human factors. However, any human activity can involve the error-producing incident or decision, even if it seems at several points removed from the event itself. CHIRP does not confine itself simply to the ergonomics of the cockpit, nor to the instantaneous psychology of the individuals concerned. We all have instances of how management climate, local procedures or past personal history can influence the way an event turns out.

Thus we were fascinated to see a table, generated (no pun intended) by Nuclear Electric PLC, showing an analysis of individual and organisational failures which have contributed to some recent industrial disasters

Taking just one example, the Challenger space shuttle accident, which might at first glance appear to have had few human factors ingredients, was found to include the following failures and contributory causes:

No effective 2-way communication

*Confused reporting lines
Lack of expert knowledge
Poor definition of roles and responsibilities
Inadequate safety organisation
Deadlines taking precedence over safety
Pressures applied to continue despite risks
Competing priorities*

Several of these were shared by the Herald of Free Enterprise accident at Zeebrugge, which also exhibited poor business focus, and a low commitment to safety (including the negative reporting system).

Other areas identified are problems with human resource management (a catch-all covering poor attendance, rostering, discipline, management inexperience, no effective manpower planning and a high turnover of staff) and management attitudes to training, including a lack of emergency procedure training. Some of these were exhibited in the Kings Cross fire; the Clapham Junction accident; at Chernobyl; and the water contamination disaster at Camelford.

All these are as much human factors in its widest sense as the knobs and dials, screens and keyboards, team dynamics and performance in the workplace.

Please note the new telephone arrangements:

Direct line and message recording: 0252 372509

Direct line with no recording: 0252 394375

Facsimile at RAFIAM: 0252 377839

BUGS?

A Question: It is now accepted practice to "clear" the many spurious (?) messages which seem to occur for random reasons ("tyre pressure indicators" when the Reversers were locked out at AD wise) by pulling and resetting the breaker, often after speaking to Tech. Control. These are "non events" and few are reported, but ought not each one to be MOR/ASR'd with full details so that the software engineers can at least attempt to trace the bugs?

The question is really: "When does 'just a bug' in the software constitute a broken bit of equipment?" With automatic recording and testing of faults this information should not be lost to the software engineers. There is currently no way of knowing what interrelated combinations of switching have been built up. These could be waiting for one further critical selection to provide a major problem.

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CHOPPER CLUTTER

Despite numerous requests to the company, the type of helicopter I and other colleagues operate over the North Sea still has no acceptable level of cockpit stowage for the ever increasing multitude of documentation we are expected to carry. Nav. logs, checklists, tech. logs, manifests, Aerads, route guides etc. etc. all compete for floor space with pilot's feet, full and empty polystyrene coffee cups etc., not to mention the controls of the aircraft.

What a ridiculous situation for an aircraft that has been in operation for over a decade.

The attempts that have been made both to re-

duce and rationalise the paperwork on the North Sea operation do not seem to have been totally successful. The committees are still meeting and making recommendations but until more funding is available to implement any of the recommendations the situation is not likely to improve.

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TIMING IS EVERYTHING!

First Officer handling. During landing flare (with mainwheels on ground reverse thrust being applied, nosewheel still off ground) Tower Controller issued long string of taxi instructions.

My duties involved applying reverse, monitoring landing roll, centreline keeping, radio, etc. - i.e. a time of high workload.

Instructions included clearance off 13L, enter and backtrack active runway 13R, clear at taxiway "C" + stand allocation.

I feel this timing by ATC showed zero appreciation of pilots' workload during landing and was very poorly timed.

In event I requested repetition at closing stages of roll to confirm the instructions.

Controllers please be aware that large aircraft need careful monitoring during landing (e.g. chance of engine surge during application of reverse, directional control problems, etc.).

A) Message could have proved dangerous distraction.

B) Poor timing resulted in need for me to request repetition.

More haste less speed?

A fair point, to be made about all radio transmissions, try to fit them into the operation by considering the receiver's problems as well as your own. That goes for air to ground as well as ground to air calls.

