focus

ON COMMERCIAL AVIATION SAFETY

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Front Cover Picture: Sikorsky S61 in the Livery of British International

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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Ground Damage – Why No Management Interest?

Recently the Flight Safety Foundation released figures on the cost of damage to aircraft arrived at during their project into "Ramp Damage". They estimate that the global cost is in the region of US$ 6 million a year. This figure seems believable as two years ago the insurance industry estimated that the uninsured ramp damage to aircraft was in the region of US$ 4 million.

Why is it then that few air operators have a method of recording the cost of this damage and why do they not have a robust programme for preventing it?

Most air operators use third party contractors to carry out their aircraft servicing. Gone are the days when the air operator's personnel handled all the servicing of the aircraft. Claims are made that it is more cost effective to use third party organization as it is not the air operators "core business".

Is it that CEO is too busy worrying about profits, traditional cost cutting and shareholder dividend to consider looking at less traditional areas where costs can be cut?

Is it because the accountants have no mechanism or process for costing such incidents? Do they see costing systems as too much work or too difficult to design and implement? Perhaps this is not a traditional accounting function and therefore someone else's problem.

Is it because the contracts manager has been given a mandate to secure contracts at the lowest possible price and this is done irrespective of the quality of the service? Perhaps he has a cost saving "target" to achieve. The contracts manager seldom ever sees the poor quality of service provided and never sees the damage caused to the aircraft. Repairs and aircraft serviceability is a maintenance or operations problem.

Managers are appointed to supervise staff and tasks and yet few air operators have a person responsible for the supervision and management of the ramp servicing function. Third party contractors do their servicing task without supervision, even though the air operator is responsible for the conduct and safety of these services.

It is in the interest of all operators to reduce the amount of damage caused and at the shame time improve their profitability and on time performance.

To implement strategies to reduce these uninsured losses operators could;

- Implement a ramp damage costing system.
- Improve communication between contracts manager, the quality and safety department and the accounts department.
- Review the balance between contract price and quality of service.
- Review the terms of reference of the contracts manager.
- Improve the contract terms with service providers to include penalties for accidental damage.
- Ensure service providers train their staff properly.
- Implement a vigorous ramp safety audit programme particularly in the area of vehicles in proximity to aircraft.

A successful ramp safety strategy would;

- reduce repair costs and improve on time departure rates
- reduce the indirect cost due to delays (a/c leasing, hotel accommodation, meals, etc)
- improve customer satisfaction and Company image.
- improve profitability.

Ramp damage is a management problem that erodes company profits!

Chairman's Column

Communication is more than just an Art Form

From cradle to grave we spend our lives communicating in some form or another. The moment we are born we start to make our feelings and desires felt (ask any mother!) We develop our own techniques to get what we want and when we want it using language, facial expressions and gestures. By the time we finish academic work and move into our chosen profession we will have our own unique style; this can make us leaders or followers depending on our brand of communication.

In the aviation industry, communication began from day one. In 1783, Pilatre de Rozier, a science teacher, and the Marquis d'Arlandes, an infantry officer, became the first human air travellers when, in a hot-air balloon, they flew for 9 km over Paris, As soon as two people began flying together, decisions were made, some democratic, some not so democratic! Add other crew members, engineers, ATC and all the many others who help us to operate means that at some stage we all need to talk.

The tragic consequences of not communicating were brought home to us in the UK with the crash of the Trident out of London Heathrow in June 1972. During the investigation it was found that members of the flight deck were doing little in the way of communicating. This probably led to a simple mistake which caused the accident. The US had found the same problems and Cockpit Resource Management (CRM) was born. It was quickly realised that all aircrew needed to be involved and the 'C' became 'Crew'. As the process of CRM developed, its uses were seen in all parts of the industry (and other industries too) and 'Company Resource Management' has now evolved.

Standard Operating Procedures (SOPs) have been developed so that, not only do we operate to a safe and acceptable standard, but also they are something to fall back on when all around is failing and the adrenalin is flowing. It is also comforting to know that whoever is with you will be working to the same procedures, even if you have never met!

But this is not always enough, and situations may arise where questioning the way of working may be necessary – this is a fundamental of CRM. However, CRM is not intended to be an excuse for the 'follower' to contradict and overrule the 'leader'. The basic intention of CRM is to allow interaction of ideas between the team so that the manager (in our case the captain) can make a reasoned judgement based on all the information and comments made to them. It will always be the case that some situations demand an autocratic solution, but perhaps CRM should endeavour to make captains 'benevolent' autocrats. In other words, be aware of others inputs and act for the greater good! Do we need to get on really well to make it work? Well it helps, but it is our fundamental attitude that is the key to good communication.

Unfortunately life is never this simple! So what is the point of this Chairman Column? The UKFSC seminar this year is looking at communication at all levels. Come and listen to a few different ideas of how we can make life better. The large majority of people in the aviation industry are getting paid for a job they enjoy doing. With a little bit of thought, we can make it even safer as well as even more enjoyable!

by Stuart McKie-Smith
flybe.

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

Adherence to Standard Operating Procedures

An effective strategy in accident prevention
IATA Human Factors Working Group

Introduction

Non adherence to Standard Operating Procedures (SOPs) has been identified as a key factor in many accident scenarios. IATA Human Factors Working Group contributes to the industry safety effort by publishing this report on "Adherence to Standard Operating procedures" (SOPs). This paper is based on:

- Transport Canada's "Human Factors for Aviation-Advanced handbook" on why Standard Operating Procedures are critical to safe flight (study reference TP12864,1996);
- Research by Degani and Wiener on the Philosophy, Policy, Procedures and Practices of an airline and how they affect the implementation of the standard operating procedures in line flight; (study reference-"On the Design of Flight-Deck Procedures", NASA Contractor Report 177642, June 1994)
- The IATA Safety record (Jet) 1994 which encompasses the Boeing Commercial Airplanes' Accident Prevention Strategies (1992) which clearly link "flying pilot adherence to procedure" and aircraft safety;and
- On an example from a major airline which clearly documents the real life systematic problems in implementing and maintaining Cockpit Discipline and Standard Operating Procedures in a large airline.

The report is written for upper airline management, standards and training and the line pilots who all must interface to support the adherence to safe operating practices. The first step is to create a better understanding of the Human Factors involved in the creation, implementation and application of standard operating procedures. Second, airline management must review its standard operating procedures in the light of these Human Factors issues to see if there are inconsistencies in their operations and eliminate them. Finally, both the line pilot and the training and checking departments must analyze the actual practice, that occur. For the line pilot this would take the form of a self and crew appraisal, the airliner would need to develop a more precise analysis tool that would highlight deviations from standard operating procedures on the line and in the stimulator. Some good examples are: Line Operation Safety Audit program (LOSA) from University of Texas, Procedure Event Analysis Tool (PEAT) from Boeing, and Line Operations Monitoring System (LOMS) from Airbus (all these programs are designed in cooperation with airlines). The root cause of the deviation would then be identified and finally a remedy would have to be put in effect.

Airlines need to implement an analysis and feedback tool (such as the British Airways Flight Crew incident report designed with Human Factors and markers and several other internal reporting systems or Air France Flight Data Monitoring program) so that their crews can give the airline data on where and why line operations are different from the "standard" set by management. This analysis needs to be implemented as a matter of routine, before incidents occur.

Also flight data recorder (FDR) technical data (actual line practices) and line oriented flight training scenarios (LOFT) need to be combined into a matrix to capture and measure what really happens in normal and emergency conditions. Thus, the cause of the problem of deviation from SOPs could be ascertained. The root cause(s) could then be identified more easily and the steps to remedy the deviation(s) taken. The Boeing Accident prevention Strategies approach to accidents (adopted by IATA) cites that pilot non-adherence to SOPs and other non-compliance with procedures were evident in (more than 40% of all accidents studied. The question of why the procedures weren't followed can be called a lack of discipline on the part of the operating crew or a more realistic and systemic analysis can be taken. The IATA Human Factors Working Group sees the problem as having its roots in surrounding operational circumstances and systemic causes.

