



FEEDBACK

AUGUST 1993

NUMBER 30

Flying will always be about balancing risks. However, CHIRP has been getting information lately that seems to indicate that some of the established values of risk appear to be changing. The standards established to prevent errors due to fatigue are being stretched by dispensations to fly more than 5 consecutive nights and by novel methods of establishing the starting time of the pilot's flight time. The levels of fuel contingency carried are getting down to the same percentage as the error in the fuel gauges and those carrying more than flight plan fuel are having statistics presented to them on related costs that do not take all the associated variables into the equation. These management influences, aimed at providing greater productivity than ever before are as great in the case of controllers. They are required to behave like a computer which is multi-tasking while naming a single programme as their allocated duty.

While the chaps at the console or in the cockpit are sent off on Human Factors courses to enable them to recognise their limitations and help them overcome the inadequacies of equipment design, the question arises whether managers have equal realisation of the Human Factors impact of their methods. It is time to evaluate the impact of the Human Factors issues on the operations in aviation as a whole and not

in isolated compartments.

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WHERE ARE YOU NOW?

No autopilot. ATC always very slick, professional + helpful. I am P1 this leg. P2 collects ATIS. Westerly Runway in use. I confirm this as I ident the VOR which also Tx the ATIS. All aids set up for a westerly runway as far as we can. On handover told Rnwy for us was one of the Southerly Runways. This is not unusual as when wind in SW easterly arrivals often use Southerly Runways. Eventually given radar hdg towards field. All aids set idented + confirmed for Southerly Runway.

App checks completed. Expecting hdg change to take us downwind rt for Southerly Runway. ADF indicates we are going to pass west of the locator NDB. Normally pass east. I say to Capt "I wonder why he's taking us right of the NDB". Capt says he was just thinking that as well. Controller very busy due Low Vis Ops in progress due Wx. Moderate turbulence and ice. I'm working quite hard to maintain hdg + ht within limits. We have some discussion about where he is taking us. But still in vectoring area for Southerly Runway. Eventually given rt turn hdg 240 degrees descend to 2000ft to intercept. I say that's strange turn is long way round, just. Check DME. Seems a bit far out but not unusually so. Angle of intercept seems large, but not unusually so. Capt agrees, both look puzzled. ILS beam bars giving totally spurious info, wandering all over, no G/S indication.more confusion. Checked

ADF, this now looks as if it has failed, needles horizontal in 270 degrees (rel) position. (This type of receiver parks the needles horizontal when receiving no or weak signals.) Checked all idents, still good. Capt checks VOR still good. Even more confusion. Controller says we have missed centre line. We say we have Nav Equip difficulties. Gives us another hdg. Nav systems still showing "rubbish". Again we miss C/L.

Controller now has small sense of humour failure and gives us a hdg to go round again. Now everyone completely confused as to what is happening. My mental picture as to where we are "passed away" ages ago. Capt says I wonder if Tx to controller "which rnwy in use" Controller says Westerly !!! Capt says we were expecting Southerly. Controller says NO. Small exchange between Capt + controller.

Set up for Westerly Runway. Hdgs to intercept. Lights at D.A. land.

Capt + I discuss it on stand, and are convinced we were told Southerly. But now are not sure. Should we make an issue of it with ATC? Decide not to as short turnaround + already late. Both of us were very confused throughout the whole incident.

As usual a series of events lead us into this situation, as at no time was there anything REALLY unusual other than passing east of NDB on approach to Southerly Runway. Even the "failure" of the ADF was not a failure as the area in which we were being vectored for the Westerly Runway was almost exactly due east of beacon and it was therefore giving correct indications. The intercept hdg of 240 degrees M although a bit excessive for the Southerly Runway was correct for the side of the rnwy that we were, and correct for a Westerly landing. The Southerly Runway was a more sensible rnwy for wind direction 215/20. It was difficult for me to contribute fully to solving the problem as I had my hands full flying the a/c in the condi-

tions. It was quite frightening to be above a very busy airport apparently as a "rogue" aircraft.

On departure for next sector asked to call ATC on App. Controller said he checked the tapes and confirmed we had been given the Southerly runway, and not Westerly. Profuse apologies were accepted as by now we were convinced it was our fault.