* * * * *

A PROBLEM SHARED ?

At our unit it is not a question of providing only an ATC service but also doing the weather, dealing with customs, dealing with the public and various other tasks. Providing that no one went sick for any length of time we were able to implement the CRATCOH rules successfully.

It was made quite clear that either you "toed the Party line or left". It is no time to be unemployed and so we had, and still have no room to debate the issue. The only snag being that one of the controllers DID leave. A few attempts at finding replacement controllers were made. One stayed a few days. Another stayed a few months and left as it was all too mentally distressing!

Eventually a new ATCO sat and passed the validation on a relatively quiet day. However, within a short time a departure on sick leave reduced the numbers again. Concurrently, for part of this period, another controller has been on leave. There go the days off for the rest of the controllers. Due to staffing, the use of two frequencies (aerodrome and approach) was long abandoned and it is now all crammed onto the approach frequency. The staffing level has meant that I have been to work suffering once from flu, another time from a cold during which for four days I controlled with a very weak and

rough voice which I lost all together at one stage. My colleague has been to work for a week when he was in so much pain that he could barely walk.

Yesterday, after expending a considerable amount of mental energy that I really do not have to spare, I sat and read the CRATCOH book and then took a look at our watch-log.

The 200hrs rule had been broken

The 10hrs between shifts rule broken

The 3x60hrs break rule broken

The 50hrs continuous rule broken

The 2hr operational duty rule, as well as our 3hr exemption rule (conditions broken) broken.

The working hours of the last few months have totally altered our lives. We are all totally mentally drained and exhausted. I feel like I live at this airfield! We are contracted to work on an average of 38.5hr per week so the committee are able to say that although we may work 40-50hrs per week it will be less during winter and so levels itself out.

Our social lives have been affected as well. I am not talking about traipsing off to the local pub but more about what we used to do to help us relax. Simple things like hobbies or clubs have had to be put on hold. It has also had repercussions on our relationships with our families (which we hardly ever see). There has also been mental and physical health effects to some or other degree. We have no time to mentally relax or unwind.

The most important aspect to you is obviously that of the safe provision of the ATC service. Beyond the glaring problems of overworked, over-stressed and fatigued ATCOs providing the service there are other choice inputs. Amendments to the ANO and Mats Part 1, for example. I have no time to even read them normally, let alone absorb and understand them. Within myself I have noticed a severe loss of tolerance of people in general which could colour my judgement. There is also the total lack

of mental energy to keep going on and on and on at times.

I feel that the lack of job-security, the constant work, work, work, the stresses of on-the-job training and severe staffing shortage are all leading up to a possibly dangerous situation. I am surprised that our unit has been allowed to operate under these conditions. I feel that it is only the high level of professional integrity as well as a considerable amount of goodwill that has got us through.

The CAA has been able to resolve manning shortages at most of the airfields that suffered like this. Do FEEDBACK readers feel that these are whinges from those who should now "get out of the kitchen", or do some more of you feel that the impositions are genuinely becoming too great?

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FLASHER TROUBLE

Is there any reason why vehicles which attend an aircraft at night have to leave their orange "rotating" beacons running when the vehicle is not in use? I have counted up to 10 lights at times - and I can see no reason! They are mesmerizing, (?) headache inducing etc. etc. and I am sure they are not doing crews any good!

The Air Traffic Ground Control rules for vehicles on an airfield do require the flashing lights to be operating while the vehicle is in these specific areas.

The medical advice which was given on the debilitating effects of the combined strobing was that this is unlikely to produce any of the symptoms to which you allude. However, the irritation from the flashing was more likely to be a

function of cumulative fatigue induced by the series of night flights. In a very small number of the population lights flashing at a critical frequency may produce symptoms of vague disorientation and nausea. Should you ever experience these symptoms, when subjected to any flickering light, then you should consult your aviation medical examiner.