For crews to support and adhere to SOPs there must be a number of precedents in place at the training and standards department at their airline.

Cockpit Discipline & Standard Operating Procedures

The intertwined concepts that are essential for the development of an effective crew are cockpit discipline and standard operating procedures, including and understanding of the Human Factors issues involved in designing, writing and applying these in training and in actual flight.

Adherence to Cockpit Discipline is preceded by and the result of:

1) Knowledge (the what)

2) Skill (the how)

3) Attitude (the why)

4) Commitment (the adherence)

Adherence to SOPs are preceded by and the result of:

1) Philosophy (the beliefs of how the business of the airline should be conducted)

2) Policy (how the philosophy will be implemented)

3) Procedures (the training and monitoring policy)

4) Practices (the actual pilots performance)

Knowledge (the what)

The Flight Operations Training Department should filter the knowledge required to safely and effectively operate the aircraft in the particular airline environment into building blocks of instruction proceeding in a sequence from vital through necessary to important.

This division of need to know "how the system works" is essential in the complex aircraft and operational knowledge and the rationale behind an SOP is lost in the deluge of information that pilots are expected to absorb during a computer based training course. Training departments should clearly identify what a pilot needs to know and why it is applicable to the operation of the aircraft.

Skill Training (the how)

Clear performance objectives must be predetermined so that both the pilot and instructor can measure the progress toward the required performance. Where an instructor sees a number of his students having difficulty with a procedure he should be encouraged to report his concern to operational standard departments and/or the flight safety department. A formal program for feedback from check airmen could greatly support this process.

All instructors must be standardized in how to teach the procedure in the same manner so that there is standardization across the airlines' crews. Also the checking department must reinforce the same standards. Pilots are sometimes caught in the position where they are taught one procedure during training only to be presented with another during line indoctrination. This represents a clear failure of the training system. A company culture that fosters consistency between the training, checking and line adherence to SOPs is one of the reasons that some airlines safety records are better than others.

Attitude (the why)

An airline must have a philosophy, policies and procedures that put safety into the proper context by budgeting adequate resources to training, developing SOPs and supporting its Flight Safety Department before a safety culture will develop. Lip service to safety or a lack of commitment to safety is easily identified by any end-user population with the resulting degradation in standards. The operating crews must be listened to and their concerns addressed. For instance, if crews point out that the procedures such as a full cockpit check before each flight were developed when there was adequate turn around times and then shorter turns were implemented then it is the responsibility of the Standards Department to modify the SOP to match the new reality. Only by responding to input from line crews will they become an active part of the "team" in fact as well as in theory. This contention could be backed up by looking at a few major airlines that entered a cycle of reducing training, having their crews lose faith in their commitment to safety, having numerous safety breakdowns and eventually going bankrupt.

Commitment (the adherence)

Adherence to SOPs is the outcome of observing the three previous precedents: the will to adhere to the standards set by the company and the culture within that airline's crews to always operate by these policies and procedures. Thus adherence to SOPs is the result of consistent, well developed knowledge, skills, attitudes and procedures being instilled, maintained and supported among the pilot group.

For example, airlines require crews to perform cockpit crew briefings related to some phase of flight. If the crew understands that this is done because the review will refresh the procedure in their minds (knowledge), they have been trained to actually perform the actions in the flight deck (skill), and if supported by the company culture the operating crews will do this out of respect for the set standards (attitude) and as a matter of rote (adherence).

Standard Operating Procedures

Standard Operating Procedures (SOPs) are a corporate document that captures the company's philosophy of running the flying part of the business. It is a set of procedures that personnel should follow to ensure the safe operation of all flights. It is important that each organization has a set of SOPs and is committed to having them followed: SOPs indicate the operational behaviours that management expects from pilots.

Analysis of aviation accidents indicates that a large proportion may have been averted if Standard Operating Procedures (SOPs) had been followed. This means that, in some cases, pilots are deviating from procedures in ways that contribute to having an accident but in other cases, the SOPs were inappropriate, which can contribute to an accident. An inappropriate or missing SOP is a latent problem occurring at the line management level. Either way, there is no doubt that following well established procedures reduces the chances of having an accident.

The following list from Transport Canada's Human Factors for Aviation (TP 12864, 1996) highlights the basis and the most compelling reasons for having and enforcing the strict adherence to SOPs. An airline's safety culture should consider these building blocks on which the standards and training department develops its policies and procedures. The airline's pilots are more likely to practise these procedures if they are well thought out and are consistent throughout the airline's fleet.

- **SOPs create a logical ORDER.** A repeatable sequence or rhythm is established. All items can be covered (dealt with) in a logical manner. If the sequence is interrupted for any reason, it is easier to pick up the sequence where you left off.

  For example, one item in the SOP may be: All checks are done in the same sequence. This then translates into an operational procedure, such as all ramp checks are done from top to bottom and left to right.

- **SOPs improve COMMUNICATION.** Use of standard phraseology keeps misunderstandings to a minimum.

  The SOP may state: Standard calls will be used.

  Example: one jet has flap position 2~, 5~, 15~, 25~, and 30~. The flaps were at 15~ and the pilot flying (PF) called for "Flaps two five." The pilot not flying (PNF) heard "Flap to Five" thus retracting the flaps creating a hazardous situation (possible loss of control). The standard call is now "Flaps twenty-five" which avoids any ambiguity.

- **SOPs support better ERROR MANAGEMENT in the cockpit.** SOPs offer to the crew better opportunities to detect and correct errors. A SOP item may be: Any irreversible item must be confirmed by the other pilot. This leads to the requirement, for example that any irreversible action or item that will shut down an engine, such as movement

of fuel cut-off levels, and disconnection of a generator; must be confirmed by the other pilot. In newest generation aircraft, entering data in the flight computer also falls under this item, as recent accident experience suggests. In other words, SOP's create a greater margin of safety.

- **SOPs support a better WORKLOAD MANAGEMENT.** SOPs specify duties that each pilot is responsible for, thus saving mental resources and ensuring good WORKLOAD MANAGEMENT.

  AN SOP may be: Review memorized items of emergency drills before each flight cycle. This would lead to the following verbal statement said out loud before take-off:

  Captain: "In the event of a rejected take-off, I will call out "STOP", close the throttles, extend the speed brakes, and...."

  First Officer: "I will apply slight forward pressure on the control column. Select idle reverse, call operating or no reverse on #__ engine."

  Captain: "1 will ....." And so on.

- **SOPs specify PRIORITIZATION of duties.** For example, aviate, navigate, and communicate. This could lead to the following procedural requirement when given a hold. The pilot not flying will select, check and set up the hold in the FMS while the pilot flying concentrates on flying. PNF announces the type of hold entry. The PF will clearly state "You have control" and will confirm the entry. He or she will then state "I have control." and return to flying the aircraft. The PNF will communicate to ATC when they have entered the hold.

- **SOPs raise SITUATIONAL AWARENESS.** Reviewing what you are about to do keeps both pilots equally aware of what pilots flying is planning on doing.
  A SOP item may be: Before each take-off, descent or approach, the flying pilot flying will review the speeds, altitudes and route to be flown. For example, V1, V2, Vr and the standard instrument departure (SID), including the altitude cleared to, will be reviewed before each takeoff.

