focus

ON COMMERCIAL AVIATION SAFETY

SUMMER 2007

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THE OFFICIAL PUBLICATION OF THE
UNITED KINGDOM FLIGHT SAFETY COMMITTEE

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National Aerospace FOD Prevention Inc and BAe Systems Present

THE 3RD INTERNATIONAL FOD PREVENTION CONFERENCE

FOD PREVETION CULTURE – THE HUMAN ELEMENT

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9-10 October 2007 at the Hilton Hotel, Blackpool, UK

Conference Description:

The 3rd International FOD Prevention conference objective is to make the wider aerospace industry aware of the need to prevent foreign object debris/ damage from our aircraft, airports, runways, manufacturing facilities, flight lines and all aspects of aerospace operations. The conference provides an effective forum for the exchange of ideas, solutions, expertise.

Who should Attend:

Anyone who has an interest in flight safety. This conference attracts major industry representatives from: Airlines, Airports, Cargo Haulers, Aircraft Manufacturing & Repair, Military, Space, Support Industries, and many others from Aviation organizations.

Who should Exhibit:

Anyone who's products or services increase flight safety & FOD prevention. Examples: borescopes, cameras, lights, tools, tool kits/ tool control, FOD detection systems, aircraft protective devices, personal protective equipment, wildlife control, runway sweepers, vacuums, etc... Companies also exhibit to showcase their FOD prevention programs, products and services.

Conference Program:

NAFPI and this year's co-host invite everyone to come to Blackpool and take part in the 3rd International Aerospace FOD Prevention Conference to see the latest FOD prevention techniques, equipment, and technological advancements used in the industry to prevent FOD, promote awareness, and combat a common enemy. Experience two days of facilitated panel discussions, keynote presentations and exhibits. Share proven methods and best practices of preventing FOD throughout the aviation/aerospace industry. FOD can come in many different forms, and produce disastrous effects if not identified and corrected.

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BAE SYSTEMS

The Official Publication of
THE UNITED KINGDOM FLIGHT SAFETY COMMITTEE

ISSN: 1355-1523 **SUMMER 2007** **ON COMMERCIAL AVIATION SAFETY**

focus

contents

Front Cover Picture: A Dornier 328 on the stand at Southampton International Airport

FOCUS *is a quarterly subscription journal devoted to the promotion of best practises in aviation safety. It includes articles, either original or reprinted from other sources, related to safety issues throughout all areas of air transport operations. Besides providing information on safety related matters,* ***FOCUS*** *aims to promote debate and improve networking within the industry. It must be emphasised that* ***FOCUS*** *is not intended as a substitute for regulatory information or company publications and procedures.*

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More Effort Needed

Not a day goes by when I do not ask myself; "Are we really making aviation any safer?"

Safety professionals all over the world are working hard to improve the aviation safety statistics and yet when you read the various safety magazines it is difficult not to have doubts.

Perhaps it is because the material we read regularly always tends to be about incidents and accidents and so there is little reinforcement of the positive effects that safety related work is having.

In general terms aviation safety is definitely improving. So, what areas remain a concern to aviation safety managers?

Top of our list are level busts. There are far too many aircraft that through one reason or another, bust the level that they are cleared to. The reasons for this vary widely but in spite of raising the awareness of this problem the number of level busts continues to increase. Human factors are cited as the main cause but in spite of all our efforts to raise the awareness of aircrew, they still fail to change their behaviour. What do we have to do to get the message across?

Runway incursions in Europe appear to be on the increase. Aircrew and ground crew still do not pay sufficient attention to the radio and therefore enter the active runway whilst it is occupied by another aircraft. We continue to try to raise the awareness of this problem but for some reason we are not able to get the message through to those who operate on the runways and taxiways. Do we need to have a major disaster before pilots sit up and take notice?

The quality of radio transmissions leaves a lot to be desired. Because of this, a number of incidents occur, that should not normally present themselves. Some of the difficulties are caused by (a) one aircraft taking the clearance of another (b) failure to read back clearances correctly (c) reading back the clearance correctly but then taking the wrong action (d) failing to make contact when handed over from one controller to another (e) making calls on the wrong frequencies. Most of these problems could be avoided by listening attentively and writing down the clearances so they could be read back and action taken correctly. Have we been too quick off the mark in moving away from a manual system to an automated one?

Radio congestion has become a major concern. Some of this congestion could be alleviated by paying more attention to the radio procedures and making sure the transmission is correct the first time. National and regional accents also affect the clarity of radio transmissions.

Poor decision making and poor captaincy also give rise for concern. These days there seems to be an ever shorter time from pilot qualification to becoming Captain. This means that in general the experience of some Captains is less. These young and less experienced Captains are then responsible for monitoring and mentoring young First Officers. If you do not have much experience to pass on then it is unlikely the First Officer will learn much. Fortunately the training in most organisations is good and therefore some of these issues are overcome by comprehensive training. This does not necessarily help with decision making.

The problem does not necessarily lie with the aircrew. All too often aircraft are damaged on the ramp and the perpetrator fails to notify anyone of the damage caused. The result of this and potential for an accident does not bear thinking about. There is a very real need to create the correct work environment so that those who cause the damage are not reluctant to come forward and report it. This sector of the aviation industry is under pressure to cut its cost to win contracts. The airlines are continually squeezing them for better prices. Often their employees are poorly paid and there is not sufficient money to ensure proper training. It is therefore no wonder that they cause damage and fail to report it.

The short term gains achieved during contract negotiation are far outweighed by the damage caused to aircraft and the potential for an accident. For some reason we seem unable to interest the company accountants in this matter.

The lack of suitable qualified engineers is a further cause for concern. Aircraft engineering is no longer attractive to young school leavers. You can get a better paid and more comfortable job working in the IT sector. Young people do not find shift work in the cold and wet very attractive. Many qualified aircraft engineers have left the industry for other employment.

The result is that with fewer qualified engineers the working practices are changing. Fortunately the aircraft manufacturers are making aircraft that are easier to maintain and so the improvements on the one hand is countering the lack of skill on the other. However this trend can not continue indefinitely. Eventually we will get to the point where we will have a problem occurring that will go unchallenged by an engineer.

The introduction of the low cost carrier has not done much to help with any of the above. Conventional carriers are trying to compete but their cost model is not the same and therefore cutting staff and trimming budgets does nothing to improve safety.

If we intend to get on top of these safety issues and not just pay lip service to safety then we need to be making far more effort to ensure that these areas are addressed.

Chairman's Column

Look Both Ways

by Ian Crowe, Willis

This is my last column as Chairman. It has been a very interesting and enjoyable 12 months providing me with an insight into areas that while certainly appreciated did not loom large on my radar.

It was this thought that made me consider what else I could be missing. Indeed, what else could we be missing as an industry, to further improve safe operations. How do we resource, identify and analyse our future safety demands.

Many of our "life" decisions should be based on what was done previously by others in similar circumstances. We do need to review; we do need to look back. Developments in safety is in many respects based on not repeating the same event time after time, recalling the old adage "there are no new accidents, only new people".

The answer may lie in looking at what we did in the past.

From the very beginning accidents were a product of aircraft development. Improved design, international rules and regulations has improved safety to an acceptable level. However, we should remind ourselves that 2007 has not been a particularly good start, where 7 major losses have killed some 250 people.

The cause of these accidents have yet to be determined; but human error is always a factor. Improvements have, over time "designed out" almost all mechanical and system reliability problems. As an example, just look at engine reliability these days; unbelievable low rates of removal and the ability to absorb damage and continue to operate is common place. So all that remains is how to deal with human error, the cause of over 85% of all accidents.

To further improve our performance, the same effort that was applied to system development is needed. Reducing the cause of human error will require a greater commitment in terms of resources equal to and perhaps greater than those expended to obtain improvements in systems.

Having been successful in designing out system difficulties, how on earth can we design out our inbuilt human factor complexities? Sadly, there is no easy answer and many of the good and the great continue to study this aspect with far better knowledge than I have. But as a first step we need to reduce complacency, improve safety awareness, through an in depth knowledge of risk.

Surely, safety is a sub-set of risk so by looking at risk rather than safety may provide us with the answer to identifying the root cause of the terribly complicated and complex issue of trying to understand why we do the things we do.

If you agree with me that the next big step to improve safety and safe operation is "people based" then surely, improvements in the way we train our people is key. Greater efforts are required from selection to recruitment and by the way, retention of our most valuable asset our people. Our safety seminar this October is entitled Technical Innovation and Human Error Reduction, I strongly suggest you attend.

So let's look back at what we did as an industry to improve system reliability and use the lessons learnt to take us to the next phase of improving safety by fully understanding the complexities of human error through a thorough knowledge of risk.

Fly safe.

UK FLIGHT SAFETY COMMITTEE OBJECTIVES

- **To pursue the highest standards of aviation safety.**
- **To constitute a body of experienced aviation flight safety personnel available for consultation.**
- **To facilitate the free exchange of aviation safety data.**
- **To maintain an appropriate liaison with other bodies concerned with aviation safety.**
- **To provide assistance to operators establishing and maintaining a flight safety organisation.**

Club328

by Capt. Derek Murphy

In recent years there has been a marked increase in the number of passengers choosing to take advantage of the convenience and flexibility offered by private jet travel.

As commercial air travel generally becomes an increasingly less enjoyable experience, especially in light of the recent terror threats and the need to be more stringent on check in procedures, more business travellers are turning to private charter. Being unable to carry onboard laptops, mobiles and blackberries in the initial week of the tight security after the terrorist threat in August 06 proved a source of distress for many of them and a prompt to look at a new service.

In 2006 some 850 new jets were delivered to customers. In the years ahead this number will get higher as the new breed of Very Light Jets (VLJs) enter the market. A significant shift is the amount of business jet travel expansion in the Rest of World catching up with the USA, its traditional market. Europe alone is expected to have a total share of 16% of worldwide aircraft deliveries over the next five years.

