

FEEDBACK

Issue No: 44

October 1997

Editorial

Engineering Reports. From the initial batch of Engineering reports received, a number have detailed occurrences in which working hours, time of day, or shift-work patterns may have been a contributing factor. Some of these reports are included in this issue. As you may be aware, the European Commission has also taken an interest in the subject of working hours and has proposed that the provisions of the Social Chapter, which the UK Government has accepted, be extended to the non-mobile sector of the Air Transport Industry. A brief summary of the proposed EC Directive is included on Page 9.

The 'good old days' of 'ghosters' and endless overtime being the norm are by no means gone. However, there is a growing realisation that a tired Engineer is, at best, a potential safety risk and in some circumstances may be a significant safety liability. There will always be the need for bursts of intense and sometimes extended periods of activity to clear aircraft, on turnarounds, off maintenance inputs and the like and similar demands are often made on shift workers. Medical research has demonstrated that extended working can be tolerated for relatively short periods provided the worker is well rested prior to starting work and the opportunity for adequate rest is provisioned after the work period to restore normal performance. A common argument in favour of long working hours is that of increased productivity. On the contrary, ample medical evidence is available to show that prolonged periods of attendance at work normally result in a decrease in productivity over that normally attained.

There is also an attendant individual responsibility to ensure that rest periods are used for the intended purpose (Airworthiness Notice No 47 refers). All Engineers have a duty to themselves, their employers and most of all to those flying under their signatures to be fit for the job.

The CHIRP Organisation.



Standing:

Peter Tait
Kirsty Bedford

Director
Asst. to Director

Sitting (L to R):

David Burgess
David Johnson

Dep. Dir. (Ops/Syst)
Dep. Dir. (Eng)

Peter Tait Completed 18 years in the Royal Air Force as a pilot, the last eight of which were served as a test pilot, including four years at USAF Flight Test Centre Edwards AFB as KC10 Project Pilot, prior to joining British Aerospace (Commercial Aircraft) as Senior Development Test Pilot and later Deputy Chief Test Pilot for the BAe 146 and 125 projects. More recently held the posts of Director Flight Operations BAe (CA) and Vice President Customer Support & Flight Operations Avro International Aerospace before joining CHIRP in 1995. Holds UK ATPL and FAA ATP licences

David Johnson David's aviation career started with Rolls-Royce, from where he joined East African Airways. After Cranfield and a further period with Rolls-Royce, he worked for British Airways for 15 years, working in UK Line Maintenance, Industrial Engineering, Propulsion and, latterly, as CME Wide-bodied Aircraft. Senior positions in British Caledonian, Dan Air and at Cranfield followed, before helping to establish Airline Maintenance Associates. Prior to joining CHIRP, David worked for Marshall of Cambridge.

David Burgess Following an Honours Degree in Electrical Engineering, David assisted in the development of open heart surgery at the London Hospital, before emigrating to the USA to work on the Moon Programme. After receiving a Doctorate in Bio-Engineering, returned to the UK to work on submarine escape/rescue research. Later transferred to the RAF Institute of Aviation Medicine and held a number of appointments including that of Deputy Director Engineering and Flight Research, before joining CHIRP.

Kirsty Bedford Kirsty held junior management positions with a major publishing house and more latterly in sales administration before joining CHIRP.

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CHANGE OF ADDRESS?

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A Reminder on the Magazine Format:

The following fonts are used:

- Disidentified reports. These are reproduced with minimum text changes
- *CHIRP Comments are italicised*
- Verbatim Third Party responses are printed in SWISS type

FEEDBACK - COMMENTS

FB43 - Disorientation - An Alarming Experience

The 'Alarming Experience' in the latest CHIRP was such a riveting read it has galvanised me into writing to you.

The writer's candour is commendable, but has your comment not rather missed the point? Surely the burning issue ought to be how it can be possible for a helicopter to be in the descent at 300 feet from the ground in IMC at night? This would be below minima at many airfields served by recognised nav aids and runway lighting?

The commercial pressure/management coercion described by your other helicopter correspondent (*FB43 Commander's Decision*) is valid enough, but I would add pilot peer pressure ("he could not get in, but I did"). It is only because there are no rules that this can flourish.

Far be it for me to point a finger. As a co-pilot I have personally overflowed a turreted five-storey castle at 500 feet AGL and not seen it until alighting on the croquet lawn. I have also descended at 200 feet AGL in fog before overshooting a manor house. The aircraft's GPS (*Global Positioning System*) was inoperative at the time, so the Captain used a hand-held GPS receiver resting on the door pull. My first touchdown there was in sunshine; I noted the fine trees sheltering the house and paddocks and could not help wondering!

Lastly, on a rainy night on finals to another castle, I found myself discerning individual leaves on trees from my door window. The ancient pile was comprehensively floodlit, but intermittently obscured by pockets of post cold front fracto-stratus. Realising in a

flash that just one more in front of us would doom us to destruction, I called "####, Pull Up, Pull Up" as calmly as I could. To his great credit he did, immediately and with full power.

Some weeks later in daylight I looked back along our flight path that night. Only the crowns of the deciduous trees were visible across the park's skyline. In between, and the closer they were, the more of them could be seen, were stately cedars. We had been descending over rising ground - even something the best radar altimeter cannot show.

In transit outside CAS the principle of terrain clearance in IMC is plain enough. Anything you might otherwise bump into has been cleared by a minimum of 1,000 feet. Similarly, there is no ambiguity about a non-visual runway approach. Every possible permutation of obstacle hazard, landing direction, nav aid visible, even aircraft handling characteristics has been computed to promulgate landing minima. Compliance with these is not optional and is equally obligatory to helicopters.

But if descending without visual references to an area not designated for the purpose of take-off or landing, just how low is a helicopter allowed to fly? There is no definitive answer, and I am profoundly convinced it is time there was.

Only a short time ago a DIY IMC let-down was confined to what used to be called 'cloudbreakers'. The old RNAV's performance, prone to lane jumping and flashing its orange warning light at exactly the wrong moment, was sufficient to deter most from attempting anything more ambitious.

Since the Gulf War though, GPS has made such improvements in reliability, presentation and even flight control integration in some equipment that, for the most understandable reasons, and in a vacuum of defining parameters, pilots are doing everything they possibly can to accommodate client requirements. This has created the potential for a highly dangerous grey area. At the moment, anything goes because regulation has not kept pace with the enhanced technology fitted to IFR on-shore helicopters.