- **SOPs improve CROSS-CHECKING** and monitoring by the other crew members. Unintentional deviations from standard operating procedures are more easily identified if SOPs are adhered to.
  A SOP item may be: SOP's *will be adhered to. Any deviations from SOP's will be raised by the pilot not flying.* For example, any autopilot mode change will be announced by reading the Flight Mode Announciator (FMA or PAM) display. This alerts the other pilot that you are aware of the new AP status and that you have checked it. If the call is not made by the pilot flying, the other pilot will make the call to alert the pilot flying.

- **SOPs set LIMITS or acceptance tolerances.**
  That is, they impose a safe envelope which must be adhered to.
  AN SOP item may be. *An approach must be stabilized by one thousand feet above the ground or a missed approach must be initiated.* This specifies that the aircraft must be configured for landing and altitude and airspeed must be within the specified limits or tolerances.

- **SOPs allow an inter-changeable crew composition.** TEAMWORK is standardized so that any crew combination will know what to do and to expect even if crew members have never flown together before.

- **SOPs facilitate CONFLICT RESOLUTION.** The amount of conflict over the best procedure to use, for example, will be reduced by SOPs that layout the company's policy regarding the procedure.

Fundamentally, SOPs indicate to pilots the manner in which operational management wants the various piloting tasks to be performed. Consistent and logical procedures provide guidance to ensure the logical, efficient, safe and predictable conduct of flight operations; while evidence from accidents involving deviation from SOPs suggest that inconsistent and illogical procedures lead flight crews to deviate from them.

Fundamental as they are, procedures are not inherent to the equipment; that is to say, they are not hardware/software-dependent exclusively. They depend also on the operational environment on the people who operate them, on the corporate culture of the company they work for and on the nature of the company's operations. Procedures must be defined based on a broad concept of how an airline intends to build an operation. There is a link between procedures and the concept of the operation; and such link was researched by Degani and Wiener in 1994. These researchers developed a model to aid understanding this link which they called "The Four Ps of cockpit operations". *(Study reference - "On the Design of Flight-Deck Procedures".NASA Contract Report 177642, June 1994)*

The model proposes that at the strategic apex of the airline top management develops a philosophy, which is an overarching view of how they will conduct the business of the airline, including flight operations. Corporate culture is a major determinant of this philosophy, since it permeates the company.

This philosophy of operations, in combination with economic factors, public relations campaigns, and organizational changes generates policies which are broad specifications of the manner in which management expects flying training maintenance personal conduct, exercise of authority and so forth to be done. To indicate how these policies will be implemented (i.e. how these tasks should be achieved) procedures are then designed, which should as much as possible be consistent with the policies, which in turn should be consistent with the philosophy.

In brief, if procedures should be based upon a clearly stated (i.e. written, philosophy and a set of policies, then a logical and consistent set of cockpit procedures that are in accord with the policies and the philosophy can be developed, discrepancies and conflicting procedures will be easily detected, and flight crews will understand the logic behind the SOP.

The fourth component of the model is the actual practices, which is encompassing the correct execution of a procedure, deviation from a procedure or omission of a procedure. Ideally, procedures and practices should be the same, but this is not always the case. A few reasons by which pilots may deviate from established procedures include:

- Individualism;
- Complacency;
- Humour;
- Frustration;
- Overproceduralisation; and
- The procedures are inappropriate or difficult to apply.

The example of the Ground Proximity Warning System (GPWS) Policy as Instituted by a major airline, illustrates how the concept of the 4Ps lead to adapting the procedure from feed back from the real operational environment:

- **Philosophy:** It is a corporate goal to be a safe and secure airline as stated in the corporate mission and goals.
- **Policy:** In the event of a full, or partial "Pull-up" or other hard (red) warning, the following action must be taken promptly.

a) Below dominant MSA (Minimum Safe Altitude).

Announce "PULL-UP GO AROUND"
Immediately complete the pull-up manoeuvre in all circumstances.

b) At and Above MSA
Immediately assess aircraft position, altitude and vertical speed. If proximity to MSA is in doubt, take action as in a) above.

- **Procedure:** GPWS pull-up manoeuvre is described in fleet-specific manuals. Describe the call-outs by the handling pilot and the non-handling pilot procedures at below MSA and procedure above MSA; define during climb and descent in case of ambiguities and include additional operational information deemed appropriate for the crews to observe the GPWS policy.
- **Practices:** do flight crews observe the policy and follow the procedure in operational conditions?

In the GPWS example, discussed above, the airline's original policy mandated an immediate pull-up upon receipt of any GPWS warning, regardless of altitude and position of the aircraft. Operational feedback obtained through airline's internal safety information system however,

indicated that during the first calendar year after this policy was implemented, GPWS alerts had not been followed by a pull-up in 60% of occasions. This was due to a variety of reasons, including false and nuisance warnings. Of particular concern was the fact that pull-ups had not been initiated on 20% of occasions when the warnings had been genuine. An obvious discrepancy between the three first Ps and the last one – Practices - was evident The safety services of the airline determined that the reason for this discrepancy between philosophy, policy, procedures and practice centered around the unreliability of the technology which resulted in false and nuisance warnings. In some cases, warnings had been triggered at 37000 ft flying in cruise, immediately after take-off, when there were no obstacles in the flight path or in holding patterns, with other aircraft 1000 ft below the host GPWS. This feedback data and its analysis led the operator to review its GPWS policy and amend it to that included in this example, with the immediate intent of ensuring compliance with the policy on all occasions.

There are four factors which will minimise the difference between procedures and practices:

- **Compatibility,** to ensure that the procedure is logical and appropriate within the larger system within which it is operated.
- **Consistency,** to assure the line pilot that there are reasons for a given procedure, and that this reason is pervasive throughout the company,
- **Quality management,** to provide standardization and guard against non-compliance, and
- **Feedback,** to provide assurance from the real world about the finality of any individual procedure or policy.

Looking at another example of non adherence to SOPs which has its roots in a discrepancy in the Four Ps is the case of an airline where the Flight Operations philosophy was that the safest cockpit on take off was a silent one. The pilot flying would brief the speeds and initial SID procedure upon lining up on the runway. The policy from that point until the "positive rate" call only discrepancies from normal should be voiced. This procedure called the "silent cockpit" was supported by both the management and the crews. The practice on the line adhered to this SOP.

Industry standards indicated that most airlines and manufacturers had speed callouts during the take off roll (e.g. 100kts, V1 and rotate). One airline's Standards Department decided to change the procedure a number of years ago and adopt a verbal calls philosophy. However, this violated the crews' basic philosophy of safety and was not practiced by many crews. Some Captains began to brief that the SOP should be ignored. The Standards Department quickly saw the problem developing and reverted back to the previous policy thus eliminating the discrepancy.

Conclusion

The goal of management should be to promote good practices by specifying coherent procedures. The next step is to develop the tools for identifying where and why there are inconsistencies between what is supposed to be done and what is actually being done, and then to remove the discrepancies. The above will lead to a higher degree of conformity during flight operations and it will make training and checking easier, and it will enhance the overall quality of flight operations. Furthermore, it will provide a solid defence, increasing the tolerance and resistance of flight operations to human error and making it viable.

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Access to the CAA Mandatory Occurrence Reports

The CAA's overall objective in operating an Occurrence Reporting Scheme is to use the information to improve flight safety and not to attribute blame. The CAA's staff is well aware of the potential damage that could be caused to the MOR Scheme's integrity. We do not allow representatives of the media access to the database and have no intention of changing this policy. As I explained at the Flight Safety Committee's meeting immediately following the article, the newspaper obtained their information from a manual sift through safety summaries widely available throughout industry. Certainly no access was requested, or would have been granted, to the database. So concerned was the CAA that immediately after the newspaper article had appeared the journalist concerned was invited to Gatwick to discuss the matter with the Group Director Safety Regulation and Senior Managers where our points regarding flight safety reporting were robustly made and accepted.

