

FEEDBACK

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Editorial

Organisation. In the past month CHIRP has been entered onto the Companies Register and has gained the consent of the Charity Commissioners for the award of charitable status. Accordingly, with effect from 1 November 1996, the responsibility for the Programme will be assumed by the independent Board of Trustees with Air Commodore Tony Nicholson as Chairman.

ATC Operations and Training Standards. Since the publication of FEEDBACK Issue 39, meetings have been held with senior National Air Traffic Services Managers, at which the principal concerns that had been expressed through CHIRP reports were presented. On the subject of training a visit was made to the College of Air Traffic Control Hurn during which the views of reporters and staff were debated. There is some evidence to suggest that the concerns expressed by reporters may be a legacy of the training policy that was in existence some three to four years ago. One of the aims of the recent Review Group ATC Training (RGAT) initiative was to match training more closely to the requirements of operational units. As yet, relatively few post-RGAT graduates have entered On Job Training (OJT) at major operational units although early indications are encouraging. Undoubtedly, this issue will continue to be monitored with some interest.

CHIRP Confidentiality and Anonymity. In the past few months I have received a number of anonymous reports on important issues, in which the reporter has cited "leaks to the press" or "breaches of confidentiality" as the reason for submitting an anonymous report. On the issue of press coverage of reports published in FEEDBACK, it should be recognised that within a circulation of 20,000 copies per issue, it is likely that information on CHIRP reports may be passed to media representatives. Hence it is accepted that any item published in FEEDBACK may be placed in the public domain. However, it has been and remains the CHIRP policy not to discuss specific reports with the media. It is equally important to understand that CHIRP must retain the ability to conduct a confidential dialogue with reporters, in order to validate details of a reported incident and if necessary to represent reporters' views on an absolutely confidential basis. Anonymous reports are not normally acted upon as they are rarely able to be validated or analysed.

Peter Tait

PLEASE NOTE: Recipients of FEEDBACK who do **NOT** hold a valid pilot/ATCO licence, including organisations, received address slips to be completed and returned to CHIRP in the last two issues. Of the 1046 slips issued, only 535 slips have been returned. If you have **NOT** replied and have received a further address slip with this issue, it is essential that you notify us of your wish to continue to receive FEEDBACK.

A Reminder on the magazine format:

The following type fonts are used for:

- Disidentified reports - printed with minimum text changes
- *CHIRP comments are italicised*
- Verbatim Third Party Responses are printed in SWISS type

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FEEDBACK - Comments

Fatigue

(1)

I write not to report an incident but to contribute to your investigation into cumulative fatigue with a copy of my roster, which is relevant because of two features, excessive flying hours and repetitive day to night scheduling

Over recent months, I and my colleagues have commonly been rostered for 90-100 hours in each calendar month. Many are almost continually on the brink of 100 hours in 28 days, and several have accumulated well over 800 hours in the last 12 months. What makes my roster period interesting is that I have been scheduled in excess of 90 hours flying despite eight days leave, i.e. 90+ hours in 23 days. Simple arithmetic converts this to an annualised rate of flying of over 1400 hours. It is perfectly legal, of course, but the spirit of CAP 371 limitations has disappeared!

The blocks of flying duties show a regrettable, but now customary pattern: two night flights after one or two day flights, allowing little chance of obtaining adequate rest before an all-night duty.

The company's standard admonition that crew members are "responsible for planning and using their rest periods properly in order to minimise incurring fatigue" cannot disguise the fact that this sort of rostering promotes fatigue. In my own case, I find that the two days off in between blocks of flying are fully used in recovering to near normality, just in time to start the debilitating process again.

(2)

In your response to the letters in FEEDBACK 39 you state that you do not have the detailed evidence on

individual sleep patterns that, by inference, might influence the Authority's approach to this problem. What happened to the information learned from the little blue booklet that I, and many of my colleagues, religiously filled out with exactly that information.

The booklet was completed some two to three years ago and returned to Farnborough. We were fatigued then and our work pattern has since deteriorated, perhaps you might imagine how we feel now.