Within the last year the fatality record of British registered aircraft in this category is very sobering. As winter draws near a

rigorous scrutiny and reappraisal of non-visual approaches to helicopter sites, in theory and practice, by the appropriate regulatory authority would, I suggest, be most timely.

FB43 - Keeping Abreast of Change

In FEEDBACK 43 'Keeping abreast of Change', a reporter asked why the currency of aeronautical information was not checked during visits by CAA Flight Operations Inspectors. Captain Tim Sindall Head Flight Operations Inspectorate (Aeroplanes) CAA (SRG) has provided the following response:

Flight Operations Inspectors routinely carry out sample checks of documents such as operations manuals, flight crew notices, aircraft checklists, etc the primary purpose of which is to specify how aircraft are to be operated. Also, on an opportunity basis, the Inspectors will check the currency of reference documents such as AICs on which operations manual material may be based. This latter activity will have a lesser priority, often being little more than a check on the administrative capability of the organisation concerned.

In line with our policy of encouraging operators and their staffs to be proactive in what they do to deliver high standards. I would suggest that the quickest solution would be for your correspondent to bring any deficiency he or she observes to the notice of the person responsible for providing current information and for removing any that has passed its sell-by date.

The following comment was also received on the same issue:

NTAOCHs

I think that the list of publications given in your item 'Keeping abreast of change' could reasonably include Notices to AOC Holders (NTAOCHs).

There is a lot of information in them, which is not only just of interest, but does actually concern operating crews.

Yet in every company for which I have flown, there seems to be a tendency to discourage crews from reading them. Copies always seem to be kept where crews are unable to see them and on occasions when I have asked to see them, there has always been a certain degree of

reluctance. Questions such as "What do you want to read them for?"

I have even known young co-pilots who do not even know that NTAOCHs even exist.

The information in them is not confidential and crews have every right to be allowed to read them. My cynical mind suggests that they sometimes contain information which operators would prefer crews not to know about.

NTAOCH No 6/94 on duty limitations was of great interest. Yet the only way most pilots got to hear about that one was when BALPA addressed the problem by sending a copy to every member, if my memory serves me correctly.

I suppose the best answer to that question would have been "I don't know until I have read them!"

All flight crew should be aware that in a letter dated 18 August 1997 the CAA (SRG) Flight Operations Department notified all recipients of NTAOCHs of the following change in procedures for the dissemination of information to Industry:

With immediate effect, NTAOCHs will cease to be issued.

With the exception of Aeronautical Information Circulars the sole means by which the (CAA/SRG) Flight Operations Department will communicate with Industry will be a series of 'Flight Operations Department Communications'.

FB43 - Call Sign Confusion

Easy solution, use "Forty four, Ninety nine" as per the whole of the USA. It works!

FB43 - Readback Confusion

Perhaps the Captain should stick to addressing the passengers only when in the cruise, and concentrate on flying the aeroplane when in the descent (and climb for that matter). This is a common enough standard with many operators.

FB43 - Message for Inspector Morse from Inspector Clueso

The comment "Normally after rollout a backtrack to runway exit is executed without recourse to the Tower ATC after Radar Approach" caused me to wince slightly. The writer indicated that he, in fact, did this while still on the Radar frequency and that subsequently the tower "chewed his ear" because there was an a/c at the hold for a quick departure. Okay, no major incident this time, but consider the following.

He touches down safely and rolls down the runway. The tower controller tells an aircraft on final approach "Land after the (a/c type) on the runway". This would not be heard by our colleague on the runway, because he is still on the radar frequency but at this point he decides to backtrack. Need I say more?

The Land After Procedure is detailed in UK AIP RAC 5.1.1 and Manual of Air Traffic Services (MATS) Part 1 Sect 2-9.

The MATS Part 2 Procedures for many airfields prohibit the use of the Land After Procedure when backtracking is required. Interestingly, MATS Part 1 makes no mention of this point.

FB43 - Which QNH?

The regional QNH is of real value for operators outside regulated airspace adjacent to or below the transition altitude e.g. a number of GA operators. Reasons are:

1. The transition altitude in the open FIR is based on the regional QNH, providing a common datum over an area.
2. Because the regional QNH is based on the lowest forecast pressure for the region it gives a better terrain clearance margin, especially when barometer pressure is changing rapidly with time.
3. If one is operating outside controlled airspace with a limited communications radio fit and few ground stations, local QNH's may not be readily available e.g SW England at weekends.
4. Transit of MATZ (based on QFE) coupled with a busy ATC environment

e.g. Lyneham - Bristol area results in changing altimeter datums, but may incur difficulty in obtaining local QNH's. However, given the Portland and Cotswold settings in advance one always has a safe altimeter setting to rely on.

One point that I would suggest merits examination are some of the ASR boundaries. The London TMA is now so big it might as well absorb the Chatham ASR.

Finally, I would refute the writer's comment about "entrenched views within the military in NATS". That is nonsense.

FB43 - ATCO Familiarisation

Comments have continued to be received on the subject of ATCO Familiarisation since FEEDBACK 43 was published.

The comments reflect two aspects of previous reports. One is the undoubted value of properly organised Familiarisation Flights and the frustration that results when the process proves to be inadequate. The second relates to the comments on RTF procedures in one of the reports (FB43 Page 2).

(1)

I think more ATCO's would take familiarisation flights if they didn't encounter the following.

1. Sub-load tickets that involve hanging about at the UK airport and then trying to explain to check in staff abroad who you are. I have several colleagues who have been left behind as the aircraft departs with a full cabin and empty jump seat because airport staff did not inform the crew of the ATCO on a familiarisation flight.
2. Crew that are not expecting an ATCO on a familiarisation flight.
3. Crews that make you feel particularly unwelcome. I have travelled with foreign carriers with crews who speak limited conversational English, yet they have gone out of their way to make me feel welcome.
4. I travelled with another carrier with a British Captain who gave all the children access to the flight deck before me and the ATCO I was travelling with.

We then got a ten-minute visit in cruise.

5. The method of introduction to the crew which takes the form of a letter addressed to the captain of flight XYZ and which has to be handed to the cabin crew on boarding. I'm surprised that any of these letters make it to the flight deck during this busy time.