Military Interception of Civil Aircraft

by Sqn Ldr Gary Coleman MRAeS RAF, Strike Command Flight Safety

The events on Sep 11th 2001 were "perpetrated by fanatics who are utterly indifferent to the sanctity of human life, and we, the democracies of this world, are going to have to come together to fight it and eradicate this evil completely from our world" (PM Tony Blair). I will remember that day for the rest of my life. Having just landed from a 1 v 1 air combat sortie, whilst serving as an instructor on the Tornado F3 Operational Conversion Unit, I walked into the crewroom to be greeted with the sight on TV of 1 of the Twin Towers burning. I sat down and watched with interest, with thoughts like "how on earth did that happen?" running through my mind. Within minutes the second aircraft hit the other Tower and shortly after, the Squadron Commander came in and said " We're arming up the jets, Gazzer, go get the crypto sorted…" (I was the cryptographic material custodian). Although no attack came, the events of 9/11 increased the UK Air Defence posture and this posture endures today. Armed aircraft are held on Quick Reaction Alert (QRA) ready to respond to any airborne security threat to the UK. This position is replicated throughout most European Nations.

Outside of UK airspace there have been many intercepts of Commercial Air Transport (CAT) flights, some of which have been highlighted by the media. In all cases the QRA aircraft have been scrambled because of concerns that the CAT may have been hi-jacked. Clearly it is not appropriate for the Ministry of Defence to comment on other national air-policing procedures, but you may find the following generic details useful:

Under what basis does the military conduct intercepts? At present each State enjoys exclusive sovereignty over the airspace above its territory and territorial sea. Consequently, no one may fly through its airspace without prior permission or authorisation by the Sovereign State. In addition, under ICAO Article 9, each contracting State reserves the right, for reasons of military necessity or public safety, to restrict or prohibit aircraft from flying over certain areas of its territory. Finally, the rights to self-defence are reserved under Article 51 of the UN Charter.

What are they protecting? The population and infrastructure of the State.

What triggers an intercept? Each State will react according to its own interpretation of the risk being faced. A trigger could be a single event or a combination of small errors. Historically actions resulting in a scramble of QRA aircraft have been:

- Unauthorised deviation from the cleared flight profile.
- Loss of radio contact, particularly if associated with a flight profile deviation.
- Unauthorised SSR Transponder code changes or extended use of Ident.
- Use of non-standard phraseology by the crew or other actions that could be construed as a covert attempt to alert agencies to a situation on board.
- Notification of a threat from official or non-official sources.

Some nations, such as France, have a very overt reaction policy. For example, scrambling against any aircraft failing to establish 2-way communication as it

enters their airspace. Having scrambled they will often complete the intercept, even though communications may subsequently have been re-established. In contrast, the UK has adopted a slightly less overt but reactive threat-based Air Defence posture which is constantly changing to meet the perceived threat to UK airspace and the homeland. Consequently, in UK airspace, it is highly unlikely that CAT aircrew will see UK QRA aircraft at close quarters unless all other methods of confirming the integrity of the flight deck have been exhausted. To that end, if you are intercepted in UK airspace, you are advised to take the event very seriously.

What should you do if you are intercepted?

- Follow the procedures and signals laid down in AIPs in ENR1.12
- Report the interception to the ATSU and try to contact the interceptor or its control agency on 121.5MHz or 243.0 MHz.
- Comply with all instructions. Non-compliance will only give the agencies on the ground cause for greater concern.

Is it safe? British military aircrew that conduct air-policing duties are well trained; in the RAF this can take over 3 years. Routine air-policing training utilises the RAF's own large aircraft assets; CAT are never used for routine training unless the permission of the airline operating company has been secured. The intercepting aircraft will not trigger the TCAS and will take responsibility to avoid the aircraft being intercepted. The only time the collision avoidance responsibility is reversed is when the interceptor gives the command signal "You have been intercepted. Follow me." Responsibility does not pass, however, until the intercepted aircraft responds with the signal for "Understood. Will comply." These signals are detailed within AIP ENR1.12.

What should you do if you believe the interceptor is acting in an unsafe manner? The incident should be treated as any other aerial confliction. However, be aware that the interceptor could construe the manoeuvring of your aircraft, so as to avoid what you perceive as a risk of collision, as non-compliance. It is, therefore, essential that you contact the ATSU, intercepting aircraft or its controlling agency on the in-use frequency or 121.5 MHz or 243.0 MHz immediately. Once the situation is resolved, report an Airprox to the ATSU currently providing your service and on landing fill out an Airprox report form from the national agency in whose airspace you are flying. In being intercepted you should note the prescribed separation minima that you were flying could be eroded. For example, the RAF minima for visual identification of an intercepted aircraft are 200 ft by day/VMC and 600ft by night/IMC.

How do I report an Airprox in another country? The countries AIP section ENR1.14 should cover the Airprox procedure.

Conclusion. The interception of civil aircraft by Sovereign States is usually only conducted when required under the State's 'duty of care'. Whilst it might seem unnecessary and a source of annoyance to the aircraft involved, the intercept will almost certainly have been triggered due to a belief that, from observed events or information received, the integrity of the cockpit may have been compromised. By way of a summary, I leave you with the following few recommendations:

Key Recommendations for Pilots and Aircraft Operators Operating in UK Airspace

In order to ensure that any event is handled in the most appropriate manner:

- Be aware of potential situations such as loss of two-way communications or inadvertent A7500 selection that may indicate to ATC a potential hijack or security threat to the aircraft.
- Communicate clearly when in your opinion there is an actual security threat.
- Volunteer information regarding the integrity of the flight deck to ATC in a timely manner.
- Use appropriate RTF phraseology and special purpose SSR Mode A codes.
- Comply with government instructions whether given by radio or through visual intercept signals.

Full members

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Vice-Chairman
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Medical Matters

Brain Health

Statins May Protect the Brain

Statin drugs (Lipitor, Zocor and other brand names) are prescribed principally to lower cholesterol levels, but researchers seem to be publishing studies left and right these days showing that they have beneficial effects above and beyond their effect on cholesterol. So in some ways it's not surprising that a large study published in the Nov.11, 2000, Lancet found that statins seem to substantially lower the risk of developing dementia, the loss of memory and abstract thinking abilities that affects about 10% of everyone over age 65.

The study was based on analysis of data on about 60,000 people, age 50 and older, collected as part of the British-based General Practice Research Database. They were followed from 1992-98, and during that period, 284 of them developed dementia or Alzheimer's disease. The researchers compared that group with 1,080 people in the database who didn't have brain disease but were similar with respect to age, sex, weight and smoking. They found that high cholesterol that had been treated with drugs other than statins didn't affect the risk for dementia or Alzheimer's one way or another. But high cholesterol treated with a statin actually seemed to protect people against dementia and Alzheimer's lowering the risk by 70%.

What would account for the protective effect of statins? It is only at that, but it has been suggested that the gradual narrowing of tiny blood vessels in the brain might be a contributing factor in the complex puzzle of Alzheimer's causation. The theory is that narrow blood vessels allow less blood to reach the brain; this in turn, kills off nerve cells, resulting in the buildup of the amyloid plaques in brain tissue that are the hallmark of Alzheimer's. The authors of this study suggested that the statins might counteract this chain of events by dilating capillaries and increasing blood flow in the brain. Keep in mind, however, that this study was not a randomize, clinical trial, and the finding that statins protect against Alzheimer's will remain an intriguing hypothesis until corroborating evidence from clinical trials is reported.