The data for the study referred to by a number of reporters were collected by the Royal Air Force Institute of Aviation Medicine (RAFIAM), under contract from CAA Safety Regulation Group between September and December 1993. This period was immediately prior to the transfer on 1 April 1994 of all contracted research sponsored by CAA from RAFIAM to the Defence Research Agency (DRA).

The study involved the completion of sleep log questionnaires over typically a 28 day period. A total of 241 aircrew submitted reports of which 116 were from B747 three-man crews.

The report on this study "Sleep Patterns of Aircrew on Long Haul Routes" was published by DRA on 25 October 1995. The study states that no direct information was collected on levels of alertness during duty periods, as it was designed to investigate sleep problems of long haul crews, but the data was used to derive estimated levels of alertness. Although the report details significant levels of degradation in the level of alertness at the end of the return duty period from NE and Central USA, it concludes:

"On westward trips most aircrew slept slightly in advance of local time, especially on the first night. Some sleep problems persisted throughout the layover period on the west coast of America, but there was no strong evidence of difficulties coping with trips to the east coast even during 24 hour layovers."

From our own review of the roster data that have been supplied by a number of reporters, we feel that crews in several sectors of the industry are currently operating duty periods and/or frequencies which, although within the detailed requirements of CAP 371, may be conducive to significant levels of fatigue if operated on a continuing basis.

CHIRP has proposed to the CAA (SRG) that there is sufficient evidence to justify that the data previously collected, together with the data provided recently by reporters, be re-evaluated to examine the specific areas of concern. As an example, the effect of continually scheduling rest periods between 18 and 30 hours after flights involving multiple time zone changes should be assessed in relation to CAP 371 Paragraph 2.3, which requires consideration to be given to avoid such rest periods when planning duty rosters.

Interceptions - A Military Response

As an operational Tornado Pilot, I could not let the comments of the retired ATCO, printed in the July issue of FEEDBACK, pass without trying to restore some balance to what is a very emotive issue; namely Civil and Military traffic in open FIR.

While endorsing Gp Capt Gooding's statement that interceptions are not authorised against civil air traffic, I would add that actual infringements are extremely rare. I use the word actual advisedly. While the ATC standard separation is indeed 5nm/1000ft, when flying VFR the minimum separation required is 1000ft vertically from other aircraft. Thus I am perfectly entitled to fly VFR 1500ft directly below a civil aircraft in open FIR, but considering that prospect must indeed cause Civil "neck hairs to elevate".

What does become quickly apparent, when considering this issue, is the almost protected status expected and indeed afforded to Civil traffic outside CAS (*Controlled Air Space*) by Air Traffic Control. While I do not advocate any action by Military aircraft that would give another Captain cause for concern for the safety of his aircraft, common sense must be applied if Military and Civil aircraft are to operate in the same open airspace.

There is no need for a Military jet to practice "high speed interceptions" against civil traffic, "coming as close as it dares". Equally, a Civil pilot sighting a Military jet in his vicinity should not automatically make an AIRPROX report. Finally, if Civil traffic chooses to leave the protective shallows of CAS ventures out into the deep blue waters of open FIR, then it must expect to come across the creatures that live there; namely Military Fast Jet traffic.

However, if we all adhere to the rules and apply common-sense, we can all get the job done safely.

Maximum Duty Limits

Your report headed "Maximum Crew Duty Limits" in FEEDBACK July 1996 raised an important area of interpretation. While I remain a supporter of your good work and your publication, I fully concur with the sentiments expressed in the report and wish to take issue with the CHIRP comments that followed.

Based around a normal, average working week of 40 hours, an upper limit of 55 hours a week would not seem unreasonable. I firmly believe that this limit applied to a period of seven consecutive days was the original intention.

However, by using the literal interpretation of a week, as only

applicable from a predefined day, operators may abuse the scheme and roster duties far in excess of 55 hours in a seven day period. In fact, rosters of 90 duty hours in a seven day period can be legally written using this interpretation. The 95 duty hours limit in two consecutive weeks is technically achievable in just eight days!