(2)

I would like to comment briefly on the item in FB43 ATCO Familiarisation (1)

Your contributor writes; 'It's no help to receive calls like "G-GABC" on frequency" or just a callsign'. In most cases this may be true. However, a recent operating procedure on the Final Director frequency at EGLL requires only the callsign to be passed on first contact.

On this frequency the timing of instructions to aircraft is critical and finite. This is due to the unusually high concentration of RT calls made on this frequency and the close proximity of the aircraft involved. It has been found that when aircraft report in with height and heading information (sometimes they report in with just about every piece of information that they can think of), it seriously affects the ability of the Final Director to achieve the required spacing or separations.

This 'callsign only' procedure is safe as the fully marked flight progress strip is passed from the previous controller to the Final Director so in effect the Director already knows the information required.

So pilots if you are requested to 'contact Director with callsign only' please do so.

(3)

Although not really Human Factors, the statement in the report ATCO Familiarisation Flights (1) regarding the RTF requirements on departure (Para 3, 4 and 5) should be corrected.

The requirement should be exactly as he states in Para 5, but unfortunately it is not defined in this way in the AIP (*Aeronautical Information Publication*). So whilst I agree 100% with the suggested philosophy (and the background ATCO

obligations), we are not yet at a point where the pilot has such a responsibility.

A change in this requirement has been sought, but many months have passed with no action having been implemented, despite the incidence of SID 'level busts your correspondent referred to.

AIP RAC 3-1-15 Para 4 lays down the requirements, and Para 4.1.1 is the 'offending' paragraph. This states (in the copy I am looking at):-

"The initial call on changing radio frequency shall contain only the aircraft identification and flight level". I interpret this to be the actual level at the time of the report - perhaps a clarification could be gleaned?

The note then goes on to say:-

"When changing frequency between any of the London Control or Manchester Control sectors, pilots are required to state their call sign and Flight Level/altitudes only ...", "When the aircraft is in level flight but cleared to another .. both should be passed... similarly, when the aircraft is not in level flight, the pilot should state the level through which the a/c is passing and the level to which it is cleared.."

Consequently, unless I am reading an out of date instruction, the case of departure from AN AIRFIELD, is NOT covered by the latter requirement. A simple change to the wording is all that is required, ATC want the change, so I can only assume the delay is because the pilots don't want it - perhaps as the other writer suggests it is because the system is not understood by the majority of flight crew?

Clarification of the points detailed by the author is being sought from CAA (SRG) and will be published in a future issue.

FB43 - Robin (or) Son - A Solution

Aren't all aircraft issued with an alpha/numeric code of up to four digits that are used to identify type on an ATC flight plan? Why not use the code instead of the aircraft name? (E.g. Piper Cherokee becomes PA28)

ATC REPORTS

Work-in-Progress

I had been given an 'eight mile' inbound check by Radar on an aircraft, which subsequently called me on a three mile final.

I cleared the aircraft to land completely forgetting about the maintenance team that were working on the runway. Fortunately they had instantly vacated the runway on hearing the transmissions and the aircraft landed without incident. The aircraft Captain made no comment, so I'm not sure whether he spotted my mistake.

I attributed the following factors to the error:

1. The location of the work party was obscured by the physical structure of the VCR (*Visual Control Room*) as pillars in the windows were in line of view).
2. Just prior to the incident a visitor, who had been brought to the VCR, was leaning over my working position taking measurements for fitting shrouds to VDU's. This distraction may have made me overlook the 'Runway Blocked' display strip in position on the VCR desk.
3. The incident occurred some two and a half hours into a morning shift with a start time of 0445Z. At this time the early morning fatigue following getting out of bed at such an early hour is at it's worst.

Taxiway Designation - ATC Views

(1)

I have to sympathise with the writer in FEEDBACK 43 reference the new Taxiway designators. We too at my unit have had this 'new' ICAO standard system imposed upon us. With a North-South orientated runway, the Airport Authority have in their wisdom divided the taxiways into (basically) an East-West format. In low visibility procedures we have an incident waiting to happen.

The various taxiways have an alphabetical designation - Alpha, Bravo, Charlie, etc. Holding positions are each denoted by a number BUT they have literally used 2's

and 4's! - (asking for trouble). So, a common occurrence is to taxi an aircraft to 'Charlie 2', an intermediate location on the taxiway (which runs the length of the runway and includes access to/from the ramp). This location is used to hold aircraft whilst others pass on an intersecting taxiway. The problem looms - a busy controller inadvertently says "ABC123 taxi Charlie 2 (to) runway ##" and a collision occurs at the intersection.

I firmly believe in the old maxim "If it ain't broke, don't fix it". I have had instances of pilots querying instructions such as "Taxi D2 (Delta Two) runway ##" asking exactly where they ought to go. I really do dread low visibility during our morning 'rush' when 40 or so aircraft depart in a little over an hour.

(2)

This report aims to reiterate the confusing nature of the recently adopted taxiway naming system introduced at a fairly major international airport. The incident occurred at the end of a night shift for both parties.

The aircraft concerned had just vacated the threshold of the departure runway having landed opposite direction and so would have to hold short of the main taxiway until the departure stream of traffic had passed. As all departing a/c were on my frequency, I kept control of the aircraft and it was instructed to "Turn right through FB and then round into FC to hold short of taxiway F". This was duly acknowledged by the crew. However, the aircraft did not turn right at FB and became a head-on conflict with another from the opposite direction. Eventually, the aircraft was fed into FC back onto FB to hold short of taxiway F.

Later that day, I managed to talk to the Captain of the aircraft to obtain some opinions of not only what had gone wrong, but also of the new taxiway system. The crew were on their last leg of the night and being a little tired the attention span wasn't as good as it could be, and it seems that even though they'd read back the correct taxi instruction, they'd heard and not listened. However, if the old system had been used, the Captain said that in all likelihood that the situation

would not have occurred because of its clarity.

As with all pilots with whom I've spoken so far, and controllers (outside management at least), none appear to be happy with the new system, it being verbose and confusing. Most taxiways are double letters as are the holding points and hence there is no clear distinction between the two outside of using the phrase "holding point" (mandatory). The old system had taxiways as numbers and holds as letters, which was very clear, easy and distinct. On busy occasions there now appear to be so many "hotels" in a taxi sequence, one may as well be in Blackpool.