Eye Disease

A New Treatment for Macular Degeneration

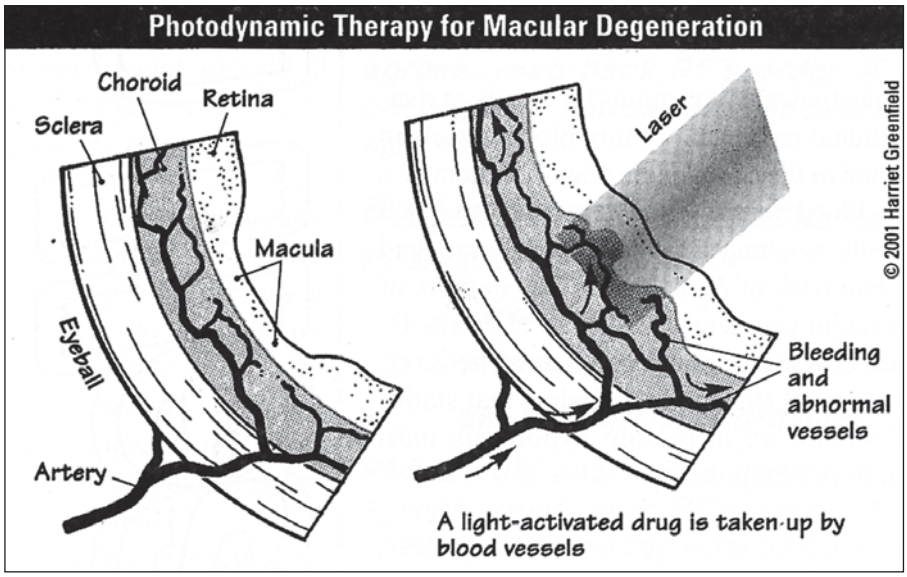
Age is hard on vision, but few things are harder on the eyes than age-related macular degeneration. The macula (from the Latin word for spot) is in the center for the retina and is about the size of this capital O. It is critical to reading and the visual acuity needed for almost any level of detailed vision. There are two forms of macular degeneration, dry and wet. People with dry macular degeneration often don't even notice its effect on their vision because one eye compensates for the other. The wet form, which can come on suddenly, is far more serious because it can lead to legal blindness, which is usually defined as 20/200 vision or worse. The underlying cause is abnormal growth of tiny blood vessels that leak blood and other fluid into the retina, thus the "wet" label.

Laser Treatment

Most of the time it's left untreated, the blood vessels of wet macular generation continue to grow and leak, and a small area of distorted or absent central vision can expand, blocking out all but peripheral vision. Ophthalmologists have used lasers to treat wet macular degeneration for years, but the treatments came at a steep price. Because the laser damaged the retina as well as the underlying blood vessels, patients were left with a definite blind spot in the middle of their vision that could be even worse than what the macular degeneration had caused. The trade-off was the possibility - and it was only a possibility – that the laser treatment would stop the blood vessels from leaking further. Essentially, the patient getting the laser treatment had to accept a small blind spot now in hopes of forestalling a larger one later.

In April 2000, the FDA approved a new kind of treatment that uses a low-energy laser that doesn't harm the retina. It depends on a chemical called verteporfin (Visudyne) that has been used in cancer chemotherapy. Verteporfin is a photodynamic, or light-activated, chemical that gravitates toward the blood

vessels behind the retina. The treatment starts with an intravenous infusion of verteporfin, which usually takes about ten minutes. There is a five minute wait to give the chemical time to travel to the blood vessels. The laser treatment lasts only about 1 minutes. The energy level of the laser is so low that it won't even burn a hole in a piece of paper, but it's enough to activate the verteporfin. When the laser hits the verteporfin, it produces unstable oxygen molecules that cause very localized tissue damage, which is a good thing here because it prunes back the blood vessels harming the retina. The treatment is painless, although afterwards patients must avoid sunlight for 24-48 hours because of the verteporfin circulating in the bloodstream. People have gotten bad sunburns on the way home from treatments because they've had their arm resting on the edge of the car window.



The Problems

This new, low-energy laser treatment of wet macular degeneration is an advance, but it can be oversold. Here are some of the caveats. It involves as many as seven separate laser treatments over a two-year period. It really is only effective in people with what ophthalmologists call classic lesions – in other words, the location of the culprit blood vessels is clear so the ophthalmologist knows where to target the laser. Only about one in five people with wet macular degeneration has the classic lesions appropriate for treatment. In ideal situations, the treatment does halt the spread of the macular degeneration, but the goal is stablilization, not improvement, of vision. Finally, although medicare and insurance companies are covering the treatment, it is expensive: the verteporfin alone costs about $1,500 per treatment.

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S61 Flying from Penzance to Isles of Scilly

by Capt. Tony Jones - Operations Director, British International

Way back in 1964 the "pipe dream" of Jock Cameron, then General Manager of British European Airways Helicopters, became a reality when on 2nd May that year a scheduled passenger transport service provided by helicopters came into being. Previously operated by a fleet of six BEA Dragon Rapides, one Sikorsky S61N helicopter capable of carrying 28 passengers took over the task and the route is still operated by that type today.

Forty years on, the Penzance to the Isles of Scilly route is flourishing. Two S61s, fly 130,000 passengers a year to the Islands of St Mary's and Tresco, and more that 3 million people have used the service. Whilst these numbers are modest by major airline figures, for a helicopter which can sometimes offer no more than 20 seats per sector, it is a remarkable achievement.

The development of large, twin-engine IFR machines enabled the launch of an experimental service to the Isles of Scilly which has developed into an aerial "life-line" to the Islands. Jock's vision was to establish inter-city connectivity using helicopters, and then extend it to routes such as London to Paris, and other medium range (in helicopter terms!) opportunities.

Political and practical problems were put in Jock's way, and whereas these more "sexy" routes have yet to be opened up to helicopters in the UK, the well-proven Isles of Scilly service has demonstrated the versatility and flexibility of large helicopters.

The Scillonians rely on the helicopters for their day-to-day transport, mostly to sustain their primary income source – tourism. From April through to November it is almost impossible to find over-night accommodation on Scilly as pretty well all of the 1500 visitor rooms are booked up well in advance by tourists who return to the Islands year after year.

British International (BI) prides itself on maintaining this high-density service to a demanding customer-base and to an even more demanding Island community which looks upon the two Sikorskys as the mainstay of their transport infrastructure.

During the season BI's Penzance and Isles of Scilly Teams mount a shuttle flying programme beginning at 0800 and continuing through to 1900, Monday to Saturday inclusive, carrying up to 1500 passengers a day. The heliport on Tresco is run by staff from Tresco Estate, which like Penzance, operates under a CAA Aerodrome Licence, including the provision of fire cover.

(Fire simulator training at Penzance Heliport)

The Sikorsky S61s (BI has six of them in all) have a spacious passenger cabin where every seat row is by a large panoramic window (each is a "push-out emergency exit" if needed) and the internal noise levels are reduced by soundproofing. These machines are well-suited to carrying large numbers of passengers in relative comfort.
BI also has a base in Cardiff which is home to a Bolkow 105 and two Twin Squirrel AS355F2 helicopters fitted in the aerial police role, with visual/thermal imaging equipment and other evidence-gathering kit. Operating from the newly commissioned Cardiff Heliport, BI works not only for the South and East Wales Police Air Support Unit, but also provides aerial surveillance capability for Network Rail in their campaign to eliminate vandalism, and to repair track damage, to keep the trains moving.

These activities are conducted under rules set out in a Police Air Operators' Certificate which enables the operation to take place without having a long list of exemptions from ANO so that, for example, landings at unprepared sites can be made.

The Bolkow is used to recover Mirach air targets from the sea in missile ranges off Benbecula in the Hebrides, and Aberporth in West Wales. The helicopter carries an underslung net and scoops the Mirach out of the water. The targets are

very expensive, don't float for long, and contain important research information. QinetiQ (formerly DERA, the Defence Evaluation and Research Agency) is the customer, and for the above reasons is keen for us to recover a high percentage of their Mirachs. It's pleasing to say that to date none has been lost, in a demanding environment.