As the economy grows globally, business jets have become an ever important business tool. Almost every company in the industry claims to have the best safety standards. But how can a customer really determine what defines standards?

When it comes to providing clients with safe, professional aviation services, Club328 is one of the best. Safety starts long before take-off and at Club328 the safety of clients and staff is paramount, forming the foundation of everything they do. The new technology aircraft and strict pilot training schedule along with stringent maintenance and operating procedures ensure the safest operating environment. New CEO Elaine Young explains that

Club328 “have the commitment and resources to ensure that safety is never compromised. We genuinely believe in a hands on approach, adding value every step of the way for a select group of clients. We are not the largest and we choose not to be. This gives us the ability to maintain the best dispatch reliability, customer service and safety record of any company in the Private jet sector”.

There are obvious safety implications in that private air charter is synonymous with security, confidentiality and sensitivity. You almost certainly know the passenger profiles or the person in the next seat! As part of its service Club328 uses a specialist security company where the customer feels that such services are warranted. The Middle East and Eastern Europe provide destinations well within the reach of the company’s aircraft and the provision of discrete, non-invasive security personnel, all ex-military and trained to the exacting standards of the British Special Forces, does much to provide peace of mind to business, VIP, and celebrity passengers.

Club328 aims to deliver a discrete travel service tailored exactly to the needs of the customer, even to the extent of a red carpet if necessary! Its crews are trained that after the obvious priority of air safety the client is the most important factor. The aircraft Captain is required to meet his/her clients landside and ensure that their passage to the aircraft via security, customs and immigration checks is as seamless as possible. In the meantime the rest of the crew are required to check all the organisational niceties of the journey ready for an immediate start once the doors are closed.

Private charter has the appeal of flying locally. There are dedicated business aviation airports such as Northholt, London Biggin Hill and Farnborough in the UK and some 2,000 private airfields in France and Germany alone. The benefits of using Cannes or St Tropez over Nice, where the scheduled airlines go, are clear. Club328 works with selected FBO’s, local airport authorities, law enforcement and security officials to determine whether additional security measures are necessary to ensure clients peace of mind when flying to any selected airfield.

Club328 is based at Southampton International Airport and caters to a wide variety of clientele from private clients, businesses, and entertainment personalities to heads of state. It operates Raytheon Premier 1 light jets, Dornier 328-300 corporate jets and the ever-popular Hawker 800 series. The aircrew are very experienced in the industry and, are drawn from scheduled airlines, the military and from other corporate operators. The company’s flight attendants too have all previously worked with the major carriers at international and

regional level. Above all Club328 operates very much as a team and if not flying all the aircrew are actively involved in other company activities to help improve the service. The company CEO, Elaine Young, joined in 2006 equipped with a broad portfolio of industry, commercial and operational experience including senior positions with both easyJet and bmi. Top of Elaine's priorities is safety and to that end she not only chairs the monthly Safety Review Board but takes a very active part in ensuring that her responsibilities as an Accountable Manager are fully served.

"We never say that safety is a given and we engender an open culture which promotes safety at all times"

This philosophy has worked in the company's favour as it has a very low turnover of flight crew. There is also a fine line between commercial expedience and safety where there can only be one winner. As a result some lucrative winter work has been declined on safety grounds, particularly to some of the more marginal Alpine resorts. To their credit the customers are receptive to this point of view and share Elaine's premise that: "at Club328 we will do whatever we can to minimise any risk."

The flight safety duties are shared at Club328 by Captain Derek Murphy who has the epithet of Flight Safety Manager. Derek is an experienced captain and is well known throughout the industry for his participation in the UK Flight Safety Committee. He has added an even stronger safety bias to the company team. This is vital as Club328 continues to grow not just in terms of regulatory compliance but also in commercial terms. A company with a good safety reputation is one with an advantage over its competitors.

Working with Jeppesens

In a relatively new development, Club328 Operations Department now works hand in hand at Southampton with operations personnel from international flight planning specialists Jeppesens. Jeppesens provides the trip planning advice and solutions that enable Club328 to offer the very best service. Efficient and accurate international trip planning is essential for the operation. With the Jeppesen system Club328 operations can get decisions on unusual airfields, slots and overflight requests quickly. Rapid answers allow the prospective clients to be advised in quick time. Armed with the Jeppesen information Club328 talk through a flight booking with a client and tailor a full itinerary including special requests for catering, entertainment and provision for junior travellers. (The Sony PSP is invaluable in keeping children pleasantly occupied long after the novelty of air travel has worn off!) Some clients can be flexible, especially those looking for a short ski break who will occasionally ask Club328 for advice – even to propose a resort where there is a lot of snow! There are many airports which the company serves which are closer to the popular ski resorts than the main hub airports of Zurich and Geneva. Chambery is popular and Club328 also uses the small St Gallen Airport in Austria.

Club328's Dornier 328, with its capacious hold, is very popular for group skiing and golfing trips.

Trip planning

The saying "an ounce of prevention is worth a pound of cure" holds true in life as well as in air travel. All pilots will prepare for unexpected events by planning alternate options prior to every flight. They will take into account many factors including weather, fuel, airport runway lengths and the weight and balance of the aircraft. Jeppesens lends expertise to Club328 on itinerary and route planning; internet access to trip status and reports; overflight and landing permits en route charge reports, airfield slots and computerised JetPlan flight plans.

Once the route is planned, the pilot will research alternate airports and routes and will be prepared with the necessary charts, radio frequencies and airport information on hand. Route changes often come at the expense of clients' time, and cause inconvenience. The entire Club328 team will work diligently to minimise the impact of these unplanned events, contacting FBO's and operators and coordinating details (ie: ground transportation, catering) to accommodate any schedule changes. All changes are accomplished diligently and always with safety at the forefront of decisions.

Club328 also delivers FlightWatch services, in conjunction with Jeppesen; advising other operators of any planning requirements from the obvious one of flight plan submission to Notam provision, airfield briefings, the provision of fuel and crew accommodation and the vital provision of Met information.

Club328 and the future

Club328 is looking to expand its business with third party managed aircraft. It is unique in having a sister company at its base, Jet Engineering Support Services (JETS) which has European EASA 145 approval to perform maintenance and technical services on the Dornier 328, Premier 1 and Hawker aircraft. JETS, founded two years ago, also supports third party customers and the hangar at Southampton frequently contains a pot pourri of aircraft in various states of maintenance. JETS is able to provide essential background on all Club328 aircraft, including aircraft provenance, records and history data enhancing awareness and improving safety and maintenance standards. Club328 only engages aircraft operated with the highest safety standards; paralleling the standards used by commercial airlines. The full time Safety & Standards department is dedicated to enhancing safety and providing supervision and oversight to deliver the highest possible standards in all areas of its business.

From its beginnings in 2004 Club328 has developed an ethos of commercial development based on safety and a close working relationship with trusted service providers. The client base grows by the day and the company sees itself in the near future as one of the flagships of the corporate aviation industry.

NATS safety notice

EXT 1/2007	Use of 'Expect' Clearances and Phraseology

In response to a level bust reported as an Airprox in 2006 and following input from operators NATS has conducted a review of the use of 'Expect' clearances in the en-route airspace in the UK. CAP 413 Radiotelephony Manual does not include standard phraseology for passing or reading back 'Expect' clearances. In the absence of standard phraseology the controllers at some NATS units use the following phraseology:

"ABC123 descend FL310, expect FL250 level XXXXX"

All of the NATS en-route air traffic control centres have experienced level busts involving the use of an 'Expect' clearance. Input from operational staff and pilots has confirmed that there are a number of occasions when a clearance including an 'Expect' level causes confusion and/or may not be correctly read back. It appears that it is the inclusion of two flight levels in the same transmission that is giving rise to the misunderstanding.

The NATS review has concluded that:

- The use of 'Expect' clearances is valid when managing sector workload
- There are concerns with the routine use of 'Expect' clearances
- The commonly used phraseology does not conform to Human Factors advice which is that where an instruction contains an executive and a conditional element, the executive element should be transmitted last. This is already the case with conditional clearances around a runway.

NATS has determined that the phraseology for 'Expect' clearances should be standardised.

Standard Phraseology

From the 1st of June 2007 when an 'Expect' level clearance is passed it shall be used in the following standardised form:

"ABC123 expect FL200 level by XXXXX, descend (*now*) FL280"

The word 'now' is optional. Pilots are requested to read back the clearance in the order in which it is passed and to seek confirmation from ATC if any doubt exists about the cleared level.

NATS controllers have been advised that:

- They should be selective about when they use 'Expect' clearances, should not use it as a matter of routine and that it may not be appropriate for all pilots.
- Where the expect level phraseology is used, controllers should be vigilant in listening to the readback and in carefully monitoring the descent or climb of the aircraft.

Produced by Division of Safety
Contact: Richard Schofield
Tel: 01489 615310

Effective Date: 09/05/07

safety notice

Preventing Wheel/Brake-Area Fires

by Brian Webber, Mechanical Systems Engineer, Service Engineering

While most wheel/brake-area fires pose no serious threat to the airplane or passengers, they can be alarming enough to cause cabin evacuations and costly delays. This article describes proper wheel/ axle greasing techniques during wheel and brake maintenance and highlights the importance of not allowing flammable solvents to collect in wheel heat shields during cleaning procedures to minimize the potential for wheel/break-area fires.

Many airlines, particularly those operating carbon-braked airplanes, have experienced wheel/brake-area fires due to excessive grease buildup, incorrect grease usage, the presence of flammable cleaning solvents in wheel heat shields, or the accumulation of hydraulic fluid on the brake. In the rare instances when wheel/brake-area fires do occur, the grease, solvent, or hydraulic fluid is ignited following landing by heat generated by the application of the brakes.