This is now my second occurrence where I've had aircraft head on close to taxiway confusion, and I've had countless other times where although there has been confusion, it didn't put anyone in danger. The old system was very user friendly and safe, and I hope that it doesn't take an accident for this to be seen.

All of the reports detailing difficulties with the new system of designation were sent to Aerodrome Safety Standards Department CAA (SRG). The response is reproduced below:

Thank you for your letter of 2 September, the subject of which was comment following our compliance with the 'new' ICAO system for designating taxiways and holding points. I have digested the reports, which you kindly sent us and would at this stage limit my comments to three areas.

First, I am curious that the reasons for adopting the alphabetic system are not understood. Our intentions to come into line with the ICAO requirements, as a contracting State, were first notified in 'Yellow No 77' in 1992, this was followed by an amendment to CAP 168 in 1994 and an AIC (AIC 47) on 1 June 1995. That combination of advertising should have explained adequately the reasons for the change of system and given aerodromes the guidance for clear and unambiguous designation.

Second, there is the question of R/T phraseology used by controllers. The industry went through a similar situation some years ago with 'climb to' and 'descend to', and 'passing 35 for 55' etc. An extensive education process eliminated problems, and I shall ensure that the reported comments are passed to ATSSD.

Third, and last, is the question of aerodrome design. With the new safety management regime it is the responsibility of all licensed aerodromes to

demonstrate that they have in place safe procedures and facilities which are then subject to periodic audit by our Aerodrome Inspectors. Proposals for aerodrome development and design are submitted to Aerodrome Standards, and our advice is offered where we feel it would be of benefit, within the requirements of ICAO and CAP 168.

I will keep you updated on progress. I would also welcome any further comments you may receive on this on the topic via your confidential reporting system.

The method of designating taxiways is explained fully in CAP168, Licensing of Aerodromes, Pages 7-9 and 7-10. An abbreviated reference can be found in CAP 637, Visual Aids Handbook, Section 3.

However, It would appear that the implementation of the ICAO designation system for taxiways/holding points has been less than simple in the case of some UK airfields. The apparent ease with which confusion can arise is a matter of some concern.

Whilst it is true that crews who routinely use these airfields will probably make fewer mistakes as they become more familiar with the new system, education and familiarity will only ameliorate the type of problems that have been reported. Vulnerabilities in the procedures will remain as potential traps for the unwary or the occasional visitor.

ENGINEERING REPORTS

Why CHIRP for Engineers now?

I thank you for your letter that introduces Engineers to the CHIRP system.

What I would like to know is why introduce it to us now? Why not in the beginning? Is it because Licensed Aircraft Engineers, like myself, are still seen as part of the cloth cap brigade and not really professional? But then I digress. Many companies have a very good reporting system and as you know internal reporting can be by-passed by the MOR system which is straight to the CAA. Why is the RAF involved? It seems odd, since the cutbacks in the RAF seem to have caused a few problems for them with a few incidents/accidents that civil aviation does not experience. I know how good RAF training is, but then we have

gone a long way (*in civil aviation*) since then with (*the likes of*) Concorde.

I do not see the point in "CHIRP" if you are only going to treat Engineers as second grade aircraft workers, we should have been involved from day one. Don't take this as a rejection of an incident reporting system, it's just that the aircraft Engineer is never taken seriously.

The inclusion of Engineers into the CHIRP system has been considered before, most recently in 1992. At that time, as had been the case previously, there was significant opposition to the proposal to include Engineers from both engineering managements and the Authority.

However, in recognition of the fact that incidents/accidents with maintenance related causal factors have shown an increasing trend in recent times, there has been more widespread support to bring Engineers into the system as one of the measures to combat this unwelcome characteristic.

The fact that we have an address that includes the name of the RAF School of Aviation Medicine does not mean that we are accountable to the RAF. Partly for historic reasons, in that CHIRP was originally managed by the RAF Institute of Aviation Medicine, we continue to occupy accommodation within the School at Farnborough.

One of the principal reasons that CHIRP was set up as a Charitable Trust was to ensure that it remains completely independent of any military, governmental, regulatory or industrial organisation to preserve its impartiality and confidentiality.

Assault on Battery?

A battery was received into workshops and an initial inspection revealed an incident/accident label attached to the main connector side of the battery case. There was no reported incoming defect. (Confirmed by reference to component history).

Earth leakage checks were of acceptable limits and electrolyte levels appeared satisfactory.

It was noted that during the initial top-up charge, the top of the battery cells was hot to the touch; initial discharge was out of limits i.e. discharge time from 40 amps to 20 amps, was 36 minutes. During subsequent disassembly two cells were found to be of the incorrect part number. This type of cell is approx. 30mm less in height than the correct cell part number. Blocks of polystyrene had been used as packing under the shorter cells to raise the level to the height of the adjacent cells to enable connecting links to be fitted.

This battery had been on loan to a non-UK operator. On return it was subject to an overhaul, but the discrepancy was not discovered on that shop visit.

Following the discovery of the defect, an internal investigation, held to identify the reasons for the failure to detect the problem during the earlier overhaul, failed to address some of the key issues. However, the Airline now confirms that its procedures have since been amended as part of a general review to improve overall quality within its Engineering department.

Working Hours

(1)

Although I have no particular incident to report, I would like to take this opportunity to ask you for your views on a safety matter.

Whilst serving in the RAF we were not allowed to sign off an independent (or duplicate) inspection if we had been on duty for more than 24 hours.

During my time as an Aircraft Licensed Engineer we occasionally worked for more than 24 hours, and at the end of this period we had to clear the paper work and often carry out a duplicate inspection.

I have often thought that in the interest of safety, why the CAA has not considered taking on board the same ruling as the RAF.

(2)

A major check was already significantly late and I wanted to put extra certifying resource on the night shift. There was no one available on night shift and my Manager said that since we had already had extra man-hours on the check, I would have to do it (i.e. stay on overnight). I did stay on, but limited my work to minor items and preparing for the next day. I feel quite undue pressure was applied to get me to work when I thought I should not.

My duties would normally be control of staff, quality monitoring and management of the work area. I would sometimes certify work to keep recency, but not at a time of high pressure, such as an extended shift at the end of a check. I am quite happy that I coped by limiting the type of work that I did, but I am unhappy at the pressure applied.