(Police Operations Cardiff)

At Plymouth, BI has two Dauphin AS365N2 helicopters on long-term contract for the Royal Navy providing air-taxi services for essential personnel between vessels, conducting radar calibrations and standing-by for casualty evacuation flights. Often the task is highly demanding involving landing on small ships in high seas or winch-transfer of passengers to vessels with no heli-deck.

(Dauphin flying at Plymouth for MOD)

Down in the far flung reaches of the South Atlantic Ocean, BI has two Sikorsky S61N helicopters providing air support to the Falkland Islands Garrison. Based at RAF Mount Pleasant on East Falkland, the two S61s are used to re-supply forward troop locations, including carrying of external and internal cargo loads, conduct VIP transport (there are no roads to speak of in the Islands), general communication flying and to assist in the Search and Rescue role. The task involves the day-to-day carriage of a mix of passengers and freight, underslinging of fuel tanks (6000lbs each), including operations into and out of mountain-top sites.

Anyone who has visited the Falklands will tell you that the difference between winter and summer weather there is hardly noticeable, and the MoD contract warns potential bidders that the environment is hostile. If one expects the worst one is seldom disappointed! 70 knot fog, sleet, snow, sunshine and showers all before lunch, mixed in with often treacherous turbulence in the mountains all makes for an interesting and challenging operating environment.

Each of BI's four present operating bases has its own individual task pressures and environmental issues to cope with. The Cardiff aircraft spend a large amount of time at low speed/low altitude looking for criminals, and once discovered there is frenetic activity in the chase and capture phase. Crew co-operation and the inter-weaving of pilot and police air observer skills is essential. In the heat of the pursuit it is tempting to let the chance of a "collar" override the prudent limits of safety.

When not engaged in police tasks the Cardiff pilots can find themselves flying a very VFR Bolkow 105 searching for, and recovering missile targets over the sea. There is a constant danger of becoming over-focussed on the job rather than the overall safety environment.

At Plymouth, the pressure to get the team of RN specialists on the deck of the Type 42 Destroyer bobbing about in a choppy sea, or hoisting them onto a confined winching area on a ship from a foreign navy, must be balanced against the safety considerations of the task, especially as it is a single pilot (with crewman) operation. Additionally, Plymouth Airport sits right on top of a hill, and whereas the weather out in the vessel training areas may be good, it tends to change rapidly back at base - there's plenty to think about all the time!

In the Falklands pressure on the crews of a different kind is ever-present. There is huge reliance on BI's S61s to stick to the "Helitasking Cell" schedule. At most of the sites fuel, food, ammunition, mail, papers and beer can be delivered only by helicopter as there are no useable roads to them. Many of the personnel at these remote locations spend 4 months there, sometimes with only 2 or 3 people in the team. When it's time to pick them up for the next-day flight back to UK it is of great importance that they be collected on time, for if not, they will miss the flight

(S61 Penzance to Isles of Scilly)

home, and will be stranded for another week! Similarly, if a site is running out of fuel for the generators which power the air defence radar, there is a threat to the early detection and protection system.

These "get-the-job-done" pressures are there all the time. If there wasn't a pressing operational need for the helicopters, they wouldn't be there. However, against this background the crews have to be vigilant at all times. Mountain-top sites are often affected by vigorous down-draughting air currents, and a slight change in wind direction during the approach can cause dramatic wind shear.

These sites can be in and out of orographic cloud, rain and snow. A pad which is in the clear at the start of an approach can all-too-quickly disappear in fog/cloud whipped up the into-wind slope engulfing the landing area at the last moment.

Even when all else is going well, the crews have to remember that RAF Mount Pleasant is their only "bolt-hole". Stanley, the only other airport in the Islands with an ATC Service, has no precision instrument approach. MPA is effectively a "no alternative available" destination, evidenced by the frequent inability of RAF Tri-Star to get in.
At Penzance this common theme is also present. BI's customers are the paying public on holiday. They want to get to the Isles of Scilly on schedule, and get back on time as well, because everywhere is a long way to travel from Penzance on the journey home.

Neither of the Island destinations, St Mary's Airport or Tresco heliport has a precision approach and the NDB/cloud break procedures cannot be relied upon to get you VMC-below to make a visual arrival.

BI's helicopters are no different from any other, in that the useful payload versus fuel carried is always a compromise. Although fuel is available at St Mary's it is inconvenient to plan to refuel there. To shut down on the Islands would make it impossible to meet the busy shuttle schedule in the time available. With round-trip fuel the S61s can carry a full load of passengers and baggage. Carry Exeter diversion fuel and you lose 4 passengers and add an extra round trip to the day's programme.

Then there is the dreaded enemy….fog! A small cluster of Islands in a maritime airstream. Moist air moving North-

(Falkland Islands flying at Mount Pleasant)

Eastwards over a progressively colder sea. No need to dive for the Met handbooks to work-out what that means.

It is frustrating for crews to be sitting in Penzance in beautiful blue sky, unlimited viz when the Islands are fogged out. On a busy day there can be 400 passengers at the Heliport by lunchtime, all wondering why we are not flying, and constantly enquiring as to when the fog will clear. If only we knew! Then they ask the question "why can't you fly over there and hover down through the fog?" No good trying to explain Vortex Ring to the harassed parents of, bored, snarling, grumbling, fed-up children.

When there is a hint of a clearance the crews' self-imposed pressure to get airborne is huge, but balanced by the knowledge that it could all so easily be a 'sucker's gap'. It's not helped by the telephone calls into the Penzance Operations Room from disgruntled passengers waiting on the Islands wanting to know why it is that "we can see the church in St Mary's now, why aren't you flying?"

The pressures are there – all the time – at all the bases, and they are of the same nature but caused for different reasons. To support the aircrews in their decision making processes it is essential that the management team is pro-active, encouraging open reporting, acting quickly and positively when potential threats to flight safety are discovered, communicating them to all staff and reviewing safety performance constantly.

BI is fortunate in that it has an enthusiastic team of base Flight Safety Representatives lead by a Group Flight Safety Officer, Captain Terry Green, who has shown the rare skill of understanding the commercial pressures on the Company balanced against the different safety management requirements at each base, and who has active support from his Group Chief Pilot and all the Company's aircrews.
BI came into existence in May 2004 as a "descendant" of one of the world's pioneer helicopter companies. Safety is our watchword and the maintenance of a robust safety record is our most important business objective.

So, 40 years of scheduled helicopter passenger service out of Penzance; here's to the next 40 – but who is going to design and build a helicopter so safe reliable and passenger-friendly as the Sikorsky S61 eventually to replace it?

Error Avoidance

by Keith A Frable, Aviation Safety Inspector - London – IFO/FAA

Attention Factors that influence installation error in the application of maintenance/inspection task cards

Aircraft maintenance is an essential part of the entire aviation system, which supports the global aviation industry. As aviation grows so will the demands upon aircraft technicians to increase onetime performance. This will only further open the window for human error and subsequent break down in the system safety net we currently enjoy. The information the technician receives will greatly affect his/her performance, and many human factors issues are prevalent.

Human error in maintenance usually develops from an unintended aircraft discrepancy attributable to the actions or inaction of the aircraft technician. Any maintenance task, performed on the aircraft is an opportunity for human error. Each task requires the transfer of some type of information media. The "information content" of the information system can be transferred from person to person (via communication), from equipment to person (via displays), from product to person (via inspection), or from person to equipment (via controls).

