Strategic Approach to Safety

Issued June 2011

Foreword

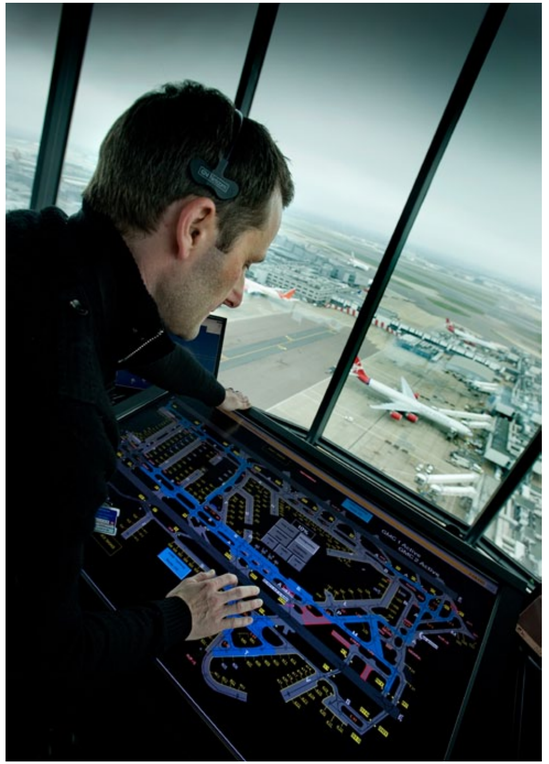
Safety is core to our business in NATS. We have an outstanding safety record and our controllers, engineers and support staff are fundamental to this. During CP2 we have almost halved our safety risk. However we shouldn't be complacent; it is essential that we continually raise safety standards. As we forge ahead with cutting edge technology and services, improving safety goes hand in hand with improving our service delivery, capacity and environmental impact. The best solutions do not trade off safety against service, but find ways to improve both.

We have ambitious safety targets and ambitious change projects to help us achieve them. This plan gives a high level view of how we intend to achieve further improvements in safety during CP3. We plan to systematise the airspace, with major redesign projects and fundamental changes to existing practice. This will help reduce conflicts and congestion. We will be making air traffic more predictable with less tactical intervention, identifying and resolving conflicts earlier. This will allow traffic interactions to be better planned and traffic to become better moderated, with smoother flows and less spikes of intense activity. Integrity of aircraft behaviour will improve with increased conformance monitoring. All of these changes will reduce vulnerability to human error because controllers, and consequently pilots, will have more time to think and plan and be less likely to face periods of peak workload or unexpected traffic activity.