Wheel/brake-area fires are occasionally reported following normal operating brake temperature condition landings (see fig. 1). The cause of the fires can usually be attributed to the ignition of excessive grease that has accumulated on the axle in the brake assembly cavity (see fig. 2). In addition, some wheel heat shields can retain residual cleaning fluids after being saturated with flammable solvents during maintenance. Wheel/brake-area fires have also been reported due to ignition of hydraulic fluid associated with leaks or hydraulic system maintenance (see fig. 3). While these fires generally do not cause major damage to the airplane or endanger passengers and crew, they can prompt evacuations that can lead to injuries, temporarily take the airplane out of service, and result in costly repairs. Yet most wheel/brake-area fires can be avoided by following some simple procedures:

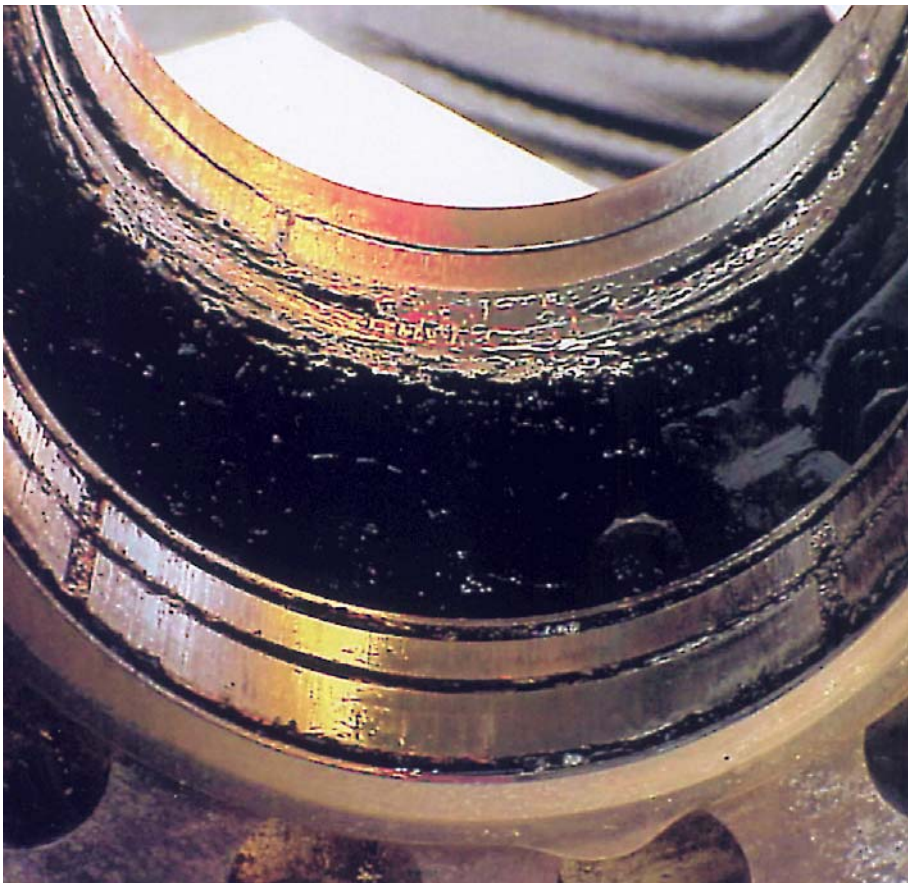

Figure 2: Removed brake following fire from excessive amounts of grease

ALTHOUGH THESE FIRES DON'T CAUSE MAJOR DAMAGE, THEY CAN LEAD TO DELAYS, ADDED MAINTENANCE COSTS, AND EVACUATIONS.

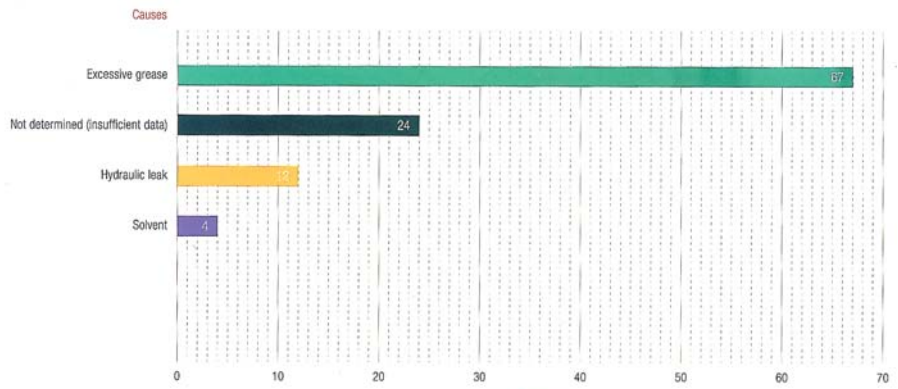

Figure 1: Brake-area fire events since 1996 (Excluding dragging brakes, brake misassembly, or wheel bearing seizures)

- Clean all grease from the axle before reinstalling the wheel and/or brake assembly.
- Use only approved greases in small quantities at the points where the wheel and brake will contact the axle.
- Follow wheel supplier Component Maintenance Manual (CMM) cautions regarding the use of flammable cleaners on wheel heat shields, including not using dunk tanks on "sealed" heat shields.

What Causes Wheel/Brake-Area Fires

Wheel/brake-area fires are typically caused

Figure 3: Removed brake following fire from hydraulic fluid leak

by a buildup of grease on the axle during service or the application of excessive amounts of grease during wheel/tire changes and brake installations, and the presence of a heat source, namely the brakes. During brake lubrication, excessive grease can also collect in the cavity between the piston housing and torque tube pedestal bushing due to a damaged or missing grease seal or excessive lubrication through the brake piston housing axle bushing lubrication fitting.

Wheel/brake-area fires have also been linked to cleaning fluids retained in the heat shield. Some heat shield designs can absorb cleaning solvents, causing the shield to become saturated with flammable cleaning fluids if they are sprayed or immersed during cleaning. During normal braking on landing, the temperatures in the main landing gear wheel/brake area can cause grease and residual cleaning fluids in these areas to ignite. Carbon brakes normally operate at slightly higher temperatures than steel brakes, which explains why nearly all reports are associated with carbon brakes. These types of wheel/brake-area fires usually occur within the first few cycles following a wheel or brake change, or following lubrication of the piston-housing grease fitting when a grease seal is damaged or missing. Fires due to leaking hydraulic system components can occur immediately following fluid spillage onto a hot brake.

Preventing Wheel/Brake-Area Fires

Because their cause is well known, wheel/brake-area fires can be prevented by following proper maintenance procedures. These include:

- Cleaning existing grease from the axle. When removing or installing wheels and brakes, it is essential to remove old grease from the axle (see fig. 4), Because cleaning fluids and solvents can damage carbon brakes and titanium components, a dry rag must be used to remove the grease.
- Removing old grease from the axle every time wheels and brakes are installed or removed.
- Using only approved greases in small quantities. While it is important to have adequate lubrication within the wheel bearings, only a thin layer of grease is necessary at the wheel/axle interface for wheel/tire installations. Similarly, only a thin layer of grease needs to be applied to the interface surfaces of the brake and axle sleeves when installing brakes (see fig. 5). When applying grease to the axle bushings on the brake assembly, it is important to completely fill the grooves in the bushings with grease.
- Being certain that the brake axle bushing grease seal (on airplanes that have them) is not damaged before installing brakes and that the grease seal is properly installed per the applicable Airplane Maintenance Manual (AMM) or CMM instructions.
- Following wheel supplier CMM cautions when cleaning wheel heat shields. The main wheel heat shield must be cleaned by following the manufacturer's recommended maintenance procedures in the appropriate supplier CMM. Spraying or immersing certain heat-shield designs in cleaning fluids can trap residual fluids within the shield, which can lead to a subsequent fire. The wheel heat shields should be removed according to the supplier CMM during wheel-cleaning operations.

Additional Information

The recommendations in this article are provided in addition to the standard AMM statements to use only approved "wheel bearing" greases and not apply excessive amounts of grease during main gear wheel

and brake installations. This information can be found in AMM chapters 12 and 32. The specific wheel and brake component cleaning maintenance practices can be found in the applicable supplier CMM.

Boeing also updated a Maintenance Tip in July 2006 titled “Main Landing Gear Wheel/Brake-Area Fires” that addresses this issue (707 MT 32-002 R1, 727 MT 32-002 R1,737 MT 32-010 R1,747 MT 32-045 R1 ,747-400 MT 32-022 R1 ,757 MT 32-016 R1 ,767 MT 32-026 R1,777 MT 32-021 R1).

Training Aid

Boeing has developed a training aid to help maintenance personnel visualize and understand proper wheel and axle greasing and cleaning techniques. This aid is a 12-minute digital video disc (DVD) titled “Main Landing Gear Wheel/Brake Area Fire Prevention: Maintenance Tips.” Boeing recommends showing this DVD to engineering and maintenance personnel associated with landing gear duties during crew meetings. This DVD (VPS48559) is available from Boeing Data and Services Management at csd.boecom@boeing.com

Summary

Wheel/brake-area fires, while usually not serious themselves, can result in minor airplane damage, possible injuries to crew members and passengers when evacuating an airplane, and flight delays. Most wheel/brake-area fires, however, can be avoided simply by following proper maintenance procedures for cleaning and greasing components. For more information, please contact Brian Webber at brian.k.webber@boeing.com