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WHEN LEFT WAS RIGHT

Foreign airline look-alike Boeing twin (glass cockpit) lined up on westerly R/W. 2+ aircraft positioning downwind, right hand, for duty R/W. Subject a/c instructed "When airborne, disregard SID, (which turns right) after noise, turn left, radar heading 190 degrees climbing to FL60". Expected readback was verbatim, in fairly un-accented English.

When a/c observed to turn right the pilot was reminded of previous instruction and responded - "We want to turn left and you want us to turn left but the aeroplane, she wants to turn right, so we are turning right. I sorry (sic)".

At the time the humour was lost on us. Is the FMS really the boss, or is there the rumoured cut-out/over-ride switch?

Even if this pilot had taken the autopilot out the flight director was going to take him the same way, which shows how much re-programming skill is needed in the Glass Cockpit.

* * * * *

MORE MYSTERY CALLERS

SAME FOR US!

Ref "More Murphy" part II in Chirp June '92 - flying very regularly along the old "Greenway" STU-SAN, one knows by heart, the normal sequence of cont. freqs. expecting a different voice on each changeover.

Same at quieter times, e.g. Sundays. The increasing habit of controllers to "take over" unannounced, is equally worrying for ALL the A/C on that freq.

Have we missed a call? Are they really calling us?

A simple broadcast - "Controller change, 123-decimal-4" would prevent confusion.

A difficult problem to overcome without producing unnecessary verbiage, as with the earlier report.

* * * * *

SNEAKING IN

The a/c concerned was being vectored for an ILS approach after diverting to us. The RT pilot (1) requested a priority approach due low fuel, and advised that if they had to go around he would request direct routing to the nearest airfield as his next alternate.

He was given the weather including the IRVR and advised that I would pass any change in the IRVR. The handling pilot (2) came onto the RT and said he did not want an update.

After positioning onto the ILS I transferred the a/c to the tower controller and then monitored

his frequency from Radar. On being given landing clearance + IRVR (350, 350, 350) at five miles, pilot (2) said no more IRVR readings. The weather did in fact improve to TD 400 and the a/c landed safely.

I am writing to CHIRP because maybe through you a working controller can express concern at the commercial pressures exerted on pilots, and through them controllers. We are obliged to pass on any updates in the RVR when they occur. TO ASK US NOT TO DO SO IS TO ASK US NOT TO DO OUR JOB. If we all start to bend the rules in the interests of commercial pressure someday soon something will break and I personally do not want to be the one on the ground end of the RT sending out the trucks to pick up the pieces.

In this case the a/c was due out of our airport later the same morning and the weather at the alternate was 1500m.

As a matter of interest to you at CHIRP I am told that some recent tower validation boards have failed candidates because the controllers did not pass RVR updates to landing traffic in low visibility conditions.

The CAA are looking at this problem and are likely to issue amended rules shortly.

* * * * *

NO SLEEP TIL MORN...

"Those Flight Time Limitations Again"

The day started on Standby Duty 1100-1800. The previous day I operated the afternoon Flight 1435-2135L, finishing duty at 2230L.

I woke at 0900L on the day of the standby feeling slightly jaded from the previous duty (it's

been a long summer season) and spent the day at home completing odd jobs. At 1700L I received a call from Ops stating they wanted me to operate the 2200 flight finishing at 0520, total allowed duty 10.15. Cabin staff on delayed report.

On reaching destination, lurking in tricky mountainous terrain, weather deteriorated to below minima. We held for 40 mins waiting for improvement which did not happen, and then diverted to planned alternate. On the apron at planned alternate waiting for an improvement, talking to Ops on HF, they advise us a replacement crew is being sent to destination by another carrier when weather improves, our crew to slip at destination. By 0600 weather at destination now 100m, 6/1000. All crew feeling tired. At 0800 a senior company person put undue pressure on us to get airborne from planned alternate on route destination for an-

other attempt as his weather report gave fog lifting to become CAVOK 0800-0900, our own reports giving 1000m. We arrived overhead destination 0900 and landed at 0915, both pilots VERY tired. By the time aircraft shut down and crew departed for hotel it was 1100, hotel at 1200 - Sleep at last. It was now 27 hours since I woke for the start of my standby duty. This cannot be safe!