Having flown to the limits of CAP 371 for many years, I know such rosters would be unflyable and completely unsafe. Even nurses and junior doctors would think twice about working such practices.

Now, if the current (mis)interpretation of maximum duty hours in a week can be proved to be inherently unsafe and illogical (as I believe it can), then the only logical conclusion is to interpret the limit in its wider sense of seven consecutive days.

Indeed, CAP 371 itself is far from consistent in its use of words with regard to hourly limits. In the case of flying hours, 28 consecutive days are used, NOT four weeks.

To quote the corresponding section relating to cumulative duty hours for helicopter pilots, (Appendix D, section 22.1 page 84) ...

"Maximum duty hours shall not exceed 60 hours in any seven consecutive days and 200 hours in any 28 consecutive days."

If the intention is for helicopter pilots to limit their duty hours in seven consecutive days, why should other pilots be treated differently?

I firmly believe the true meaning and intent of CAP 371 is clear that all weekly limits should apply to any consecutive seven day period. It is regrettable that in this instance the CHIRP position would appear to support an unsafe practice, condoned by the CAA, and readily abused by commercially focused operators.

CHIRP does not support unsafe practices.

The difference in the definition of 'Maximum Duty Hours' between fixed and rotary wing is as stated and is a deliberate difference in CAP 371 policy.

CHIRP has represented the view of this reporter and others in recent discussions with CAA (SRG), in that the different definitions are inconsistent. We strongly support the adoption of the rolling limit definition for fixed wing operations.

As stated in the last issue, any evidence of significant abuse in relation to the calendar definition should be forwarded to Captain John Mimpriss Chief Flight Operations Inspector CAA (SRG). CHIRP also remains available to assist in specific cases.

LOFT

I was most interested in the correspondence in your last issue re: LOFT. As far as I am aware the term is self explanatory, but I do not know of any formal definition. In my opinion LOFT should be considered as an integral part of CRM (*Crew Resource Management*).

Your writer is quite correct in suggesting that multiple emergencies are a rare event in practice, but crews are nonetheless required to be competent with any situation that may arise on the line. There is therefore every need for the six month 'Competency Check' in which the simulator is used only incidentally for 'simulation' and more realistically as a procedure trainer.

On the flight deck, however, as in life, many situations arise where, at the point of decision making, there is no right or wrong answer; the decision, having been made, has to be carried through to its conclusion, or perhaps modified as circumstances dictate, and it is then that the individual will

demonstrate his/her ability to successfully manage the resources available in the cockpit. Subsequent discussion and analysis, if approached in the correct frame of mind by both the instructor and the participating crew, can be of the most enormous value in enhancing the airmanship not only of the crew but also the instructor. To me it is quite appalling that any such exercise, even badly conducted, should be looked upon as a "career stopping hoop", perhaps your writer should reconsider his own attitude towards training which, at none too little expense, is being provided to enable him to be a better pilot.

Having said that I must admit that in my considerable experience as a training captain and simulator instructor I have encountered many training staff who either have the "trapper" mentality, or whose idea of LOFT is merely to use most of the Competency Check emergencies, but to let the pilot land somewhere else! I would submit that LOFT should always exercise the "little grey cells", should concentrate on developing CRM capabilities, and should incorporate all the paperwork/planning that is an integral part of line operations. I certainly see no reason why the actual 'flight' time should exceed 1-1½ hours per pilot.

Whilst correctly performed emergency drills certainly have their place, expecting to find decisions made by reference to the Company SOP qualifies the pilot for the Pavlov school of aviation!

ATC Reports

Right of Way?

A busy airport, weather fine, aircraft following the green taxiway lighting system towards the holding area for the departing runway, instructed by

Ground Controller to contact Tower Controller.

Workload quite high, busy with both arrivals and departures, so did not make any transmissions to the two aircraft entering the holding area. Obviously both crews felt they had the 'right of way' as both had their illuminated route into hold, so continued as per normal only expecting to stop when they had a red stopbar.