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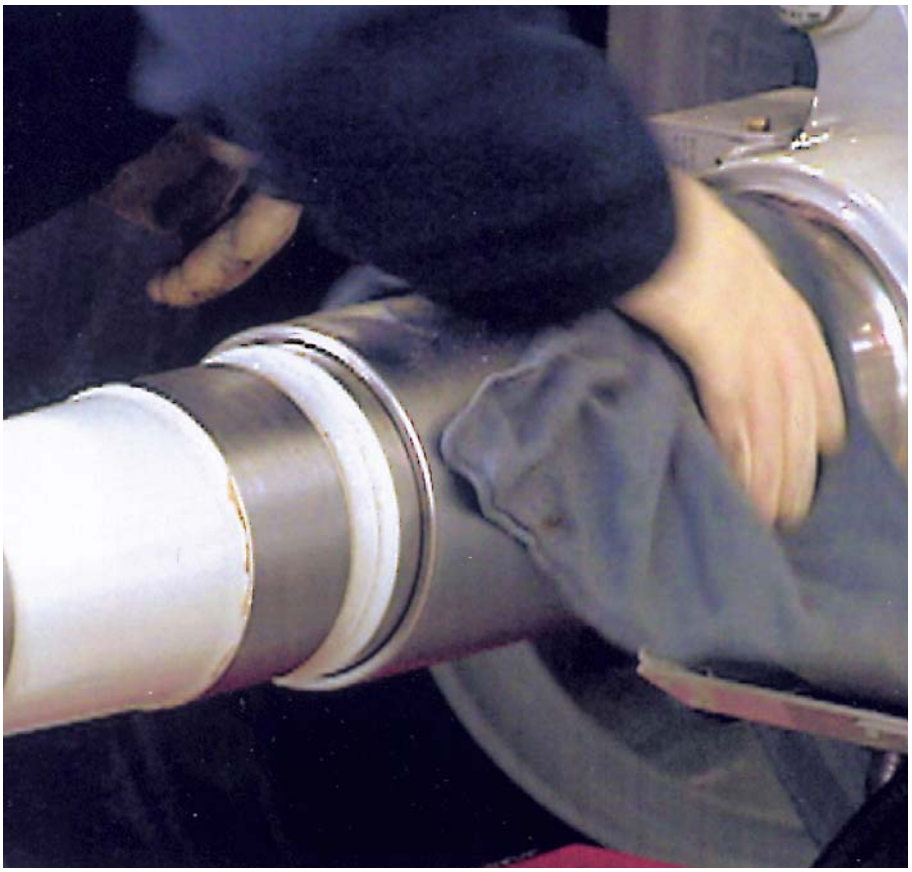


Figure 4: Essential step: existing (old) grease being removed

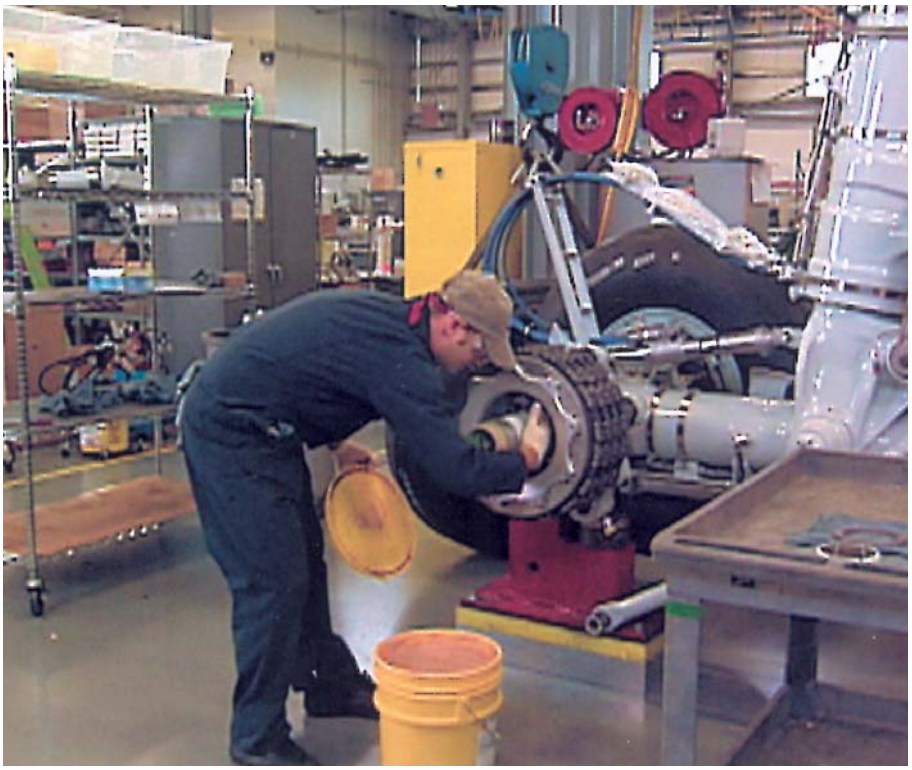
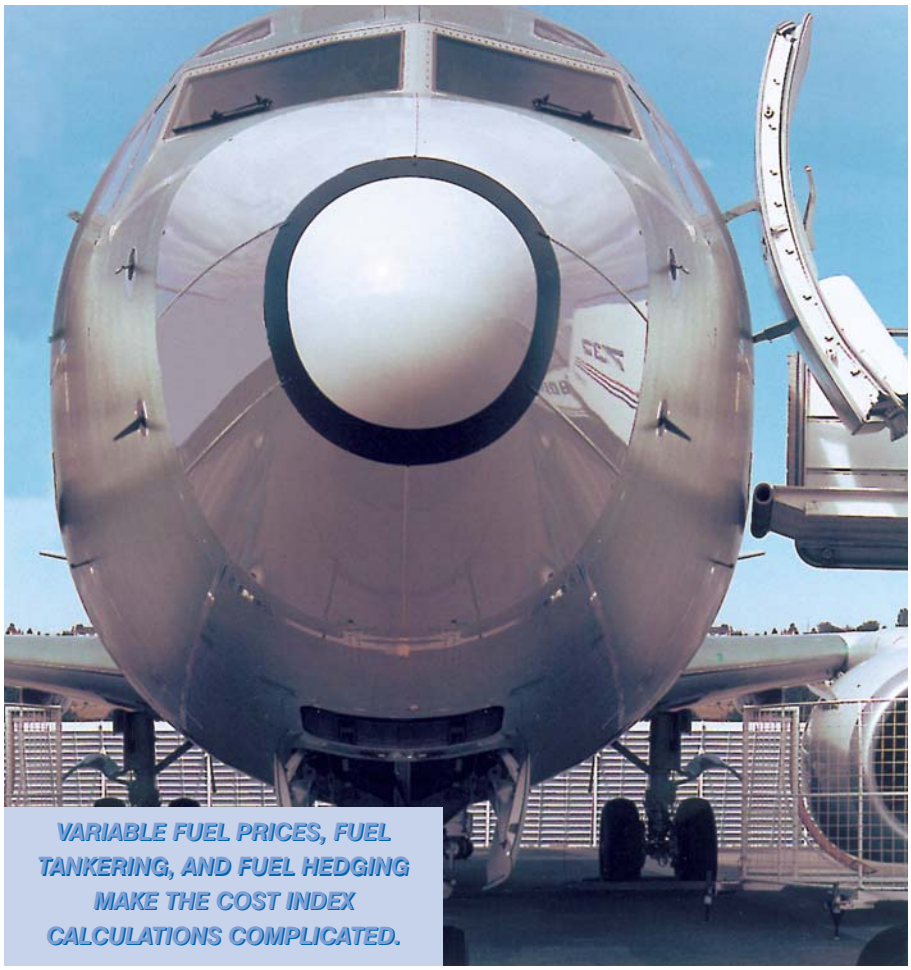


Figure 5: Thin layer of grease being applied to brake/axle sleeves

Fuel Conservation Strategies: Cost Index Explained

by Bill Robertson, Senior Safety Pilot, Flight Operations



VARIABLE FUEL PRICES, FUEL TANKERING, AND FUEL HEDGING MAKE THE COST INDEX CALCULATIONS COMPLICATED.

This article is the first in a series explorlng fuel conservation strategies.

Used appropriately, the cost index (CI) feature of the flight management computer (FMC) can help alrlines significantly reduce operating costs. However, many operators don't take full advantage of this powerful tool.

Cost Index Defined

The CI is the ratio of the time-related cost of an airplane operation and the cost of fuel. The value of the CI reflects the relative effects of fuel cost on overall trip cost as compared to time-related direct operating costs.

In equation form: $CI = \frac{\text{Time cost} \sim \$/\text{hr}}{\text{Fuel cost} \sim \text{cents/lb}}$

The range of allowable cost indices is shown in Figure 1. The flight crew enters the company-calculated CI into the control display unit (CDU) of the FMC. The FMC then uses this number and other performance parameters to calculate economy (ECON) climb, cruise, and descent speeds.

For all models, entering zero for the CI results in maximum range airspeed and minimum trip fuel. This speed schedule ignores the cost of time.

Conversely, if the maximum value for CI is entered, the FMC uses a minimum time speed schedule. This speed schedule calls for maximum flight envelope speeds, and ignores the cost of fuel (see fig. 2).

Cost Index Usage

In practice, neither of the extreme CI values is used; instead, many operators use values based on their specific cost structure, modified if necessary for individual route requirements. As a result, CI will typically vary among models, and may also vary for individual routes.

Clearly, a low CI should be used when fuel costs are high compared to other operating costs. The FMC calculates coordinated ECON climb (see fig. 5), cruise, and descent speeds (see fig. 6) from the entered CI. To comply with Air Traffic Control requirements, the airspeed used during descent tends to be the most restricted of the three flight phases. The descent may be planned at ECON Mach/Calibrated Air Speed (CAS) (based on the CI) or a manually entered Mach/CAS. Vertical Navigation (VNAV) limits the maximum target speed as follows:

- 737-300/-400/-500/-600/-700/-800/-900: The maximum airspeed is velocity maximum operating/Mach maximum operating (VMO/MMO) (340 CAS/.82 Mach). The FMC-generated speed targets are limited to 330 CAS in descent to provide margins to VMO. The VMO value of 340 CAS may be entered by the pilot to eliminate this margin.
- 747-400: 349 knots (VMO/MMO minus 16 knots) or a pilot-entered speed greater than 354 knots (VMO/MMO minus 11 knots).
- 757: 334 knots (VMO/MMO minus 16 knots) or a pilot-entered speed greater than 339 knots (VMO/MMO minus 11 knots).