What have I learned. Even "faultless" ATC makes genuine mistakes, he was very busy. Take note of even the smallest "strange" event. It may be nothing ... but then again. It is very hard to be fully involved in problem solving when hand flying in difficult conditions in a terminal area, and with basic instrumentation. The mental picture that I try to build up when flying using the information available, I thought, was in pretty good order, but completely fell apart when confronted by so many conflicting pieces of information. At least I continued to fly the aircraft within the specified limits. My first instructor's words came back Aviate, Navigate, Communicate.

IT DOESN'T GET ANY BETTER

I had arrived in the West Coast of America 24 hours ago and it was mid-afternoon local as we pushed back. I had done my utmost to get as much rest during this slip as possible but even so it only amounted to somewhere between 9 & 10 hours sleep. The clocks in UK were now on BST but they had not gone forward over there so there was a 9 hour time change. The flight progressed normally though everything seemed to be just on the limits, max T/O Wt, minimum fuel etc.; the only thing in our favour was the weather which was fine. We took it in turns to catnap on the flight deck. 9 hours after pushing back we were on the descent in the UK being asked by ATC to make an impossible profile. My brain was working much slower than normal trying to DR the descent, and it

was then I realised how incredibly tired I was. ATC sent us direct to the VOR to hold. I turned onto a heading for the VOR and centred the beam bar. The DME said we were close to the overhead, the beam bar had gone over to one side but I couldn't make sense of the VOR needles. Never mind, turn outbound, look for the abeam, what is going on. At this point my situational awareness was completely lost.

Luckily, ATC gave us a radar vector for the ILS, but it took a tremendous personal effort to get myself out of my low state of arousal. Perhaps the shot of adrenalin helped after I had lost SA. The reason I had lost it was simply forgetting to put the "rabbits ears" up when we were given direct route to the holding VOR. The needles were pointing back at the last reporting point.

We landed just before midday BST. In the previous 48 hours I had had a maximum 11 hours sleep of which 3hrs had been in the last 24hrs.

My mistake was trivial but what if we had had a real problem. How can a trip like this be legal?

So, here we have two cases of a loss of situational awareness due to an unfortunate set of circumstances. Although these situations were precipitated by two different causes, incorrect ATC instruction and fatigue, both have the fundamentals of being unable to resolve conflicting information by reference to the instrumentation and thus "losing the picture". While better instrumentation is helping to reduce these incidents there seems to be no hope of eliminating the fatigue associated with the 24 hour slip pattern. This has been acknowledged as the most difficult for crews for many years now but conflicting pressures have prevented either extending to 36 hours or the reduction to 12 hours, either of which improve the situation.

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COMMERCIAL MANAGEMENT

This report is not in relation to a specific incident, rather a concern over the flight safety implications of flying while under sudden threat of redundancy or career decimation.

I have operated 6 sectors in a very tired state while being preoccupied with the common problems that redundancy could bring. The captains I have flown next to have been in a similar condition. No doubt there have been several hundred other flights flown with a similar cloud round the flight deck.

During the 6 sectors I mentioned, I am sure cross-checking each other was not so thorough as normal and there were several missed or late altitude calls from the PNF.

This report typifies a number in a similar vein but not all related to the same circumstances. The situation arises mainly from four different problems, all of which threaten redundancy; take over of the company by another airline, new aircraft being introduced into an airline that will reduce the number of pilots needed, flying to the limit of hours available and then having working time extended by some new interpretation being introduced, and finally the flying of extended consecutive night operations for long periods of time. In the first two situations there is bound to be someone leaving. In the last two, those who do not conform to the changes being implemented because they feel they are detrimental to a safe operation, can expect to be told to leave. Examples of each of these experiences have been reported to CHIRP. This deterioration in operating performance needs to be recognised by managers and taken into account during the transitional periods in each situation.

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THE ISSUE OF INTERVENTION

With reference to the article "When Left was Right" in Feedback No.29 [p.4] I cannot believe that this sort of occurrence can be allowed to happen and what is more I find your response to it condones this sort of behaviour rather than explaining what a serious Flight Safety Hazard it really is.

If it is beyond a pilot to turn his aircraft onto a set heading and climb to a set Flight Level without an FMS or a Flight Director to help him then he should not be flying an aircraft full of passengers and certainly not under IFR.

Surely your response to this story should have been to understand the difficulties in accepting a routing that goes against the FMS but to stress that ATC instructions are just that - INSTRUCTIONS and not requests.