Suddenly they both see each other as conflict, slam on the brakes and query who is first. I say "Normal rules would say traffic on left to give way to that on right". "But I'm overtaking him and have the greens" says one on left.

I retreat to read the ANO (*Air Navigation Order*) and think about the latest ATC instruction and whether it's a good idea to have all the green routes on around a holding area at same time.

Pilots and controllers be warned - don't get too locked into the office and keep a good look out!

What you heard is not what I meant!

The aircraft made a somewhat garbled initial report on frequency at FL370. Controller mistakenly replied "Maintain FL330" to which the aircraft responded "Roger to maintain 330" again a little garbled. As the A/C passed FL360 in descent the controller queried the descent. A/C replied "Descending as instructed to 330" ... "but you weren't cleared ... " "You cleared us for descent..." etc etc.

It appears that North American areas when given "maintain" at a different level read it as "descend to and maintain". The danger is obvious.

This is not an isolated event.

North Sea Congestion

Whilst working a helicopter operating from Platform AAA, I noticed conflicting fast moving traffic come into radar cover from the east at similar level to the helicopter. Danger area DXXX was notified 'Active' (5000 to 55000ft) but these unknowns were between 2000 and 3000ft. Due to the extreme range it was necessary to relay my messages on this conflicting traffic through another helicopter.

Several contacts that I presumed to be military aircraft were observed operating beneath DXXX in areas where commercial helicopters routinely fly to platforms. What is the use of declaring a danger area active if the traffic using it operates beneath?

I feel there is an inevitability about this practice which does not bear thinking about, when challenged the response is always "It's Class G airspace - See & Avoid".

Finally MOR's receive a similar response - "why file this report?"

It is not necessarily the case that military aircraft operating in the vicinity of a Danger Area have unrestricted clearance to operate in that Area. These aircraft must therefore transit either under, or around, the protected airspace.

The problem of maintaining safe separation between commercial helicopter operations and high speed military aircraft in areas outside Controlled Airspace remains one of the most important issues for those charged with the management of UK Airspace.

Transition Altitudes

The Transition Altitude (TA) in XXXX Class 'D' airspace has recently been raised to 4000', outside this airspace it remains 3000'. The Class 'D' airspace is quite small. Departing

Eastbound Airways traffic routes through the FIR to join the Eastbound Airway 30nm NE of XXXX.

There is Northbound Airways traffic at FL60 which I am working. An Eastbound Airways departure is filed XXXX to join the Eastbound Airway at FL90. The departing traffic is cleared to climb to FL50, and climb when instructed by radar to FL90.

The QNH is 975mb thus the lowest Flight Level in CAS is FL55 but FL45 outside.

The departing traffic leaves CAS and shortly after reports (apologetically) levelling at FL51 as he was using altitude until above 4000'. So, OK, I had 900' (and 4nm), but what if the conflicting traffic had been at FL50 in the FIR, the departing traffic cleared to FL40 and he had done the same thing ?

Now who is to blame, the pilot? Possibly, but the situation is confusing, particularly early in a flight. Am I to blame? Certainly I am aware of the low atmospheric pressure and its effect on Flight Levels but to what level should I have cleared the departing aircraft, 4000ft? This has been done previously and it resulted in a GPWS alert which was the subject of an MOR.

There is a simple answer to minimise these kinds of incidents and that is to have the same TA over the whole of the UK (or Europe) to cope with most, if not all of the terrain separation problems.

The higher Transition Altitudes (TA) in Terminal Control Areas are normally required to segregate outbound traffic flows from the lowest terminal holding level for inbound traffic. In other Control Zones/Areas the TA is determined by local operational requirements.

Within the UK FIR the TA of 3000ft AMSL conforms with ICAO PANS-Ops.

I am advised that the UK policy is to seek a progressive standardisation of TA's.