THE RANGE OF ALLOWABLE COST INDICES FOR GIVEN BOEING AIRPLANES

Figure 1

Airplane Model	737-300 737-400 737-500	737-600 737-700 737-800 737-900	747-400	757	767	777
Cost Index Range	0-200	0-500	0-9999	0-999 or 0-9999	0-999 or 0-9999	0-9999

COMPARING RESULTS FOR COST INDEX VALUES OF ZERO AND MAXIMUM

Figure 2

	CLIMB	CRUISE	DESCENT
Cost Index 0	Minimum Fuel*	Maximum Range	Max L/D
Cost Index Max	VMO/MMO	VMO/MMO	VMO/MMO

Entering zero for the cost index results in maximum range airspeed and minimum trip fuel.
Entering the maximum value for cost index results in a minimum time speed schedule.

** Minimum climb contribution to trip fuel; this is different from minimum fuel to cruise altitude.*

CALCULATED VALUES FOR A TYPICAL 757 FLIGHT

Figure 3

	CLIMB	CRUISE	DESCENT	ALTITUDE RECOMMENDATIONS
Cost Index 0	290/.778	.778	250	OPT 328, MAX 362, RECMD 310
Cost Index 9999	345/.847	.847	.819/334	OPT 268, MAX 268, RECMD 260
Cost Index 70	312/.794	.794	.80/313	OPT 327, MAX 363, RECMD 310

COST INDEX IMPACT

Figure 4

FLEET	CURRENT COST INDEX	OPTIMUM COST INDEX	TIME IMPACT MINUTES	ANNUAL COST SAVINGS ($000's)
737-400	30	12	+1	US$754 – $771
737-700	45	12	+3	US$1,790 – $1,971
MD-80	40	22	+2	US$319 – $431

- 767: 344 knots (VMO/MMO minus 16 knots) or a pilot-entered speed greater than 349 knots (VMO/MMO minus 11 knots).
- 777: 314 knots (VMO/MMO minus 16 knots) or a pilot-entered speed greater than 319 knots (VMO/MMO minus 11 knots).

FMCs also limit target speeds appropriately for initial buffet and limit thrust.

Figure 3 illustrates the values for a typical 757 flight

Factors Affecting Cost Index

As stated earlier, entering a CI of zero in the FMC and flying that profile would result in a minimum fuel flight and entering a maximum CI in the FMC and flying that profile would result in a minimum time flight. However, in practice, the CI used by an operator for a particular flight falls within these two extremes. Factors affecting the CI include time-related direct operating costs and fuel costs.

Time Cost

The numerator of the CI is often called time-related direct operating cost (minus the cost of fuel). Items such as flight crew wages can have an hourly cost associated with them, or they may be a fixed cost and have no variation with flying time. Engines, auxiliary power units, and airplanes can be leased by the hour or owned, and maintenance costs can be accounted for on airplanes by the hour, by the calendar, or by cycles. As a result, each of these items may have a direct hourly cost or a fixed cost over a calendar period with limited or no correlation to flying time.

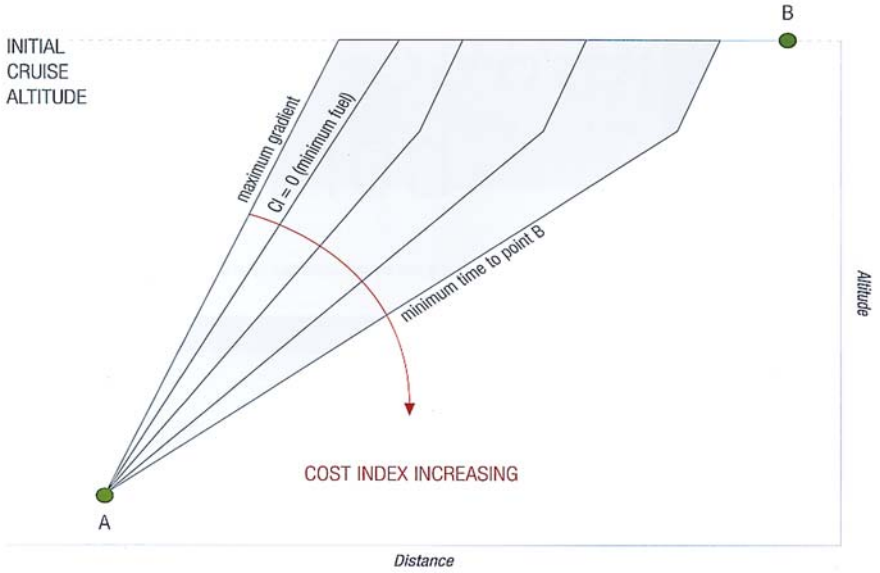


Figure 5: The effect of cost index when climbing to cruise altitude
A cost index of zero minimizes fuel to climb and cruise to a common point in space

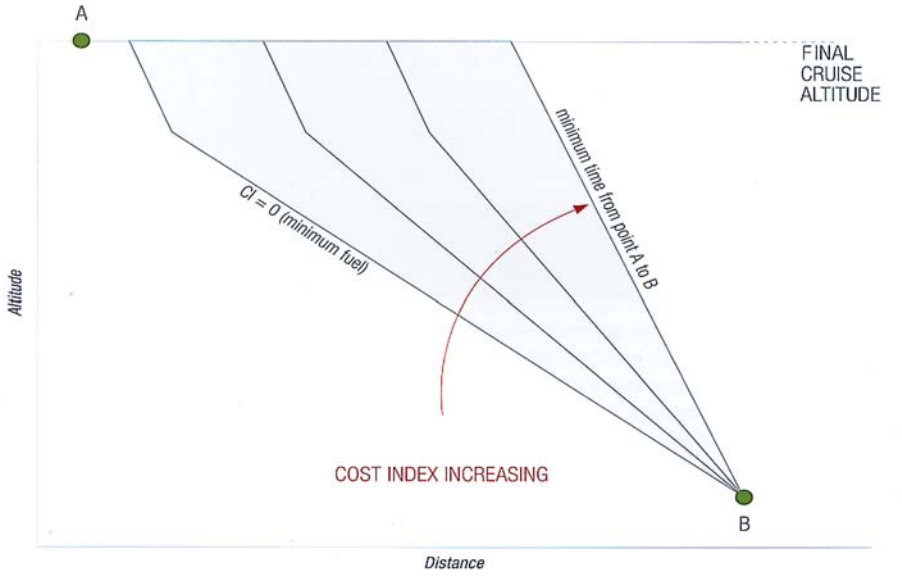


Figure 6: The effect of cost index when decending
A cost index of zero minimizes fuel between a common cruise point and a common end of descent point

In the case of high direct time costs, the airline may choose to use a larger CI to minimize time and thus cost. In the case where most costs are fixed, the CI is potentially very low because the airline is primarily trying to minimize fuel cost. Pilots can easily understand minimizing fuel consumption, but it is more difficult to understand minimizing cost when something other than fuel dominates.

Fuel Cost

The cost of fuel is the denominator of the CI ratio. Although this seems straightforward, issues such as highly variable fuel prices among the operating locations, fuel tankering, and fuel hedging can make this calculation complicated.

A recent evaluation at an airline yielded some very interesting results, some of which are summarized in Figure 4. A rigorous study was made of the optimal CI for the 737 and MD-80 fleets for this particular operator. The optimal CI was determined to be 12 for all 737 models, and 22 for the MD-80.

The table (see fig. 4) shows the impact on trip time and potential savings over the course of a year of changing the CI for a typical 1,OOO-mile trip. The potential annual savings to the airline of changing the CI is between US$4 million and $5 million a year with a negligible effect on schedule.

Summary

CI can be an extremely useful way to manage operating costs. Because CI is a function of both fuel and nonfuel costs, it is important to use it appropriately to gain the greatest benefit. Appropriate use varies with each airline, and perhaps for each flight. Boeing Flight Operations Engineering assists airlines' flight operations departments in computing an accurate CI that will enable them to minimize costs on their routes. For more information, please contact FlightOps.Engineering@boeing.com.

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Safety in Numbers

by Paul Spooner, Bank Supervisor, Shanwick Oceanic, NATS

Introduction

Situated in Prestwick, Scotland, Shanwick control provides a procedural control service to over 1400 flights daily over the North Atlantic. Our boundaries stretch from approximately 10 degrees west out to 30 degrees west, and from latitude 45 north to 61 north. That equates to nearly 630,000 square miles of airspace to control.

Daily there are two main flows of traffic. This is due to passenger demands, time zone differences and restrictions on night time landing. Westbounds normally fly during the day and the eastbounds by night. The majority of these flights are packed into just a few hours, as is shown by the graph below.

One of the best ways to actively manage these flights is to produce a set of tracks each day, one for the westbounds and another for the eastbounds. Where the tracks are, is dependant on the jet stream that flows across the Atlantic. As there is no radar in the Atlantic Ocean, (radar can only operate out to 250nm) Shanwick uses procedural control. The controllers separate aircraft based on flight level, position, time and speed. Prior to entering Shanwick's airspace, the pilot will receive an oceanic clearance based on his request, which must be read back correctly. The clearance contains the routing and level that the pilot must fly. On entering the ocean, pilots are required to report their position, level and subsequent positions every 10 degrees of longitude.

In November 2006, Shanwick in collaboration with the Canadian Air Traffic Service Provider, Nav Canada, successfully introduced a new computer system to aid controllers in separating aircraft. The controller's workstation has two screens. The left hand screen shows the strip display and messages from the aircraft. The right hand screen is the geographical display. For the first time over the Atlantic, controllers now have a pictorial display of where the aircraft should be.

Gross Navigation Errors

So what happens when a pilot's position report does not match up with his actual clearance? The computer checks every position report, and any non-conformances are highlighted to the controller. The controller's first action is to confirm whether or not the pilot gave an incorrect position or level by mistake. If the pilot re-confirms his incorrect report, then the controller will pass the correct clearance to the pilot for them to read back. This is called an **Intervention to prevent a Gross Navigation Error**. Last year there were 127 such interventions in the North Atlantic.