When a lead mechanic looks for information on a microfiche or when an inspector looks for the next step of a task in a work card, the information transfer is from the microfiche or the work card (display) to the person. Similarly, when an inspector visually inspects an aircraft fuselage the information transfer is from the aircraft (product). Finally, when a mechanic uses an eddy current oscilloscope to look for cracks, the information transfer is from the instrument (display). You can see that in each of these examples there is an "information interface," either conceptual or physical, that facilitated information "transfer" or "access." In the case of the inspector using a work-card the interface is the work card in itself. Additionally, all of the above are effected by the various attention factors, which will be mentioned later.

In a workcard study carried out by Patel (1993), most technicians in a maintenance hangar felt that the work cards they used lacked adequate information and could be more readable. Patel showed how poor design of paper-based work cards, in hangar inspection, led to errors and delays. They proposed information design guidelines that could be used for designing more user-friendly work cards. Another study by Chervak (1996) showed that work cards produced in Simplified English gave improved performance when compared to those prepared in Standard or Non-Simplified English.

Handling and usage of paper-based information is a critical factor in the maintenance environment. In the repair shop environment, paper can get dirty. In maintenance and inspection hangars or during outside line maintenance, environmental conditions like rain, snow and wind can affect the use of paper-based information. Issues like providing well-designed document holders must be considered.

Computers are slowly becoming commonplace in the inspection and maintenance work environment. They bring with them the promise of streamlining the workflow and delivering information efficiently. As a result, airlines are making the transition to electronic documentation, automated work card systems and computerized planning systems. The various software systems on the computers, however, present their own unique problems to the maintenance workers using them. The display that the computer user sees on the screen is called the user interface (UI). The user interface must be designed correctly for the system to be user-friendly and reduce errors and frustration with the system.

Information access is inexorably tied with attention —to access information, attention has to be directed at that information. Several types of tasks that

involve such direction of attention have been identified in human factors literature (Sanders and McCormick 1993). These tasks can also be seen in the aircraft maintenance environment:

Selective attention: The operator or mechanic has to monitor several sources of information to decide whether a particular event has occurred. Examples include a pilot scanning several cockpit instruments looking for a deviant reading.

Focused attention: The operator has to attend to one source of information and exclude all other sources. Examples include a mechanic reading a maintenance manual in a noisy repair shop.

Divided attention: Two or more separate tasks have to be performed simultaneously. Examples include driving a vehicle in the airport while carrying out a conversation with the a co-worker.

Sustained attention: The mechanic has to sustain attention over prolonged periods of time, without rest, in order to detect infrequently occurring signals. Examples include air defence radar operators and security guards viewing a TV monitor, or technicians inspecting many rows of rivets with no corrosion detected.

A good example of a selective attention causation factor is an NTSB investigation into the incorrect installation of O rings in a chip detector. Eastern Airlines technicians, who regularly removed and replaced this particular chip detector in accordance with a maintenance task card, failed to replace O-ring seals. The work card specifically required the replacement of the O-ring seals with new serviceable ones. Nevertheless, the technicians failed to perform the required task, leaving the O-rings off. The investigation revealed that there were informal procedures not written on the 'approved' task card but known to be adopted by most technicians in the maintenance and inspection departments. The records suggest that there were previous master chip detector installation problems and that the technicians were routinely not replacing the O-ring seals. What the NTSB discovered was that the master chip detectors were received by the technicians with the new seals already in place and had never actually had to perform that task on the work card. So, when one was received without the new O-rings, the technicians were pre-programmed to not accomplish that item on the work card (Marx and Graeber, 1993). It is clear that this latent failure was caused by a breakdown in the system; people involved were selecting what part of the task card to follow. Through a culture developed by the countless removal and replacements of chip detectors received with new seals, no one was paying any attention to the same detectors when they came without the seals. They selected what part of the card to pay attention to!

The use of maintenance/inspection task cards is inherent in the accomplishment of aircraft maintenance. They are utilized during the accomplishment of routine maintenance to heavy "D" checks. It is clearly evident that during the development of those task cards, one must incorporate the various attention factors identified above into the completion of those work tasks.

Clearly, today's environments of multifunctional displays, advanced technology, and even aircraft maintenance manuals being retained on a computer have bestowed upon us a new level of human factors awareness that must be considered. It is incumbent upon a maintainer of aircraft to address these issues as an ongoing improvement to their operation.

Note: This article only reflects the views of the author and is written without financial gain or reward.

Corporate Manslaughter

by Keith Richardson, Barlow Lyde & Gilbert

The recent criminal convictions of air traffic controllers and airport managers arising out of the fatal collision between two aircraft at Milan Linate Airport in October 2001 has thrown the spotlight back on the issue of corporate and individual responsibility for death caused by aviation accidents. The full judgment of the Italian criminal court is still awaited and so we will only be able to report further on that in a future issue of Focus. In this article we consider the criminal liability of corporations for the death of persons under current UK law and the proposals for new legislation to introduce a new offence of Corporate Killing.

Criminal prosecution for corporate manslaughter has been possible since 1965. In order to establish criminal liability on the part of a corporation for death of an individual, it is necessary for the prosecuting authorities to identify a person who is the human embodiment of corporation's "controlling mind and will". Conviction of the corporation is only possible if that person is proved to have committed a criminal offence in the course of his duties i.e. whilst acting as the "controlling mind and will" of the corporation.

However, in a large corporation it is often very difficult to identify an individual who satisfies the requirement of being the "controlling mind and will" of the corporation. Large corporations have complex management structures where decisions which may be criminally culpable are not readily attributable to any one person. In contrast, the decision making structure in smaller companies is often more transparent and thus it is often easier to identify the person who is the "controlling mind and will" of the corporation.

Because of this "identification" based liability system, successful prosecutions against corporations for manslaughter have been very rare. In fact, only three cases have been successfully prosecuted to date, all of which related to smaller companies where an individual could be proved to have had direct involvement with causal elements of the disaster. There is a stark contrast between the exposure to criminal sanctions of these small companies and that of P&O, which was unsuccessfully prosecuted following the 1987 Zeebrugge disaster, especially having regard to the damning report by Lord Justice Sheen into the Zeebrugge disaster which stated that:

"…a full investigation into the circumstances of the disaster leads inextricably to the conclusion that the underlying or cardinal faults lay higher up the company….all concerned in management…..were at fault in that all must be regarded as sharing responsibility for the failure of management. From top to bottom the body corporate was infected with the disease of sloppiness..."

The inability to prosecute successfully large corporations after major disasters has led to increasing pressure from both unions and the public at large for more effective legislation to address the issue of corporate killing. In 1997 promises were made by the incoming Labour government to introduce legislation so that:
"…people cannot be criminally negligent and allow innocent people to go to their deaths and suffer no punishment"

However, to date the government has yet to publish a draft bill. There appear to be two main obstacles to the preparation of the draft bill:

- The question of whether government bodies should be subject to prosecution i.e. Crown Immunity. As a matter of principle there seems to be no reason why government organisations should be immune from prosecution when private commercial companies performing many of the same functions and activities face potential criminal liability. However, if no such immunity is granted the Crown may face a costly and time consuming cycle of self prosecution. Interestingly crown immunity does apply in relation to statutory health and safety legislation, although the government has indicated an intention to remove this "when parliamentary time allows".

- The second issue is the concern that a new offence of corporate killing may lead to "scapegoating" or "witch hunts". Fears have been raised as to whether it would be possible for a corporation to have a fair trial especially in the emotive aftermath of a major disaster. Perhaps more worryingly there is the risk that the prospect of criminal prosecution will discourage open and transparent reporting to accident investigation authorities as has become an issue in other countries such as the United States.