This type of incident is frequently the cause of level violations. Pilots should be reminded that since 1994, the UK procedures on setting altimeters were simplified as follows:

"Within Controlled Airspace..... When cleared for climb to a Flight Level, vertical position will be expressed in terms of Flight Level, unless intermediate altitude reports have been specifically requested by Air Traffic Control." (UK AIP RAC 2-2 Para.5.1.4)

Although not within the strict definition of a Human Factors issue, the following incident report has been included in order to maintain an awareness of this important issue.

Wake Separation

While working as a Radar Controller in a busy Terminal Area I was handed an outbound B767 by an Approach Controller climbing about eight miles behind a descending wide-body which was positioning downwind. About 30 seconds later the B767 crew reported a shock which they first thought to be a major airframe problem. After checking the aircraft and controls they concluded that it was an externally produced shock of very violent magnitude. They reached their destination without further incident as far as I am aware.

The only possible explanation I can find for a shock like that, was the wide-body running eight miles ahead. This is well above normal separation minima but I am forced to assume that the arriving aircraft was decelerating and deploying all manner of spoiling devices which (on what was a still day) produced very disturbed air.

Separation standards are necessarily a compromise between traffic flow rates and absolute wake avoidance. Research in the United States has shown that in calm atmospheric conditions, vortices developed by some large aircraft, usually when flying in high lift configurations, may continue to exist with significant velocities at ranges up to 10 miles.

Flight Deck Reports

CHIRP Comment

Accidents are rarely the result of single causes, but often are caused by a number of different but related influences, which act in combination to form a chain of events that can lead to an inevitable conclusion. The detail in the following report has been published with the approval of the author and the operator.

That Sinking Feeling

Good VMC en route base from the *** rig in the cruise 2000ft. Acting as PNF (Pilot Not Flying).

Hydraulic System Warning lights appear in sequence, indicating an imminent total loss of the Left hydraulic system. *** PF (Pilot Flying) was hands-on and suggested the YYY platform as a suitable diversion. I agreed.

I attempted to establish R/T contact with YYY without success, also failed to re-establish contact with *** rig. Still no answer from YYY. Meanwhile I continued to monitor the Hydraulic Pressure. Both systems in the 'green' and *** was happily flying AP out. I did not declare an emergency as we were flying in VMC and there were no signs of fire, I knew I would raise the YYY somehow as there was lots of traffic around. Finally I called another aircraft and asked him to raise the YYY on marine frequency.

Back in the cockpit the Left and Auxiliary Hydraulic Pressure went to zero. It all went just like the simulator. Very reassuring.

I picked up the Emergency Checklist and using the thumb index managed to open it at "Double Transformer/Rectifier Failure". Re-selected and started reading, as one does at the top left of page "R/H .. " etc. Finally I found "Complete loss of L/H pressure" and carried out the checks by the book. Down to "Land as soon as possible" at this point there was a line across the page so I put the checklist down. It was a lot easier to pump the gear down in the aircraft than the simulator. I turned off the auxiliary pump as required although it was not on the checklist.

By this time we are on finals for YYY, we had spoken to them, the deck crew are on their way up and it's time for me to give my final excuses for the possible wobbly landing to the passengers. It was a superb landing! It was reassuring as we landed to see the standby boat all prepared, fast rescue boat and scramble nets deployed.

We shutdown, off-loaded the passengers, phoned base and climbed up to see where all the oil was leaking from. I found a little disc of metal that had been blown (fractured) out of a union. I contacted engineering to advise the details of the failure and organised the deck crew to manhandle the aircraft to the edge of the deck.

*** and I were quite pleased with ourselves, we decided that we were both more than happy with the way we had handled the situation. I had even managed to work the GPS to get us to YYY (not that we needed it!)

While we waited for the cavalry (a helicopter full of engineers) we cleaned up all the oil, had lunch and promised the OIM we would be off his deck in a few hours.

The engineers arrived, replaced the union, replaced the hydraulic pump and told us that as well as the union having failed there was also damage to the hydraulic pack indicating there had been an overpressure. *** and I were concerned that the amount of overpressure that blew a solid union apart could also have done other damage.