If the pilot states he is flying to the correct position but actually flies off course by 25 nautical miles or more, then a **Gross Navigation Error** or **GNE** has occurred. Last year there were 32 GNEs in the North Atlantic. It may not seem much, but in an increasingly busier and more complex airspace, there is little room for error.

Investigations have established that most GNEs and ATC interventions are the result of flight-deck error. 80% of GNEs occur because the pilot flies his flight plan route rather than the clearance given. Most reroutes issued by a controller are given because another aircraft is already on the original route.

So how can we mitigate against these errors?

- Correctly copy down the clearance. Check for errors. Reprogram the Flight management system and again check for errors.
- Update the plotting chart in line with the new clearance and plot your position 10 minutes after every 10 degrees longitude.
- When in the ocean, cross check the Long Range Navigation systems.
- Clearly mark the master flight plan and discard the others.
- Fly the clearance.
- Crosscheck the flight management system taking into account the expanded co-ordinates. Remember 55N 30W may have been incorrectly inputted as 5530N. It has happened on more than one occasion.

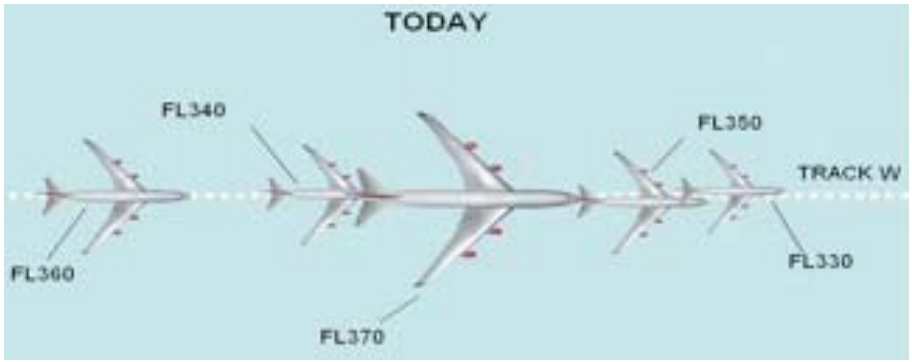
Only if the above instructions are incorporated into your standard operating procedures, and are carried out every time you fly the ocean, will we be able to reduce these errors.

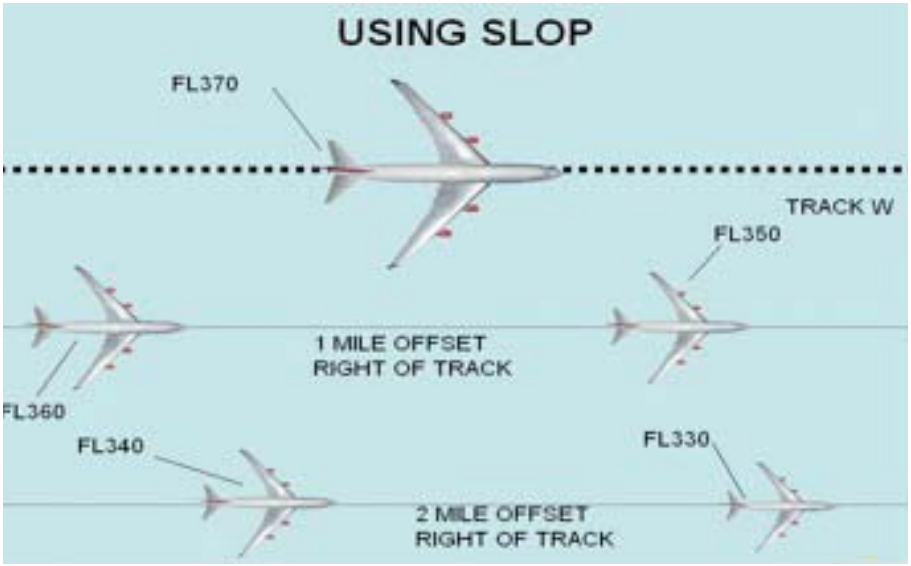
Strategic Lateral Offset Procedure (SLOP)

Introduced in 2004 by the North Atlantic Systems Planning Group, this procedure was implemented to try and reduce the chances of a mid air collision by distributing aircraft laterally. This could be either from a GNE or a vertical height deviation.

Several years ago when aircraft's navigation systems were not entirely accurate, aircraft could quite possibly be flying 2 or 3 miles off track, therefore separating themselves. Nowadays, with aircraft flying with much more precision, aircraft on the same track but at different levels, are now stacked one above the other with no lateral separation. SLOP can be flown by all aircraft with automatic offset programming capability and will reduce the risk of a vertical collision by 67%. SLOP gives pilots the opportunity to fly either the centreline of a track, or either, one or two miles right of track. It is at the pilot's discretion and does not require an ATC clearance. Pilots should make their choice based on visual acquisition, TCAS and communications with other aircraft. There is also no requirement to maintain a particular offset for the whole flight.
Full details of the procedure can be found at http://www.nat-pco.org

Currently only 10% of aircraft are offsetting regularly, which means 90% of aircraft are still flying the centreline. If an aircraft were to have a GNE at your level or the aircraft below suddenly climbs due turbulence, which offset would you rather be on.





And the Benefits to Airlines?

This is two fold. Firstly, by applying both the procedures to prevent GNEs and flying SLOP, there will be a significant increase in safety over the Atlantic Ocean. Secondly, if there is a significant increase in the usage of SLOP and a decrease in GNEs then we can start to reduce our separations. Longitudinal separation is at present, 10 minutes flying time between aircraft. In 2008, subject to SLOP and GNEs, this could be reduced to as much as 5 minutes between pairs of ADS and FANS reporting aircraft. These could effectively double our airspace capacity at prime flight levels and provide more aircraft with economical levels. Aircraft would also be more likely to obtain climbs whilst within our airspace.

NATS are committed to continually improving safety, but we require your help in order to achieve this.

When it comes to safety and economy PLEASE USE SLOP.

Fly on the right - A mid air mitigation

by Alex Fisher GAPAN

Figure 1 'Half the KAL 747 filled the P1 DV window' – a 747 on an adjacent stand seen from the P2 seat.

On 29 September 2006, A GOL B737-800 and a private Embraer Legacy business jet collided at FL360 some 200 miles north of Brasilia, over the Amazon Jungle. The Embraer's left winglet hit the 737's left wing, and the 737 crashed killing all on board. The Embraer was luckier, and made a successful emergency landing at the Cachimbo air base.

Both aircraft were equipped with transponders and TCAS, so how could it have happened? But the technicalities divert attention from a vastly more important point: was it simply bad luck that the aircraft were so close together horizontally that they collided?

The answer, as everyone flying today knows full well, is 'No'. Thanks to GPS, horizontal accuracy worldwide is now officially less than a typical wingspan. There is no protective scatter, no fat left in the solution (published accuracies understate the problem: put two GPS receivers together in the same place and, because they have the same ionospheric errors, they will agree their position to only a few metres). If you make a mistake in the vertical plane on a two-way airway, you can expect to find someone coming right for you at Mach 1.6.

We have been here before. In June 1999, a BA 747-400 and a Korean Airlines (KAL) 747 came within an estimated wingspan of a mid air collision over China, while both of them were responding to TCAS alerts (the estimate came from the co-pilot's remark that half the KAL 747 'filled P1's DV window', see fig 1). Extraordinary detective work by BA engineer, Andrew Rose, showed that a single wiring fault would cause the failure of the altitude comparison function. Andrew led KAL engineering to a single bent connector pin on the rear of the Transponder. A subsequent undetermined error in KAL's altimeter encoding was therefore not detected, resulting in the intermittent erroneous transmission of own altitude data to KAL's TCAS equipment, and that of other aircraft. The result was that the two TCAS units issued Resolution Advisories which brought the two aircraft together instead of separating them.

After such a close shave, BA naturally carried out an investigation that resulted in a number of recommendations.
In addition to several TCAS-specific issues, the final recommendation was that the issue of offset tracks should be pursued as a potential mitigation (the two aircraft involved in this incident being on reciprocal tracks). Since 1999, BA is aware of at 8 TCAS incidents where incorrect altimetry appears to be involved, five of which concerned aircraft pairs on reciprocal tracks. It is likely that this is merely the tip of the iceberg, as many other operators may not be able to identify the problem.

It is obvious, however, that TCAS failures are not the only possible source of altitude conflicts, though they do have the unique effect of both causing the error and preventing its resolution by TCAS. Other potential errors include human errors in TCAS interpretation (e.g. Uberlingen), and 'straightforward' level busts. These can be due to simple errors or misunderstandings, autopilot anomalies and turbulence. An example of an incident involving both of the last two was the Turkish Airlines A340 incident in October 2000, which suddenly left its flight Level on a NAT track, narrowly missing an A330 on the same track 1000 ft above. The AAIB investigation (Bulletin 6/2001) recommended:

a) 2000-68 - That the CAA take forward a recommendation to the appropriate international bodies that they reconsider the need for commanders to inform ATC of all lateral offset manoeuvres of less than 2 nm in Oceanic airspace, irrespective of the reason for the manoeuvre.
b) 2000-70 - That the CAA take forward a recommendation to the appropriate International bodies to consider standardising lateral track offset procedures which are independent of wind direction.

In November 2000 ICAO issued State Letter AN13 11-6.00 96 which recognised the problem and introduced guidelines for the application of track offsets. These were

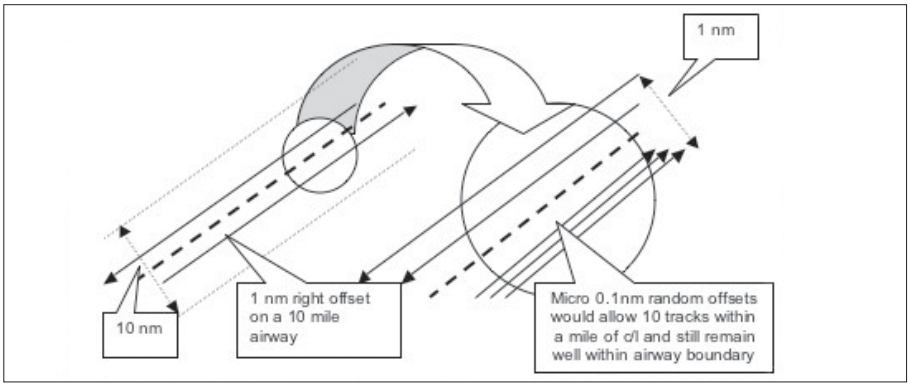


Figure 2 Micro offsets could protect both opposite and same direction traffic.