The Airline involved has been made aware of this incident.

The UK Government has decided that the UK should now accept the provisions of the Social Chapter and follow the rest of Europe in this regard. At the same time, the Council of the European Union has decided to extend the Working Time Directive to non-mobile workers in the Air Transport sector, which was previously exempt from these provisions.

A letter from the UK Department of the Environment, Transport and the Regions announcing the proposal, quotes, in part, from the Directive, that it provides in particular for: -

"a minimum daily rest period of 11 consecutive hours a day;

a rest break where the working day is longer than 6 hours;

a minimum rest period of 1 day a week;

a maximum working week of 48 hours on average including overtime;

4 weeks annual paid holiday;

night workers must not work more than 8 hours in 24 on average."

It is probable that some flexibility will be allowed in the application of these principles, including derogation in certain circumstances and, in the case of the

48-hour week, long reference periods over which the average can be calculated.

Full information can be obtained by reading the Directive, 93/104/EC of 23 November 1993

The CAA has had the issue of limitations on Engineers' hours under consideration, however, in the light of the present initiative considers it inappropriate to take unilateral action for the time being.

It should also be remembered that Employers already have certain obligations under Health and Safety law, in particular, a 'duty of care' to staff not to jeopardise their health by onerous work periods and conditions.

It Has Happened Before ... And Will Again

As certifying Engineer, I had two Technicians working with me and our tasks for the night were meeting two arriving aircraft, while also carrying out routine daily maintenance and defect rectification. The second aircraft to arrive was one which we had also worked on the previous night (Thursday/Friday).

The two Technicians commenced the routine maintenance while I debriefed the crew. Afterwards one of the technicians reported to me that when he opened the access panel to service the number 2 engine oil system, he found the oil cap hanging by its retaining lanyard and not fitted to the oil tank filler neck. I checked the oil uplift records in the Technical Log for the sectors flown that day. The last recorded uplift was the one performed the previous nightshift, carried out by the same technician and certified by myself. It seemed obvious that the oil cap had been left off during our servicing of number 2 engine.

The previous night the same aircraft had arrived at approx. 0200hrs and we had been extremely busy dealing with other aircraft before that. While the number 2 engine servicing was completed, I was evaluating defects in the Technical Log, so I did not physically get a chance to check the fitment of the oil cap (in any event the level of trust with the Technician involved is such that I would have expected satisfactory fitment).

Obviously, having flown four sectors there was the potential for partial or complete oil loss with a possible in-flight engine shutdown and the associated consequences of that. In discussing the incident, I found out that the Technician (and myself) had been awake since approx 0730 on the day before and so had been up for about some 18.5 hours of which seven hours had been on shift, and we still had five hours to do at the time of the incident. I believe that tiredness played a part in the incident coupled with the natural low feeling of working at that hour.

The affects of tiredness in flight crews have long been acknowledged and continue to be the subject of much continuing research and debate. It is only recently that there has been an increasing awareness that this is also an important issue for Engineers.

In this case domestic circumstances intervened with the result that an otherwise adequate rest period was not used for the purpose.

When working shift patterns, adequate Egyptian PT during the preceding rest period is a must!

Failure to check before certifying has contributed to major accidents in the past; checking before certifying not only covers you, it covers your team. We all can make mistakes!

Any information on incidents in which tiredness was a contributing factor would be welcome, in view of the Government initiatives.

Déjà vu?

Having met a (*large twin jet*) belonging to a non-UK airline, I noted the following in their aircraft flight and technical log book: "Fuel leak from centre tank seeping into left-hand air conditioning bay"

And the carry forward action: -

"Tank sealing to be carried out when aircraft available, no fuel to be put in centre tank".

In my opinion this aircraft should never be flying in this condition and should never have flown to the UK.

The CAA view was that provided the requirement to keep the centre tank empty was rigorously observed the procedure was acceptable.

However, two problem areas are apparent with carrying this type of defect. Unusable fuel, unless manually drained, could still be left in the tank in sufficient quantity to cause further leakage at some aircraft attitudes (i.e. the requirement for an empty tank is not fulfilled). Secondly is the difficulty of advising all involved in refuelling, from those calculating the load to those actually putting the fuel onboard the aircraft. They almost certainly would not have access to the Tech Log, resulting in possible inadvertent filling of the tank, further leakage etc. etc.

Shortly before going to press, it is interesting to note that the FAA has issued an AD for this aircraft type, to ensure a minimum of 450 kgs. of fuel in the centre tank at all times. The reason is unconnected with this report, however, it will obviously preclude the carried forward procedure adopted in this case, in the future.

GPWS Performance Degradation

The following information has been promulgated recently through the IATA Safety Information Exchange Scheme:

The investigation into a recent CFIT accident found that the GPWS warning was given much later than scheduled in the equipment.

The degradation in performance of the equipment appeared to be due to the radio altimeter antenna having been painted.

A check of other aircraft found other cases where antennas had been over-painted.

Cylinder Pressures vs. Commercial Pressures

During a routine 100hr inspection, low pressure was found on two cylinders of a (widely used) engine installed on a (twin prop commuter airliner). The cylinders

were removed, laid out and the valve gear removed. The cylinders were then 'honed' out and the valves re-ground.

This job was carried out on one of three aircraft used on a short island hop scheduled service. Unfortunately, one of the other aircraft developed a fault. The aircraft needed to be repaired and on line ASAP. Both cylinders were re-worked and checked satisfactory, by myself. The Engineer carrying out the job then re-fitted the cylinders and this was checked on completion and certified. During the ground run a small vibration and rough running was experienced but no 'mag. Drop'. On shut down one of the push rod tubes was bent. Upon removing the push rod tube and push rod it was noticed the push rod was bent. It was assumed the hydraulic tappet had locked so it was removed and checked. A new push rod was fitted and the cylinder re-assembled. Again during the ground run the new push rod and tube bent. The tube, push rod and hydraulic tappet were removed. During re-fit I noticed something unusual about the valve spring collets and ordered the cylinder to be removed.

As with all aircraft engineering there is somebody who desperately needs the aircraft. In this case Operations required it - two hours ago, to compensate for the other faulty aircraft.

Upon removal of the valve spring collets I could still see no problem with the way it had been assembled. Only as I supervised the rebuild did I see the problem. The Engineer had put the collet cap on the wrong spring.