FLASH BACK - Back to the first start up of the day, as *** turned the first booster pump on we both heard/felt a clunk which we knew was not a booster pump!

Back to YYY rig. The engineers had fixed it, so I supervised the deck crew in manhandling the aircraft back to the centre of the helideck. I saw *** in P2 seat and asked him to move to the P1 seat so he could operate the toe brakes. He did this by shuffling his body across the cockpit as the deck crew were milling around the cockpit doors.

Once into wind on the helideck it was time for a one minute ground run. The nose wheel was off centre and we used external power. I did the walk round while *** did the cockpit checks. Then I got in, checked with *** that he had done the checks and I did a visual look round the cockpit. Whilst I did the control check I noticed that the external power was off, so we got it turned on. When it was, there was a solid "clunk" and we delayed the start for a few moments whilst we discussed it. Remember we had just had a hydraulic failure in flight plus a "clunk" before start at base. As there was nothing apparently wrong we decided to continue with the ground run.

Yes we are in the kneeling position - so what? I had done a start in this position before (someone had inadvertently lowered one down overnight and I started it for them). On type conversion we had taxied and shut the aircraft down kneeling and

been told that it could be treated as normal. Technical training was that all the logic circuits still recognise the 'ground' condition whilst kneeling so I am happy to start with AMBER - GREEN - AMBER indications.

FLASH BACK - Back in February, I was P1 in the SIM, the P2 is doing P1 under instruction. I'm PF he is PNF, dealing with an undercarriage fault. Out of the corner of my eye I notice that he keeps screwing it up by pumping the gear down with it selected DOWN, I did not allow myself to be distracted whilst as PF but three times said "Put the gear up, read the checklist and start again!" Now I know that the circumstances were different but the impression left on my mind was that it was normal to select UP to pump the gear down. (It is foreign, after all!).

As I pressed the starter button the external power dropped off line and as usual all the warning lights dimmed. I did notice that the AMBER - GREEN - AMBER undercarriage lights were either so dim I could not see them, or were out.

Eyes now returned to the hydraulic pressure increasing. We ran at flight idle for about one minute with all indications normal except no undercarriage position indications, but also no abnormal gear warnings. The aircraft was stable in the kneeling position.

We shutdown with no problem, got out and had a chat with engineers about everything that had happened. Everything "on top" was okay so it was decided to go for a 10 minute ground run. We intended to lift into the hover to return the gear to the normal position during this run.

*** got in whilst I did another walk round. The aircraft was in the same configuration as during the previous ground run so I felt happy to start it again...

I started #1 up to flight idle, all temperatures and pressures OK. Nothing abnormal. Started #2. Just as I was advancing to the flight idle gate the aircraft started to move forward and down. My only thought was to let it sink under control so it stayed upright and to stop the rotors as quickly as possible. There was a lot of grinding, grating and crunching noises as it went down but no panic!

After we had shutdown and *** had left the cockpit, I noticed that the emergency undercarriage handle had been returned to the NORMAL position. My first thought was that this was the sole reason for the undercarriage retracting. *** had pushed it down as he had shuffled his body across the cockpit!

So what had gone wrong? In the subsequent investigation, the FDR showed the undercarriage logic reverted to the IN FLIGHT mode before I shutdown on the initial landing and the rest you know but...

*** and I were in a confident mood, we were pleased with the way we handled the hydraulic failure and the resultant sorting things out... were we too hasty? Over confident? I was quite happy to start in the kneeling position - the Guru of the type had told me it was okay. I was perhaps overconfident having done it before - a little bravado perhaps!

I was happy with the position of the undercarriage selector and emergency handle after I had done the checks - it was okay on the LOFT exercise and in accordance with the checks!

We were both very concerned about what had caused the hydraulic failure, even though it had been fixed. Were we distracted?

I am more than happy to allow the P2 to do the cockpit checks - he after all trusts me to do the walk round - it was for a ground run after all. Were we both complacent?