Offsets - Frequently raised Objections	
This will introduce new errors	Offsets are current technology and well protected (check your flight manual for how the FMS prevents you from applying an offset on the approach for instance)
Europe doesn't have many two way routes	No, but it has some, and anyway aircraft fly world wide.
Random routes offer better protection	True, but the world doesn't yet have a totally random route structure
Retrofit of micro capable FMS will be expensive	Maybe, but who said retrofit is necessary? – there are aircraft (737NG) that are capable of micro offsets now, to the benefit of all. As more aircraft are able to fly micro offsets, the protection just increases
This will increase controller workload	Why? It will be invisible to the controllers; the pilot makes the random choice of offset, not ATC
It would be better to eliminate two way airways and/or they to code the routes to fly right of the nominal track.	Good ideas, not incompatible with pilot selected offsets, but don't protect same direction traffic.
Offsets are incompatible with low-RNP routes	We should be so lucky as to have such things, until then, fly offsets.
The risk isn't worth the effort	I wish it were. In recent years there have been 3 well known head-on midairs (Canada, India and Brazil), and the risk can only increase (see main text)

confined, however, to 'Remote or oceanic' airspace and to aircraft equipped with GNSS navigation. But it is obvious that risks are higher over land due to greater traffic density and proportion of non-cruise traffic. Over land, DME/DME gives highly repeatable results so that two FMS equipped aircraft can be expected to overlap, as we all know; both the BA and the KAL 747 were DME/DME FMS equipped. Serious thought needs to be given widening the application of offset procedures. The AAIB's recommendations apply to all RVSM airspace.

'Flying on the right' is good, but it isn't enough to protect against both opposite and same direction traffic, we need random offsets too. But we cannot apply random offsets of more than a mile without blundering into nearby routes…. One simple modification to the most common FMS solves the problem of integrating offsets in congested airspace: the ability to 'micro' offset in steps of 0.1 nm. Most current FMS limits offsets to whole mile values. The change would increase the number of random choices available by 10 without eroding separation standards, see fig 2. Such a change would not be difficult; it should be added to future systems and be available to present units through upgrades. In fact the B737NG can already do this, and there are lots of them around.

After the Uberlingen mid air, there was immediate action in ICAO (mandating adherence to RAs). The silence after the Brazilian accident is therefore deafening and puzzling.

Action:

- Lobby your union, employer, and regulator to persuade ICAO to widen the scope of the offset rule beyond the oceans, and remove the Annex 2 requirement to fly the centreline, and to specify future fit FMS capable of micro offsets.
- If you are on a two way airway, fly on the right, no more than 1 mile.
- If you can randomly apply offsets in 0.1 nm steps, do so on both one and two way routes.

A view of Flight Data Monitoring

by Simon Searle

Although this very effective safety tool has now been around for some years, Flight Data Monitoring (FDM) has only come into general use since it became an ICAO standard on the 1st January 2005 and then only for aircraft with a max TOW of over 27 tonnes. It is however interesting to note that some states have declared a difference, delaying its introduction, in some cases indefinitely.

Unfortunately the weight limitation means that a number of operations fall through the net, with data not being captured on smaller aircraft. Experience also shows that some operators with mixed fleets tend only to include in their programmes those mandatory aircraft that they operate. This decision is quite clearly made on financial grounds. The direct effect of this has to be that operators are forced to expect different standards on their various fleets. Having said that it is also interesting to note that if an operator is a member of IATA or even wishes to join a code share with such a member, the dreaded IOSA (IATA Operational Safety Audit) will very probably come into force and within that there is a requirement for some parallel form of monitoring for smaller aircraft to be put in place. The following statement from the IOSA checklist demonstrates this very clearly:

"ORG 3.3.13 The Operator shall have a flight data analysis programme that is non-punitive and contains adequate safeguards to protect data sources. The programme shall include either:

i) a systematic download and analysis of electronically recorded aircraft flight data, or

ii) a systematic acquisition, correlation and analysis of flight information derived from a combination of some or all of the following sources:

a) aircraft FDR readouts;

b) confidential flight and cabin crew operational safety reports;

c) flight and cabin crew interviews;

d) quality assurance findings;

e) flight and cabin crew evaluation reports;

f) aircraft engineering and maintenance reports.

(Note: this is a Parallel Conformity Option effective until 31 December 2008.)"

At this point it should be added that the probability of this expiry date being extended or withdrawn completely is understood to be high.

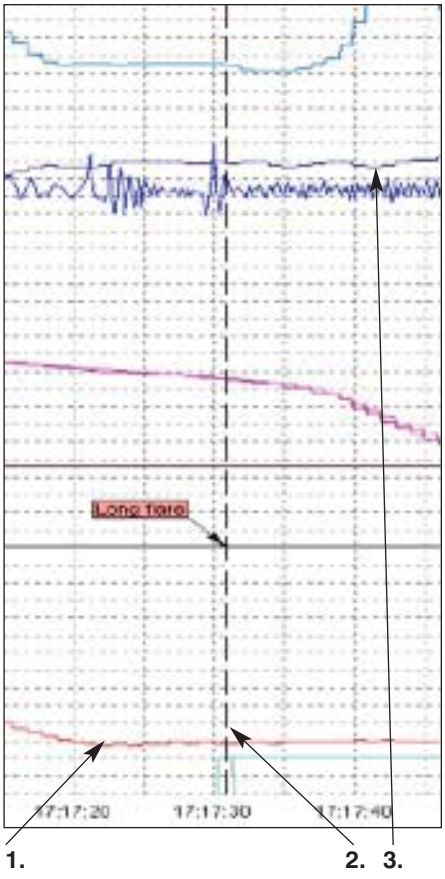
Certainly the cost of this programme to an operator is not cheap both in man hours and financial terms, but in the terms of safety the benefits are enormous. The matter of man hours can be overcome by outsourcing the analysis of data to a third party. It has to be said that there are advantages and disadvantages to both an in-house and an outsourced programme. However at the end of the day the final analysis and resolution of an event must lay with the operator.

Then there are the problems of ensuring pilot fraternity are dealt with fairly and in accordance with the requirement of ICAO to ensure the programme is non-punitive and data sources are adequately safeguarded. Where the pilot force is under the umbrella of a union, terms for the operation of the programme need to be agreed with them. Even if no such umbrella exists there is still a need to gain the trust of the pilots and reduce their concern over this "spy in the sky". Best practice indicates that some effective form of protocol is necessary.

Apart from observing whether or not pilots are operating an aircraft in accordance with company Standard Operating Procedures (SOPs), the programme can be very useful for deciding if those SOPs are actually achieving their aim or if changes are needed. A particular area that this can be useful is diminishing the chances of rushed and /or unstable approaches.

The attached chart shows how the programme demonstrated a particular landing technique which resulted in a long delay between the main wheels touching the ground and reverse thrust being available and selected.

Arrows 1 and 2 respectively show where the main wheels touched down and the squat switch made. Arrow 3 indicates where the reverse thrust starts to increase. This indicates an elapsed time of some 16 seconds. When this is converted into distance at the landing IAS of around 122kts, it takes little imagination to realise how much runway is being taken up.



Drinking and Flying just don't mix

Better understanding of how many units of alcohol you consume before you fly and the time needed for these to clear from your system, could put an end to headlines proclaiming "Drunk pilot arrested in cockpit", and increase not only safety in the aviation industry, but also the perception of flying as one of the safest modes of passenger transport.

As passengers recoil in horror from news of pilots being drunk on duty, if pilots, their managers and all aviation professionals could get up to speed and be reminded about the fundamentals of how alcohol affects the system, these incidents would be thin on the ground, and perhaps even disappear.

All professionals within the aviation industry are aware of the need to abstain from drinking prior to going anywhere near an aircraft, but it is naive to believe that it doesn't happen. The problem with having a drink the day or night before you fly is that residual levels of alcohol will still remain in the body's system, and you will not be alcohol free. Waking up without a hangover and feeling completely fine and capable the next morning does not mean you are safe to fly, bearing in mind the low alcohol limit for pilots of 9 microgrammes per 100ml of breath. With this figure in mind, any alcohol consumed that remains in the body without clearing can put pilots at risk from being impaired through drink and hence subject to arrest if caught. And if you are stopped while driving to the airport with last night's residual alcohol still in your system, the police can convict you of a DR 20 offence of driving or attempting to drive while unfit through drink.

Any airport or aviation employees, including airside and all ground staff, who fly and drive as part of their work can also be subject to the problems of alcohol abuse, if they drink in an airport bar before they fly, or drink on an aircraft with their meal. Anyone who flies and intends to hire or collect a vehicle is at risk, especially employees who fly to countries where the alcohol limit is even lower, as in Sweden. If you are a flight or ground employee from overseas, the complications can be increased if you are not used to UK driving laws and customs, specifically driving on the left-hand side of the road for the first time. An average of 100,000 people are arrested each year in the UK for drink driving, and this figure could be drastically cut if the drivers concerned knew how many units of alcohol they had consumed before getting behind the wheel of their cars.