Both cylinders were removed and inspected for damage. It was found the same mistake had been made on the other cylinder but the push rod had not bent sufficiently to bend the push rod tube. All possible damaged components were replaced and the engine ground run AFTER the tappet clearances had been measured. This was a serious mistake, I believe, caused by being pressurised into rushing a job for the sake of passenger schedules being maintained. Imagine what would have happened if the push rod tube had not deformed visibly, as in the case of the other cylinder, and the aircraft had been allowed to return to service!

The report raises two key points. The first is whether the Maintenance Manual was referred to throughout the job. The second is that this Engineer persisted in spite of the pressure from Operations, trouble shooting thoroughly and completed the job properly. Are we all always as diligent?

FLIGHT DECK REPORTS

Deferred Defects

Over the recent past my company has adopted a policy of not clearing defects, but re-entering the defect on the Deferred List at the appropriate 24 hr/3 day/7 day interval. Partly as a result of this the number of deferred defects being carried on the ##### fleet has increased from around four to six up to as many as 13 on an aircraft, some of which are sometimes major items of equipment.

The MEL (*Minimum Equipment List*) for this fleet includes a statement permitting the aircraft to depart a maintenance base if "Spares, manpower or time is not available". Is this correct?

Clarification on the policy for the deferral of defects was sought from CAA (SRG). Their response is reproduced below:

The principles and procedures which specify the use of an MEL are laid out in CAP 459.

The starting point for these requirements is Article 16 of the Air Navigation Order. Article 16 essentially prohibits an aircraft from flying with any unserviceable items of equipment required by the Order, unless the Civil Aviation Authority has expressly granted a Permission for such operations.

The Permission granted by the CAA requires the use of an acceptable MEL. The operators MEL will have been compiled to account for his particular operation based on an MMEL (*Master Minimum Equipment List*) approved by the CAA or other acceptable Authority. It should be noted that the MEL can be no less restrictive than the MMEL.

So what does all this mean? If the aircraft is not fully serviceable, or does not comply with the conditions specified in the MEL it can't legally be despatched, unless the situation is addressed by a Configuration Deviation List, or other Special Permission, or is permitted by the Flight Manual or an associated supplement. It is not the case that if the problem is not addressed by the MEL then it's okay to despatch, just the reverse, unless the conditions of the MEL can be met the aircraft should not be flown.

It should be recognised that whilst the MMEL/MEL does not prevent operations with a number of items being defective the implications of their interactions, effect on the flightcrew workload/procedures etc must be considered. While some of these situations are considered when MMELs/MELs are prepared, the number of possible combinations make it extremely difficult to cover all eventualities. Good engineering judgement is required in these cases and of course it is the commander's responsibility to determine that the flight can be made safely in accordance with Article 38 of the Air Navigation Order.

Flight outside the conditions of the MEL requires a Special (separate) Permission or an Exemption from the Civil Aviation Authority. This is granted to the Operator on the basis of a CAA investigation and has a validity period. Unless the operator holds such a Permission, flight outside the conditions specified in the MEL cannot be authorised.

As a matter of principle aircraft should not depart a base where rectification action can be carried out, irrespective of manpower, spares and tooling available at that particular time, unless specific permission to do so is granted in the MEL. Manpower, spares and tooling should be brought to the aircraft, the aircraft should not be flown to the resources, unless operation under the MEL or other Permission provides for such a flight. The reporter in this instance pointed out a problem in this respect with one particular MEL and this has now been addressed by the CAA and the organisation concerned.

As a matter of good practice, a copy of CAP 549 should be made available to engineers in every Line and Maintenance Control Office.

A Lesson Relearned - The Hard Way

A straightforward VFR transit flight in good weather, light wind, cruising 1500ft "your traffic is a Sea King Helicopter, presently 11 miles ILS Runway ##. Cleared to final no 2, report traffic in sight." A little later, Approach Checks done, I asked for a position update. "He's in your 12 o'clock, nine miles ILS". **FIRST CLUE MISSED.** I spotted the traffic then and aimed off to pick up the localiser about four miles behind, and reported final with the helicopter in sight. I appeared to be overtaking him so, knowing large helicopters normally fly the ILS at about 100 kts, I reduced to 110 kts. **SECOND CLUE MISSED.** Eight miles out, Landing Checks. There aren't many in this aircraft. Checks complete,

looked up to see I was much closer to the Sea King, less than two miles. Need a rapid speed reduction. **THIRD CLUE MISSED.** Reducing speed, felt a tiny flutter and momentary loss of response in the ailerons. Finally, it dawned - "that was wake turbulence" - just as the aeroplane departed; a roll to the right which I was unable to stop with full left aileron. I reversed the aileron input, increasing the roll rate to the right, with the intention of clearing the turbulence by changing direction toward the edge of the stream, and dumped the nose hard for speed, regaining control for a loss of 300 ft and a 70 degrees heading change. I re-established on final where I should have been in the first place - **VERY** high and landed uneventfully. Subsequent phone call "yes sir, 100 kts or so is normal ILS speed, but this particular helicopter was on test and flying his approach at about 60 kts".

Lessons learnt:

1. The other guy may not be doing what you may reasonably assume him to be doing, so don't assume - check. (Read that before somewhere!)
2. Given a constant relative bearing, the rate of closure does not become apparent until you are uncomfortably close. (Read that before somewhere too!)
3. Experienced, conscientious, sensible professional pilots miss trails of glaringly apparent clues, allowing themselves to be sucked into uncomfortable situations, and if they can then certainly so can I!
4. Any pilot who has experienced a loss of control due to wake turbulence knows several things which a pilot who hasn't, doesn't! Fortunately my crew remembered and I survived the experience - this time.

Previous issues of FEEDBACK have contained reports detailing incidents in which some form of commercial pressure has contributed to the subsequent occurrence. This issue also contains two such reports.

There are other cases in which individuals find themselves in an increasingly stressful situation by seeking to achieve the corporate objectives without overt

management pressure and without recognising the attendant risks. The following two reports are good examples:

Nibbled to Death

The flight into ##### (*major European destination*) had been fraught, to say the least. We were running late. ##### Radar was an unbroken babble of shouted machine gun foreign language, we couldn't get our calls for descent in, when it came it was in tiny steps, too little too late. Big and very active Cbs (*thunderstorms*) were everywhere. Visibility at the neighbouring field had been 600 metres in rain a few minutes earlier. Bad turbulence at the Outer Marker, where we were suddenly told to hold, immediately changed to a 360 degree orbit. Order, counter order, disorder. Rough as hell, what a trip! On stand feeling threadbare and tense.