Absent a draft bill from the government, Frank Doran MP has introduced a private member's bill which seeks to create a new offence of "corporate killing" which is intended to apply to all companies and incorporated bodies i.e. no immunity for the Crown. The bill has been derived from a draft prepared by the Trade and General Workers Union in 2003 and is scheduled for its second reading before parliament later this year. We have not seen the private member's bill itself, but the T&G's draft states that a corporation shall be guilty if:

a) a management failure by the corporation is the cause or one of the causes of a person's death; and

b) that failure constitutes conduct falling far below what can reasonably be expected of the corporation in the circumstances.."

A "management failure" is defined as: "there is a management failure by a corporation if the way in which its activities are managed or organised fails to ensure the health and safety of persons employed in or affected by those activities; and such a failure may be regarded as a cause or a person's death notwithstanding that the immediate cause is the act of an individual".

On its face the suggested wording does little to address the concerns referred to above regarding Crown immunity and scapegoating and so there must be some doubt as to whether the government will adopt the draft bill. Absent government support the prospects of the draft bill becoming law are remote.

Although convictions for corporate manslaughter have been hard to secure, corporations and their directors/managers are not above all legal sanctions. Prosecutions by the Health and Safety Executive have been much in evidence in the aftermath of more recent major disasters and, in particular, the Ladbroke Grove train crash where Thames Trains was fined a record £2 million for failing to train its drivers adequately. Similarly company directors can face fines and/or imprisonment and/or disqualification from acting as a company director for breach of safety regulations. However, it seems that the main distinction between prosecutions by the HSE and potential prosecution for corporate killing under the proposed draft private member's bill is that there is some certainty regarding the requirements of the various safety regulations, whereas determining what actually constitutes a "management failure" is a much more nebulous concept which may be open to flexible/expedient interpretation in circumstances where there is significant public pressure for "heads to roll".

The suggestion that there should be measures in place to deal with corporations which are negligent and yet escaping criminal sanctions or that there is a need to raise safety nearer to the top of the boardroom agenda are matters which are uncontentious in most quarters. However, until the government clarifies its intentions with regard to "Corporate Killing" doubt is likely to remain as to whether any new legislation will be intended to improve safety or simply assuage public demands for someone or some corporation to be seen to take the blame and be punished.

UK FLIGHT SAFETY COMMITTEE

Annual Seminar 2004

BREAKING THE BARRIERS IN COMMUNICATION

Enhancing Aviation Safety Through Better Communication

20th/21st September 2004

The Radisson Edwardian Hotel Heathrow

SEMINAR OBJECTIVE

Compartmentalised management structures can be counter-productive from a safety perspective. This Seminar will raise awareness and enable discussion about breaking down these barriers and offer some constructive suggestions.

PROGRAMME

20th September 2004

2000hrs Seminar Dinner
Jim Ratcliffe, Willis - After Dinner Speaker

21st September 2004

0800 - 0900	Registration
Session Chairman - Ian Crowe - Willis	
0900 - 0915	Welcoming Introduction **Stuart McKie-Smith** **(Chairman - UKFSC)**
0920 - 0955	Breaking the Barriers within the Military **Arthur Gibson - Defence Helicopter Flying School**
1000 - 1035	The Legal Ramifications of Poor Communication **Charles Haddon-Cave**
1035 - 1055	*Refreshment Break*
1055 - 1115	Keynote Speech **Rod Eddington - British Airways**
1120 - 1155	Understanding how Communications Succeeds or Fails **James Reason**
1155 - 1230	Questions
1230 - 1340	*Lunch*
1340 - 1415	One Voice in European ATM **Kathy Nuttall - GATCO**
1420 - 1455	Engineering Management and Communication **Stewart John - Director of TAECO**
1455 - 1510	*Comfort Break*
1510 - 1545	Transport Accident Investigation - Working together across the Modes **David King - AAIB**
1550 - 1625	Lessons Learned in the Rail Industry **Aidan Nelson - Rail Safety & Standards Board**
1625 - 1655	Questions
1655 - 1700	Closing Speech **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 10th September). If you require accommodation please contact the hotel directly on Tel: +44 (0) 20 8759 6311 and quote Block Booking Code 1019 UKF when making your reservation.
- **Seminar Dinner**
  Dress for Dinner - Black Tie
- **Cancellations/Refunds**
  Cancellations received prior to 23rd August 2004 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)

REGISTRATION INFORMATION

(Please print clearly)

First Name: _____ Surname: _____

Company: _____ Job Title: _____

Address: _____

_____

Tel No: _____ Fax No: _____ e-mail: _____

PAYMENT INFORMATION

Seminar Fee: £160 UKFSC Member ☐ £200 Non-UKFSC Member ☐

This includes the Seminar Dinner on the evening 20th September, lunch, refreshments and car parking. This does not include hotel accommodation - **please see 'Seminar Information' above.**

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 handling 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 20th September? 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 No: +44 (0)1276 855193 Fax No: +44 (0)1276 855195 email: admin@ukfsc.co.uk

Confirmation will be faxed to you on receipt of your Registration Form and payment.

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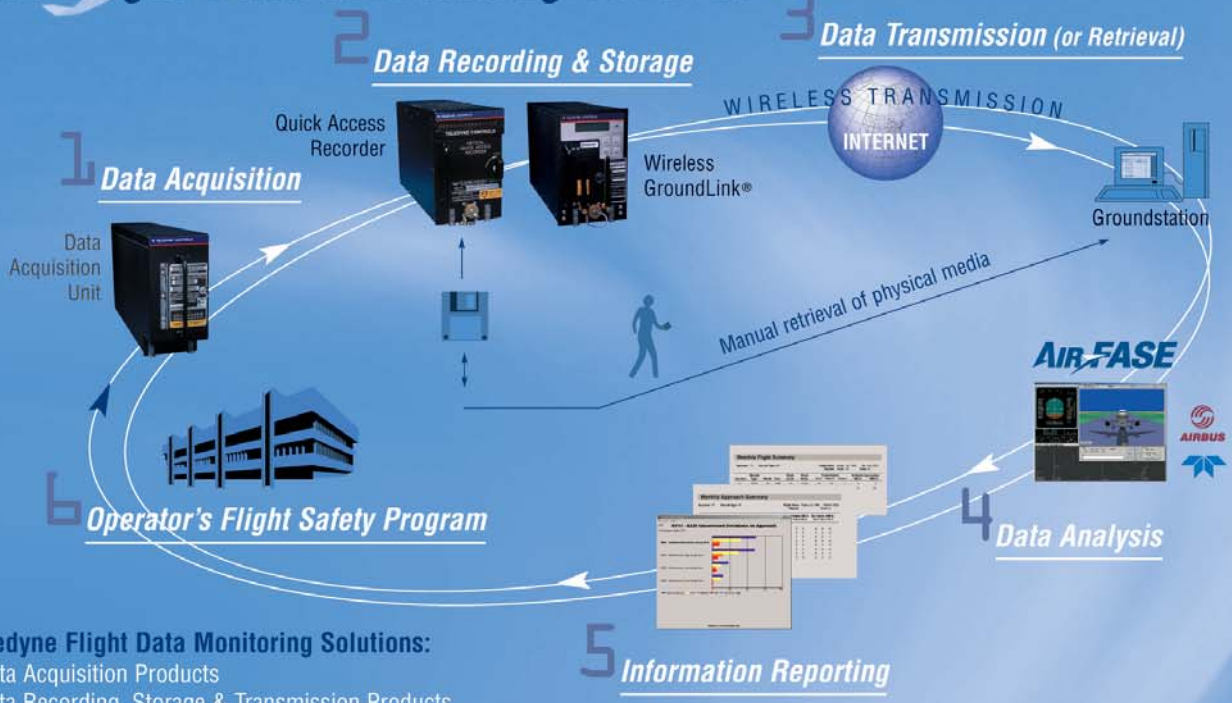

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- Flight Data Monitoring Services

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