Making sense of the many problems and providing solutions for possible alcohol misuse, especially when consumed prior to entering the workplace, has been the mission of Roger Singer of Avoidd. He runs courses for companies and their employees who want to get the facts on alcohol and even drug misuse in the workplace with regards to current legislation, and has worked with many blue-chip clients including British Airways, First Great Western, Corgi, the Royal Society for the Prevention of Accidents (ROSPA), Tappins Coaches, the British Army and Southern Electric. Feedback from his courses has been universally positive, with a Drink Driver awareness course for Corgi's 220 drivers producing comments including: "I never realised how easy it was to drink-drive, now I know how not to", and Tappins Coaches Fleet Risk Manager David Walker said: "The sessions were enjoyed by all, some very experienced drivers simply didn't realise just how little it takes to be over the limit and, more relevant, how long it takes to return to zero."

Roger Singer runs courses all-year round, and airport, aviation and aerospace managers and employees who would like further details can contact him on Tel: 0870 609 4562. His company's Avoidd website is at www.drinkdrive.co.uk

The United Kingdom Flight Safety Committee

Chief Executive

Applications are invited from experienced safety professionals for the immediate appointment to this post. The successful applicant will preferably have a substantial career in safety.

The office is located at Fairoaks Airport, Surrey, where a small but dedicated team supports the aviation industry in a wide variety of tasks.

The successful applicant will:

- manage and motivate a small team
- manage the annual budget
- need to travel and represent the UKFSC worldwide

The successful applicant will also need to have:

- a working knowledge of IT
- outstanding people skills and confidence in speaking to large groups
- a command of the English language
- good writing skills and be able to edit our magazine
- the ability to plan and manage meetings, events and seminars

Interested parties are to e-mail their application together with their Curriculum Vitae to: The Chairman, UK Flight Safety Committee at admin@ukfsc.co.uk. The final selection interviews will be notified and held at Fairoaks Airport.

New UK legislation and criminal penalties for air carriers

by Sue Barham – Barlow Lyde & Gilbert

The Civil Aviation (Provision of Information to Passengers) Regulations 2006: criminal penalties for failure to identify operating carrier: These regulations came into force in the UK on 16 January 2007 and contain enforcement provisions in relation to EC Regulation 2111/2005 on the establishment of a list of air carriers banned from operating within the EU and on informing passengers of the identity of the operating carrier.

The regulations in fact have nothing to do with the EU carrier blacklist. Instead, they focus on the second aspect of EC Regulation 2111/2005 relating to the obligations of "air carriage contractors", i.e. airlines, tour operators and potentially also travel agents to inform passengers as to the identity of the carrier who is to operate air carriage. Under the EC Regulation, the air carriage contractor is obliged on reservation to inform the passenger of the identity of the air carrier which will operate the flight; where the identity is not known at the time of reservation (which will often be the case with the sale of package holidays where the airlines to be utilised may not be confirmed for some time), the passenger must be informed as soon as the identity is known.

The EC Regulation contains standard provisions requiring Member States to establish "effective, proportionate and dissuasive penalties" for infringement and, in line with common practice in the implementation in the UK of enforcement measures, the UK statutory instrument creates criminal offences for failure of air carriage contractors to meet these information requirements. That in itself is by no means unusual though those involved in selling air carriage should also note that the UK regulations provide for the possibility of individual criminal liability on the part of any director, manager, secretary or similar officer to whose neglect the failure to provide the required information may be attributable or who is proved to have consented to or connived in the commission of the offence. Both companies and individuals face a fine if prosecuted and convicted.

The Airport Slot Allocation Regulations 2006: These regulations came into effect on 1 January 2007 and replace the Airport Slot Allocation Regulations 1993.

Airport slot allocation is the subject of EC legislation. EC Regulation 793/2004 on common rules for the allocation of slots at Community airports made significant amendments to the original slots regulation (No. 95/93) and, with this new UK statutory instrument, English law now catches up with the applicable EC regulatory provisions which have in any event been in force for some time. Of particular note is the fact that the new statutory instrument maintains the position that any air carrier which transfer slots in breach of the EC Regulation is guilty of a criminal offence and liable to a fine; criminal sanctions can also apply to any director, manager or officer of the air carrier who is implicated in the commission of the offence. Such individuals in theory could face imprisonment for involvement in unlawful transfer of slots though that ultimate sanction is perhaps rather unlikely.

The general view is that slots are not assets of the carrier and there are significant restrictions on carriers' ability to deal in slots. A slot transfer is lawful only if it is from one route or type of service to another operated by the same air carrier; or within the same corporate group; as part of an acquisition of the capital of an air carrier; in a total or partial takeover; or if it is a "one for one" exchange between air carriers - the latter being the mechanism by which slots can in effect be "traded" but only on a swap basis from one carrier to another.

UK FLIGHT SAFETY COMMITTEE

TECHNICAL INNOVATION AND HUMAN ERROR REDUCTION

Annual Seminar 2007

1st/2nd October 2007
The Radisson Edwardian Hotel Heathrow

SEMINAR OBJECTIVE

The continuing growth in technical innovation has without doubt helped to reduce the number of accidents. However, some of these developments have introduced unexpected challenges for the operators. The formulation of good procedures helps to mitigate these challenges, but there is a consensus within the industry that major difficulties still exist. This Seminar will highlight the problems encountered and propose strategies for the future.

PROGRAMME

1st October 2007

2000hrs Seminar Dinner

After Dinner Speaker - Simon Phippard - Rolls Royce

2nd October 2007

0800 - 0900	Registration
Session Chairman - Capt. Tony Wride - Monarch Airlines	
0900 - 0910	Welcoming Introduction **- Capt. Robin Berry – Chairman - UKFSC**
0910 - 0945	Keynote Speech - **Dr Kathy Abbott – FAA**
0945 - 1020	Future ATM/Single European Sky - **Mark Green – GATCO**
1020 - 1040	*Refreshment Break*
1040 - 1115	R-NAV, B-RNAV, P-RNAV - **Andy Shand – British Airways**
1115 - 1150	Passenger Entertainment in the 21st Century - **Stuart Seeney – Panasonic Avionics Corp.**
1150 - 1225	Flying the Emb195 - **Capt. Bob Horton – flybe.**
1225 - 1255	*Questions*
1255 - 1400	Lunch
1400 - 1435	The Complexity of Unmanned Aerial Vehicles (UAVs) - **Cdr Paul Brundle, RN Defence Aviation Safety Centre**
1435 - 1450	*Comfort Break*
1450 - 1525	Airbus - The Way Forward - **Peter Potaki - Airbus**
1525 - 1600	Maintenance Human Factors - **Howard Leach - RAeS**
1600 - 1630	Questions
1630 - 1645	Closing Speech - **Capt. Robin Berry – Chairman - UKFSC**

SEMINAR INFORMATION

- **Hotel Accommodation**

  Hotel accommodation is not included in the Seminar Registration Fee. A rate of £147 (including breakfast & VAT) has been negotiated with the Radisson Edwardian Hotel (valid only until 30th August). If you require accommodation please contact the hotel directly on Tel. +44 (0) 20 8759 6311 and quote Block Booking Code 1001 UKF when making your reservation.

- **Seminar Dinner**

  Dress for Dinner – Black Tie

- **Cancellations/Refunds**

  Cancellations received prior to 25th August 2007 will be refunded 50% of registration fee. Refunds after this date will not be given.

If you are unable to attend why not nominate a colleague to take your place.
If so, please advise the UKFSC Fairoaks office of any changes prior to the Seminar.

SEMINAR REGISTRATION FORM

Please complete in full one registration form per person. (Photocopies accepted)

(Please print clearly)

First Name:	Surname:
Company:	Job Title:
Address:	
Tel No:	Fax No:
e-mail:	

PAYMENT INFORMATION

Seminar Fee: UKFSC Member £200 ☐ Non-UKFSC Member £250 ☐

This includes the Seminar Dinner on the evening of 1st October, lunch, refreshments and car parking.
This does not include hotel accommodation - please see 'Seminar Information'.

Payment is by Sterling cheque only. No credit cards are accepted. Bank transfer is available, details on request (please note an additional cost of £6 will be added to cover handing charges). The UKFSC is not VAT Registered.

Sterling cheques should be made payable to UK Flight Safety Committee.

☐ Do you plan to attend the Seminar Dinner on Monday 1st October? ☐ Yes ☐ No

☐ Do you require a Vegetarian alternative? ☐ Yes ☐ No

Please send your completed registration form with your cheque to: UK Flight Safety Committee, Graham Suite, Fairoaks Airport, Chobham, Woking, Surrey GU24 8HX
Tel: +44 (0)1276 855193 Fax: +44 (0)1276 855195 email: admin@ukfsc.co.uk
Confirmation will be sent to you on receipt of your Registration Form and payment.

UK FLIGHT SAFETY COMMITTEE

TECHNICAL INNOVATION AND HUMAN ERROR REDUCTION

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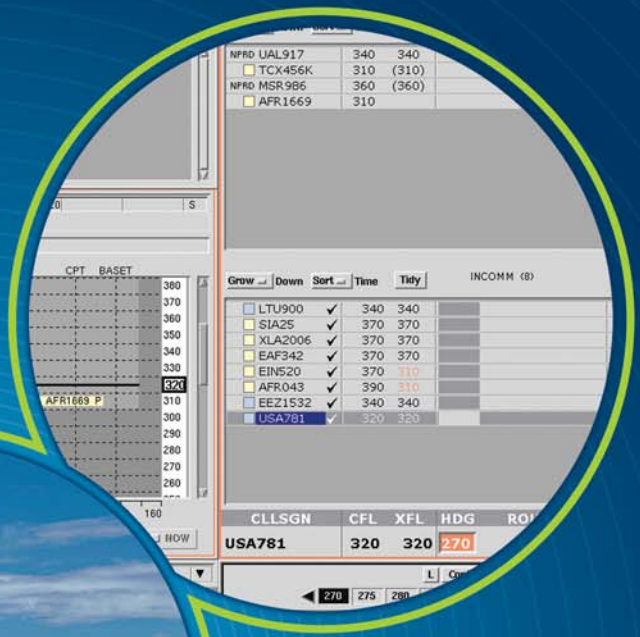

1st/2nd October

The Radisson Edwardian Hotel
Heathrow