Handling Agent asked to get passengers onto bus to minimise delay, this place notorious for inefficiency. No cleaners for 15 minutes. (Half of our quite unrealistic turnaround time gone). No passengers to be seen. Almost 100 to board with one set of steps, yes they'd get another. After 40 mins on the ground passengers appear, still no rear steps. Handling agent assures me there ARE rear steps (she knows I can't see them). After five minutes of boarding, passengers suddenly break from the scrum on the tarmac and make for the rear. 50 minutes after arrival we move off. We're held short for traffic. Nothing for five minutes, so we query. "Opposite direction landing traffic". Five minutes after that he finally appears. We are fuming.

Tower clears us to depart and offers "Turn left after departure and contact Radar". Turn left onto what? We queried it. He repeated it, a little sharply. What the ... ? We get airborne, make an early turn to the first beacon on the SID and try to clarify the clearance with Radar. At 1500 ft a.g.l. the FO calls for flaps to initial climb setting. Flaps ARE at initial climb setting! Three green lights shine accusingly below the gear handle.

As we left the runway the FO had called for gear up and I must have gone for the flap lever instead. He didn't notice either.

How on earth could I have done that? The levers are placed apart and on

different panels, they are totally dissimilar. What could have possessed me to retract one stage of flap at 100 feet a.g.l.? Why didn't the FO notice? We were certainly very stressed after a fraught arrival and the ineptitude of the turnaround, capped by a pointless delay before departure.

I think that under normal circumstances we would never have accepted such a departure clearance, so that was probably the pressure getting to us as well. The FO described it as being "Nibbled to death by ##### ducks". Maybe so, but I think we let the pressure get to us and set off in a frame of mind that was simply not conducive to safe aviation. We were lucky.

I'll never underestimate the power of stress again, or over estimate our ability as relatively inexperienced crews on type.

Aiming to Please

DAY 1

The crew had been on Standby at home. At 1930 we were called in to take an aircraft to an offshore installation to provide an aircraft for safety cover. As the work was deemed SAR, normal helicopter CAP 371 duty hours were to be applied. This meant that although the aircraft would be at the installation by midnight the crew would then not be able to start on standby/fly again until 1300 the next day. The contractor for the aircraft was informed of this but wanted the presence of the helicopter.

We arrived at the installation at 2345. The flight up was uneventful and the aircraft was shut down and, due to a good deck crew, tied down by just after midnight. We had agreed between us that to give the customer the earliest start time for the next day we would come off duty at 2359. This would allow a start time of 1300 the next day. (13 hours are required off because of 13 hours on duty).

After putting the aircraft to bed, we were given a 20-minute offshore safety video to watch and then allocated our rooms. The installation provided us both with individual cabins, which included full bathroom facilities. We were told that the installation was having a lifeboat drill at 0730 in which we would be expected to take part and what our part would entail.

We were not required to fly as part of this exercise but were expected to report to our allocated lifeboat station wearing immersion suits and lifejackets.

It was 0100 by the time we got to bed. Getting to sleep was almost impossible due to the new environment of a different bed, the constant noise of a 24-hour working installation, and the slight pitch, roll and heave. In addition, the thought of having to get up at 0730 for an exercise played a little bit on the mind.

The exercise duly came at 0730 and we took part. It lasted a maximum of 30 minutes and we then tried to get some rest. Being already up, it was difficult to get back to sleep again. We came on duty at 1300, but fortunately we were not required to fly. We were told that there would be another aircraft requiring to use the helideck at 0830 the next day. We agreed that we would come off duty at 1900 so that we could come on again at 0700 the next day. This would allow time to prepare the aircraft and also plan a return trip to ##### as we were expecting to be replaced.

Again, a sleepless night due to the constant noise of the machinery. The Captain was also up in the early hours checking the tie-downs on the aircraft as the wind had picked up and the sea state became a little rougher. A second night without proper rest.

DAY 2

We were on duty at 0700 and prepared the aircraft for flight. The weather was in and planning was made for the return trip to #####. As we could not be released until our replacement aircraft and crew were in the vicinity of the installation, we had to make a short flight to allow the installation's regular crew changeover aircraft in.

On returning to the installation and shutting down, we were informed by our Operations Department that on our return to #####, we would be required to fly a return flight to another installation (a flight time of about 2hrs 30mins). We considered this and accepted it subject to our return time at #####.

We eventually departed the installation at 1140 and routing via another installation which was close by, made our way to #####. The flight was uneventful except for the fact that the weather had

deteriorated worse than was forecast. We had fuel for one approach and then divert to our nominated diversion. The actual at ##### at one stage was 600 metres, OVC 001 (*Overcast 100ft*), BKN below 001 (*Broken 100ft*). Prior to departure, Operations had wanted us to take a rotors-running refuel direct into the next flight. With the deterioration, we discussed the pros and cons of this and decided that it would be prudent to shut down to take a better look at the weather and the options that would be open to us. We realised that this would eat more in to our duty time and therefore we decided on a cut off time as to when we would have to depart on the next sortie.

THE INCIDENT

We were routing towards #####. The runway in use was favourable for a straight-in approach. We were at FL55 and En route Radar handed us over to ##### Approach with about 40nm to the airfield). We were given a clearance to expect an ILS approach but to continue towards the VOR initially. A descent clearance was issued to 3000ft. During the descent we were cleared to report localizer established.

On reporting established we were at approximately 4000ft in the descent and appeared to be close to the glidepath. We were then cleared for the ILS approach. We were approximately 23 miles from touchdown at this point. As handling pilot I called for the Finals Checks, which were duly completed including both altimeters set to QFE. The localizer and glide slope flags were clear and the glide slope bar was approaching the datum mark. As we had been cleared for the ILS, I continued descending on the 'glide slope'. On passing 2500ft on the QFE I noticed that the ILS DME readout was 18nm. Both NAV boxes were set to the ILS frequency and had been identified as had the DME. Both indications were the same. I realised that we were too low and remembered reading something about not using the glidepath until you were within 10nm from touchdown. (I later found this reference in the AICs.)