Now that there is a great surplus of pilots "waiting in the wings" there do seem to be more occasions when commercial considerations are allowed to assume a rather larger importance, when balancing all the factors, in what is admittedly a risk balancing business. The real difficulty is, when the most crucial decisions are required is just when fatigue is starting to degrade the very faculty of considered judgement. This is also when the pilot is at his most vulnerable to persuasion.

* * * * *

For those of you who reach North America, ASRS (the Aviation Safety Reporting System) have just published such an important report, highlighting a very dangerous and seductive trap, that CHIRP sought reproductive permission. This is almost identical to the situation that caused the accident, in 1974, and the enquiry which resulted in the formation of ASRS.

The reprint below is an exact copy from the ASRS magazine, CALLBACK

"Cleared for the Transition"

One of the most persistent clearance misunderstandings reported to ASRS concerns the instruction, "cleared for the transition." When issuing this clearance, controllers often do not include a "maintain" altitude with the transition routing because they expect pilots to maintain the last assigned altitude until further cleared. Pilots, in the meantime, hear "cleared for the transition" and often climb or descend—prematurely—to the altitude published on the transition procedure. An ASRS report describes the typical result of this misunderstanding:

■ *Approaching VOR, I was given the following clearance from Center: "Cleared for the ABC Transition." I acknowledged. My last amended altitude assignment was 8,000 feet...The published altitude for the transition is 4,500 feet. At XYZ VOR, in adverse flight conditions, I began a descent. The Center frequency was busy, and I did not inform them of vacating 8,000, as I was on a published transition. At 7,000 feet Center informed me I was to be maintaining 8,000 and now to maintain 7,000. I acknowledged*

the 7,000 clearance but offered that I was cleared on the transition. Center responded that I was cleared to fly the profile only of the transition and had to maintain altitude. I didn't argue...

Since "cleared for the transition" is not in the pilot/controller glossary [of the AIM], I believe the clearance should have been "fly outbound on R-277, maintain 8,000."

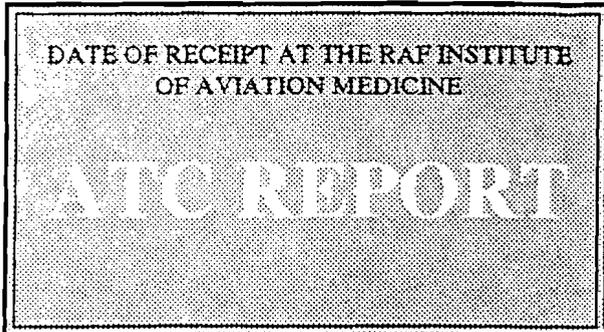
Published transition altitudes provide pilots with terrain clearance and radio reception minimums in case of lost communications. As noted above, the AIM's omission of a definition of "cleared for the transition" contributes to continued pilot misunderstanding of this instruction. Similarly, controllers' omissions of altitude reminders when issuing transition clearances increase the likelihood that some pilots will climb or descend prematurely. A simple restatement of the altitude to maintain by ATC would probably prevent many such misunderstandings. ▲

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ADDRESS: -----

PHONE No: -----



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 INCIDENT	
HOW LONG AN ATCO:	DATE:	ATC SERVICE(S) BEING PROVIDED:
HOW LONG AT PRESENT UNIT:	TIME:	IN WHAT TYPE(S) OF AIRSPACE:
ON DUTY AS:	LOCATION & NEAREST REPORTING POINT:	USING WHAT TYPE(S) OF RADAR:
HOW LONG VALIDATED ON THIS POSITION:	TYPE(S) OF AIRCRAFT INVOLVED:	WEATHER:
	AIRCRAFT IFR OR VFR:	

Please use this space to write your account, using extra paper if you need to.

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NAME: -----
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DATE OF RECEIPT AT THE RAF INSTITUTE
OF AVIATION MEDICINE

FLIGHT DECK REPORT

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 (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:		

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