When the undercarriage indicator lights went out during the first start had they just dimmed with the external power dropping? By the time I knew they were out we were at flight/idle with everything OK.

The second start was only a repeat of the first. Nothing had changed, so there was no need to do all the nine yards. The rest is history.

Now over to the reader - at what stage would you have a smelt a rat and been alerted to the fact that something was amiss? That is a question I cannot answer for you, as we obviously were not. With hindsight, the first stage should have been the BEFORE START checks. I should have been more conscious that being in the kneeling position needed extra thought. Before the second start I knew the undercarriage indicator lights were out and accepted that the aircraft logic circuits would not allow the gear to come up..... Oh and the big "clunk" before the first start..... (I now believe it was the nose wheel actuator unlocking!)

Two principal technical issues provided the enabling factors that led to this unfortunate occurrence. First, the Emergency Procedure in the Checklist did not include the action to select NORMAL gear DOWN after pumping, as is required and is stated elsewhere in the Checklist. Secondly, the gear logic circuits reverted to FLIGHT mode, and thus removed the 'on ground' protection. Interestingly, the technical reason for the logic reversion has not been clearly established by the manufacturer.

The important point is that, in spite of the technical deficiencies, the accident could still have been averted, but as in many other accidents the indications of impending disaster were overlooked. Would you have been wiser?

GPWS - True or False?

I have buttoned my lip for some sixteen years and as a management pilot I have always toed the party line, but now feel the time has come to speak out, if only to see if others within the industry may share my reservations.

Put simply, the GPWS (*Ground Proximity Warning System*) as fitted to aircraft I have flown has given literally hundreds of warnings (false, nuisance and genuine) mostly at a critical phase of the flight i.e. during the latter part of the descent or on the approach.

On subsequent investigation not one of them has provided any useful information. They have all, by definition, caused an intentional distraction to the peace and calm of the flight deck at a time of high concentration. On at least one occasion false warnings have led to multiple go-arounds in good VMC. Mode 2A nuisance advisories are such that radar descents have to be declined in certain areas, or in one case speed reduced to approximately 150 knots on the downwind leg of a radar circuit while still some 20 miles plus from touchdown.

Although I am entirely in favour of any system which helps to prevent CFIT (*Controlled Flight into Terrain*) incidents (what about GPWS for single pilot IFR operations?) and I know there are some improvements in the later versions of GPWS, the whole issue seems to need a complete overhaul. I should like to see the following points carefully considered when mandating the use of GPWS, with software developed which is relevant to the type of operations planned:

1. Aircraft handling and performance characteristics.

2. Other advisory/warning systems built into the aircraft (with MEL considerations).
3. A GPWS airfield categorisation (with software selectable by the crew prior to descent).
4. IMC/VMC switching, available to the crew.
5. Commander's authority over GPWS.

It is sobering to reflect that accidents resulting from CFIT remain one of the most significant single cause of fatal accidents in the air transport industry. A recent study of CFIT accidents states that in eight accidents, which occurred between 1988 and 1994, there was no crew reaction to a GPWS warning. Moreover, false GPWS warnings have been, and continue to be, a major source of criticism and one which tends to degrade confidence in the adequacy of the system.

Some readers will be aware of the development of Enhanced GPWS to overcome the limitations of existing equipment. However, current standards of equipment will remain in service for many years.

A Question of Pressure?

Long haul sector Far East-UK. Senior Captain, but previous experience mainly in the short haul environment.

The fuel plan from the company was extremely lean using optimum cruising levels throughout with no holding and short range London diversion, even though Prob 40 (40% Probability) fog forecast at destination. The fuel plan did contain the standard five percent contingency but reduced by using a European alternate en-route. Despite a discussion as to whether a little extra fuel would be

prudent, the Captain elected to take the company fuel figure.