We asked ATC to climb to 3000ft altitude until we could establish properly. We were told we could maintain our altitude until properly established. I reset the QNH and informed the other pilot that I was doing so.

We became fully established at approximately 7nm from touchdown. Fatigue was beginning to tell and I did not fly the best of ILS approaches as my scan rate was slow and I was finding it particularly difficult to control the rate of descent and the speed. The non-handling pilot called that he had the lights in sight at about 600ft and took control to land the aircraft. As he took over he queried whether I still had the QNH set as I had not made any of the usual calls (his altimeter was reading approximately 350ft QFE). We had both forgotten to update the Finals Checks. On landing we taxied in and shut down, and gratefully climbed out of the aircraft. Operations were told that we were not going to do the next flight (and thankfully they didn't query as to why).

The points that I gathered from this experience were:

1. Do not descend on the ILS until within 10 miles. Had I descended to 3000ft QNH and then intercepted the correct glidepath at 9nm from touchdown (approx 2700ft QFE), I would not have locked on to the false lobe.
2. Fatigue can catch up with you very quickly even if you think you are OK. The situation was not particularly stressful and the workload was not particularly high. We had managed to get ourselves out of one situation but then immediately put ourselves into another. Had we been a well rested crew, the second errors would probably not have happened.

Flight crew and ATCOs are reminded that AIC 34/1997 provides information on the use of ILS facilities in the UK.

The Commercial Equation?

As a pilot flying jets for a "low cost" subsidiary operation, I am becoming increasingly concerned that pressure to improve business efficiency is seriously eroding the long-term safety of the operation.

In order to drive down costs our operation is currently a significant number of crews short of establishment, with uncovered work accommodated by a combination of Day Off working and leave 'Buy Back'. This situation adds pressure to rosters that are already full of multi-sector, multi-

variant work on largely a six on, two off basis. Supporting scheduled routes by flying into discretion on a regular basis is also expected of crews. Whilst remaining (just) within the letter of the law, the company is operating well beyond the spirit of it by exposing its crews to a risk of long term fatigue.

Further pressure has been brought to bear in the training regime, with a reduction in the simulator sessions per year, on a fleet where most co-pilots have less than 1000hrs total time, and 50% of Captains have less than two years command experience. Again 'ticks in boxes' are adhered to but very little real training/development can be achieved in the limited time that is now available.

Engineering support has also suffered to the extent that it is not unheard of to fly an aircraft with half a dozen defects being deferred in the Tech Log, or to find lifejackets that are time expired. Even major items such as generators or APU's may be carried over for extended periods due to lack of spares, or Engineers to fix them.

These actions lead me to the assumption that Flight Safety is being de-prioritised by my company, with regulatory limits now being regarded as targets to achieve month in, month out. It is my hope that this situation can be reversed before a major incident takes place that forces a rethink on the question of what constitutes 'business efficiency'.

Aah...Automation!

Departure at light weight from ####, trainee F/O at controls. Autopilot was engaged in NAV and PROFILE modes at about 1000ft. Initial cleared altitude was 3000ft.

Frequency change, altitude capture, acceleration, flaps and slat retractions occurred in quick succession. During flap/slat retraction phase we were re-cleared to 5000ft which I acknowledged. The F/O reset the selected altitude and initiated climb.

Momentarily distracted by programmed speed going to 'green dot', about 210kts, (when normally it should have been 250kts), I cancelled PROFILE mode and selected 250kts (Pull and turn action on Speed Setting knob)

Aircraft was climbing rapidly and I saw that we were approaching 6000ft in altitude capture (ALT * mode), with 6000ft set on the FCU (*Flight Control Unit*).

I immediately called ATC we were levelling at 6000ft. ATC confirmed we had been cleared to 5000ft but said "now maintain 6000ft."

The F/O said later he was sure he had set 5000ft and cross-checked on the PFD (*Primary Flight Director*). During this high workload phase I should have accepted the lower than normal climb speed, and monitored AFS (*Automatic Flight System*) operation more closely.

Is it...or... Is It?

Flying on contract earlier this year, I was a member of a crew swapping between two operators, one flying QNH, one flying QFE.

The change of procedures was a nightmare. In three months we flew two approaches to QFE minima with QNH set and one vice versa. We also totally confused a controller at ####, he had asked for an SRA for training purposes and we complained that it seemed a bit high, but alas it was us who had forgotten that he was giving QNH altitudes!

As an aside, the QFE operation now all seems a bit Mickey Mouse. Air traffic now never give the last assigned altitude for the ILS as a QFE height, and so you have to remember it yourself. ILS's seem so rushed nowadays that changing to QFE while you are in level flight is a luxury, so often the change is done in the descent. Even if you do catch it when level, ATC often give you another unexpected altitude change, but now being on QFE you have to subtract the airfield altitude from what you are given and descend to that.

The whole thing is an accident waiting to happen, is it not time that QFE was banned?

The purpose of publishing this report was not to promote a debate on the relative merits of QNH/QFE based procedures, as each can be operated safely, but to highlight one of the problems of cross-operating. In such situations strict

adherence to the Normal Checklist is essential to avoid this type of problem.

Double Nap

The flight departed at around 2200Z. During cruise, 4hrs into flight, F/O asked Captain if he could take a nap. This he did, whilst this was happening the Captain fell asleep, this lasted on and off during the flight for approximately half an hour, (*the aircraft*) passing and turning over various waypoints during this time.

Same trip, but after approximately 36 hours rest at a stopover (*GMT+5*) our next duty period required a wake-up call at 0500 local (this is the time on these trips when you are just falling into a deep sleep after a restless previous six hours). During the approach into #### after 8hrs duty, I fell asleep - just for a few seconds. Prior to this I had felt drowsy for 5-10mins but didn't expect this.

These incidents point to departure times and wrong sleep patterns.

The first occurrence was reasonably close to the start of a duty period. Although the circadian rhythm would be approaching its nadir, it is probable that other factors, such as the individual's activity and/or quality of rest in the period prior to reporting for duty, may also have been a significant factor. In the second case, the disturbance to the normal sleep pattern that results from the eastward time shift and the necessity to work through the least favourable period of the circadian rhythm were probable contributory causes. As each crew member's tolerance to time zone changes is different, it is important that sleep periods during a layover are arranged in a manner that best suits the individual.