If more of this happens we are going to have a new most common classification of aircraft accidents "(PILOT) FMS ERROR".

AND THE NECESSITY TO INTERVENE

Aircraft is new and is equipped with EFIS and FMS. FMS was used for departure SID and hand flown by myself to FL200 before A/Pilot engaged. FMS and A/Pilot then flew the flight and V Nav used for descent into the STAR without any problem.

Radar put us on final Hdg to intercept ILS localiser and APPROACH MODE was activated.

A/c was very slow to intercept localiser and ignored glideslope. First officer warned of G/S and localiser deviation, especially in view of terrain briefing given.

A/Pilot was disconnected and Captain's EFIS display changed to normal ILS presentation. By then we had passed the Outer Marker - above the glideslope and to the right of the localiser.

Being IMC it was considered prudent to execute a Missed Approach and then a successful 2nd Approach was hand flown.

Modern EFIS is a great help when it is all working and the flight is going to plan - but it really increases the workload when it hiccups - especially near mountains!!

The presentation and manipulation of information through computers is an area of ongoing research in the field of Human Factors. Reports on these problems are as relevant as not being able to reach a lever or throwing the wrong switch. If control through the automatics becomes too difficult then that is when they are "dumped". If that happens to be somewhere on the approach segment of the flight and the standard missed approach procedure is followed then there may not be the protection from the critical surfaces around the airfield that is expected. The missed approach procedures were developed when almost the only reason for not landing from an approach was not being able to see enough lights. There was little doubt that the missed approach would commence from the centre line at Decision Height. Today it is more likely that you have to throw the approach away because the automatics are diverging and the aircraft is nowhere near the centre line. Currently, for a go-around manoeuvre from Decision Altitude the on track criteria are half scale deflection for precision and five degrees for the non-precision approaches or whatever your company manual says.

UNRESOLVED ATC

To avoid overloading the processor, since installation, the equipment has been fitted with a

built in height filter which totally removes any "return" where the mode "C" indicates that the "return" is above the preset altitude. Therefore the accuracy of the displayed information is dependent upon the accuracy of the aircrafts' transponders.

I am aware of at least three occasions where the height readout of an aircraft has been wildly inaccurate and on two of these occasions the aircraft were talking to our unit, in Controlled Airspace, not showing on the radar at all, not even in Primary radar, because it had an incorrect mode "C" output and this made the processor believe that the aircraft was above the preset altitude.

How long will it be before two aircraft get "very adjacent" because one of them had an inaccurate mode "C" and was not displayed on the radar, and possibly not even talking to us?

* * *

...the aircraft stopped showing on my radar so the display from the adjacent radar was checked and the aircraft did not show on that either. This situation (neither primary nor SSR Target) persisted so an R/T call was made as the a/c was now thought to be in difficulty. The a/c did not show on either radar for several miles, when it first showed on the adjacent radar then mine.

Both this problem and the difficulty identifying whether you have any primary returns showing on your screen have been around for some time. CHIRP is told that it seems likely

that nothing will be done about these problems as everyone is aware of the dangers and perhaps they are too difficult to solve anyway.

CAN DO!

The distribution of this FEEDBACK magazine is again under scrutiny. As a cost cutting measure the CAA decided to post FEEDBACK and the Flight Safety Committee Journal, Focus, together. This was considered to be economic as the address list for the two publications had been derived from the CAA list of Licence holders and was being updated on a regular basis. Focus has now withdrawn from this arrangement and is, once again, using a bulk distribution through internal mail facilities.

CHIRP considers that this FEEDBACK magazine is a personal link between the reporters and ourselves and that it does contain "Media Sensitive" information. The information can easily be misunderstood or used out of context and is solely for those fully initiated into civil aviation. For these reasons CHIRP would like to continue to send FEEDBACK to you individually at home and would like you to send back the tear off slip, PRINTED AT THE BOTTOM OF PAGES 5 & 6, with the address you would like the magazine sent to, realising that it may not be the address on your licence or the one used by your employer. (However, we do need updating when you move as we have had some rather volatile remarks on returned envelopes, written by the former partner of the recipient!)

ADDRESS RETURN TEAR OFF STRIP

Name:

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POSTBAG FROM #29

CRATCOH was largely implemented through an orchestrated campaign in the media by CAA Unions, when threatened with rationalised staffing levels, and has had an adverse effect on many regional units. Certainly a case existed for some form of stress break staffing - this is a sledgehammer solution.