At this time of night considerable traffic departs from the Far East for Europe at the same time, using similar aircraft and converges over Northern India. There is little radar coverage and poor/non-existent communication between FIR's (*Flight Information Regions*). Separation is 15 or 20 minutes between aircraft on the same track at the same level and it is not unusual to be assigned a flight level considerably lower than optimum. This flight was no exception and after a long period at FL260, FL310 was obtained with little hope of FL350 as a Far Eastern carrier was immediately above us at FL350, also operating into a UK destination. Our routing was standard to Europe via the CIS. The fuel situation at this point was not looking good to make London and the Captain was becoming most agitated to get FL350. Some time later, the Far Eastern carrier at FL350 seemed to have 'disappeared' on a divergent routing. After much negotiation partly on VHF and partly on HF with 'XXX' ATC, the Captain negotiated climb clearance to FL350 but by now we were quite close to the FIR boundary. I expressed some doubts as to the longevity of this climb clearance, as we would be bound to meet up with the Far Eastern carrier again to cross the CIS. I also turned on the Landing lights for the climb. This action was immediately countermanded by the Captain quoting a recent notice from management about the cost of light bulbs and the recommendation that they should not be used above 10,000 feet. This notice also covered the use of the Logo lights.

As we crossed the FIR and reached FL350, the TCAS (*Traffic Collision Avoidance System*) Alert went off and a target also at FL350 closing rapidly at 90 degrees to our track was noticed. Out of the window with Landing and

Logo lights ablaze could clearly be seen our Far Eastern carrier at eight miles closing. The controller seemingly had no knowledge of the other aircraft at all and was very agitated to receive his position report at the same level and his ETA at the next reporting point one minute later than our estimated time. The other aircraft's route had been unusual but as predicted had rejoined our own track.

Due to the unexpected arrival of the other aircraft, he was forced down to 9600m and we were allowed to continue at 10600m (FL348) thereby saving my Captain a refuelling stop and our flight continued to a Cat 3 Autoland in 250m RVR (*Runway Visual Range*) at destination. As far as I know, our Far Eastern colleague diverted.

Subsequently I did not get much rest in-flight, going over the aforementioned events in my mind many, many times and the large number of Human Factors contributing to this incident and what could have happened if we had met a few seconds later at the FIR Boundary, or if TCAS had been having one of its bad days?

This incident also caused me to reflect on the company's notice regarding Landing and Logo lights, which are often the last line of defence in 'dodgy' ATC areas. Strobes are OK but it is often difficult to see exactly where the aircraft to which the strobes belong is and where it is going!

Winter Approaches!

En route to our destination, we were advised that the airport was closed due to recent snow, but fortunately it re-opened before we commenced our approach. We landed at about 1630hrs in falling snow and about 15-20 minutes later the airport closed again.

We boarded our passengers so that we could de-ice when the airfield was re-opened, but we heard comments from the runway-clearing crews on the radio that it was taking longer than expected as the snow was falling and lying as they were clearing it.

When the airport re-opened some 40 minutes later 'XXX' called for start almost immediately. As he was parked the other side of an aircraft on an adjacent stand, we could not see the aircraft directly but we were impressed with his timing of his de-icing. He then pushed-back, taxied out and took-off, still in falling snow.

We were at the back of the queue for de-icing and, by the time we had been de-iced and called for start, the airport had closed again for snow-clearing.

Due to the ensuing weather delays we were unable to complete our schedule and during the nightstop discussed the events of the day with another crew similarly placed. The crew had been parked on the next stand to 'XXX' and surprised us by saying that he had not got his de-icing time right - he hadn't de-iced! They said that the crew had simply looked out of the flight deck window, closed the windows, and called for start!

I subsequently spoke to ground engineers at the airport, who stated how difficult the de-icing had been that night, especially as aircraft had accumulated large amounts of snow on the tail that had slid down from the fin. They confirmed that 'XXX' had been de-iced, but much earlier in the day before the first closure.

The additional frustrations that result from the delays associated with winter operations are well known, and yet these, in combination with commercial and other pressures, can and do lead crews to make injudicious decisions, sometimes with tragic results. If in

*doubt play it safe. Remember, no one
will thank you if you get it wrong.*