...I have every sympathy with the difficulties faced by the controllers there. It is all too easy to say that if they don't like their working conditions then they should find employment elsewhere. Unfortunately many people have domestic commitments (elderly or infirm parents and the like) which preclude them from moving away. If legislation exists it should be enforced; if airport operators cannot afford to meet the manning levels then it is they who should get out of the kitchen not the Controllers.

....I identified with everything mentioned. I felt that your comment about "whinges from those who should now 'get out of the kitchen'" was ill informed. The majority of ATCOs at our unit have been there for most of their working lives. To get up and go with wives happy in their jobs and children at school is not such a simple task.

There is a general feeling of resignation and as morale has dropped so has the standard of ATC service provided. With goodwill all but disappeared and professional integrity being eroded

I only hope that something changes soon before the inevitable incident occurs.

The introduction of CRATCO, whose concept I applauded, has changed my view of a job I did enthusiastically to a position close to loathing.

From the controllers' view there is no useable break. You are still working a minimum of 2 days in every 3, but "late" before your day off and an early start following your day off.

It has further complications in that we used to get 15 long weekends every year which coincided with "normal" weekends. We now get none. It is quite possible to work for 4 weeks before getting a Saturday OR Sunday off.

The result for me has been an absolute loss of sleep pattern. I am always tired. I wake up at 5am on my day-off, and can't get to sleep 'til 3AM when I'm due to start at 6AM. I have made more errors in my controlling in the past six months than in the previous 18 years.

To sum up. CRATCO takes no account of reasonable sleep patterns or any social life. I should like to leave, but family commitments will not allow it at present, so I continue and hope I just stay lucky.

Sadly these reports give no examples of the effects of such situations on operating capabilities. However, we believe that there have been enough example events given previously to show that a genuine problem does exist.

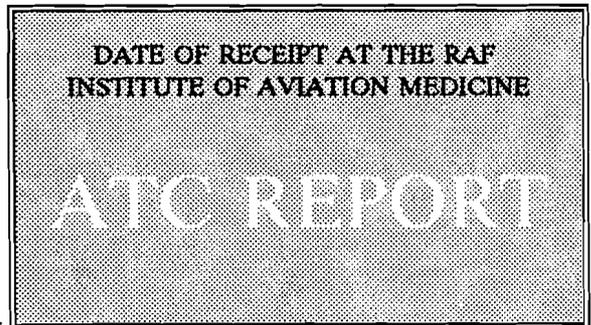
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YOURSELF
1. HOW LONG AN ATCO
2. HOW LONG AT PRESENT UNIT
3. NATS/NON-NATS UNIT
4. ON DUTY AS
5. HOW LONG VALIDATED ON THIS POSITION

THE INCIDENT	
6. DATE	11. ATC SERVICE(S) BEING PROVIDED
7. TIME	
8. LOCATION AND NEAREST REPORTING POINT	12. IN WHAT TYPE(S) OF AIRSPACE
9. TYPE(S) OF AIRCRAFT INVOLVED	13. USING WHAT TYPE(S) OF RADAR
10. AIRCRAFT IFR OR VFR	14. WEATHER

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

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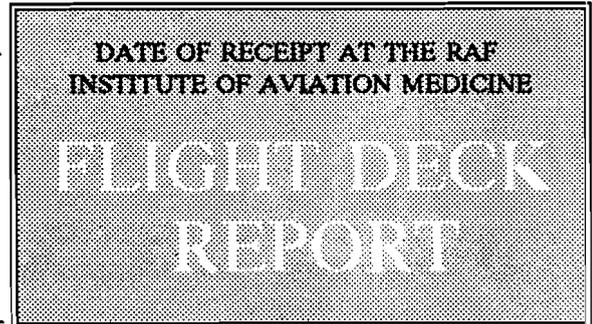
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CREW POSITION
TOTAL FLYING HOURS
HOURS ON TYPE

THE FLIGHT
DATE
FROM:-
TO:-
IFR/VFR
TYPE OF OPERATION

THE INCIDENT
TIME (PLEASE STATE LOCAL/GMT)
DAY/NIGHT
LOCATION
PHASE OF FLIGHT
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