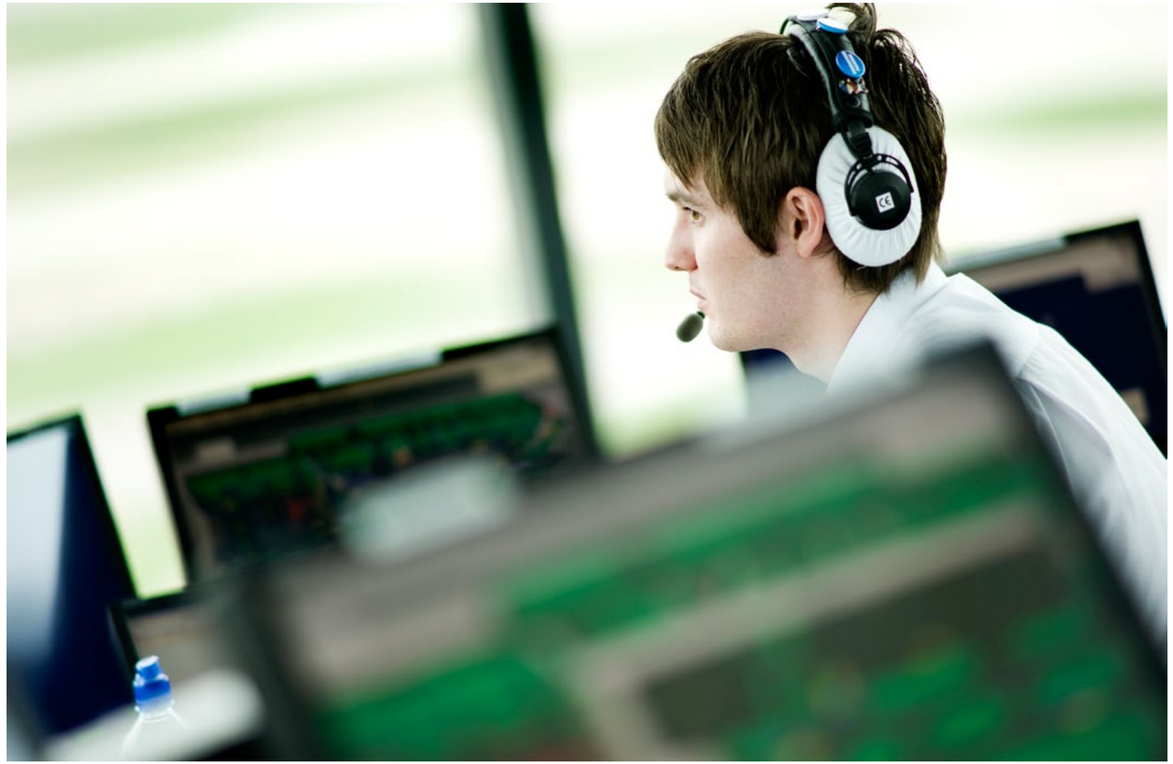
Of course, there are still many challenges. The economic situation remains tough and there are far reaching changes in technology and concepts of operation coming from a wide range of sources; they will not be easy to draw together into a unified, coherent operating environment. UAVs may change our operating environment in ways that are not yet predictable; the international nature of SESAR will challenge our interoperability and assurance arrangements and may cause us to re-examine some long standing assumptions; the degree of variation in equipage of aeroplanes – and capability of ANSPs – may be wider than before and this may demand more flexibility as we move towards performance based navigation, 4D trajectories, datalink and other strides forward in the aviation system. We will need to learn to take best advantage of the advanced simulation and web enabled training facilities that are becoming available. The sheer complexity of networked systems may make it harder to predict system behaviour and secondary effects of changes, outages or unexpected events, and so we also need to ensure that we have achieved a degree of system resilience and adaptability.

In order to achieve the twenty first century environment that we are seeking, it is essential that we work with others in our industry, across disciplines and internationally. In NATS we have significant expertise to contribute in our partnerships and we are working hard to increase our capability across the company. We also respect and highly value the complementary expertise that we know exists in other organisations. I am personally committed to delivering exceptional safety performance and I would like to take this opportunity to thank our partners in CANSO, the airlines, other ANSPs and our Regulators for their continued commitment and energy in partnering with us.

Richard Deakin, CEO NATS



Contents



Safety Policy

Our safety commitment is to strive continually to improve our operational safety performance and to minimise our contribution to the risk of an aircraft accident as far as is reasonably practicable.

In order to fulfil this commitment, we have a formalised, explicit and proactive approach to systematic safety management which

- Defines the safety organisation with clear lines of safety accountability
- Promotes a climate of safety awareness and understanding throughout the organisation
- Monitors achievement against safety objectives and predictive indicators of safety performance
- Ensures that everyone understands the role they play in delivering operational safety performance, has the capability to discharge their role and recognises that they have an individual responsibility for the safety of their actions
- Encourages all staff to report operational safety concerns within a Just Culture, such that appropriate improvement actions can be taken
- Seeks out and adopts good operational and safety management practices
- Engages with external stakeholders to share safety improvement opportunities
- Complies with all applicable safety standards and requirements

As Chief Executive, I am totally committed to this safety policy and to the provision of the necessary resources to support its implementation and maintenance.

Richard Deakin, Chief Executive NATS

Introduction

The traditional way to improve safety has been by responding to accidents or serious incidents and learning from those experiences. Today, it is harder to learn from accidents and incidents because there are few of them and the system is complex. It has become less effective to improve safety by reacting to isolated safety events and a more proactive approach is needed.

The goal must be a strong, systematic infrastructure that creates an inherently safe environment with multiple layers of defence to support a confident safety performance.

In safety critical industries over 90% of incidents and accidents still result from human error. Human performance is both our greatest asset and our greatest risk. The majority of actions described in our safety improvement work streams aim to support human performance in some way, whether it is by improving safety culture and leadership, developing technology that helps controllers to plan, designing airspace that is easier to manage, implementing changes that meet expectations, or creating operational structures and supervision that promote excellent controlling practices.

This Strategic Plan for Safety draws together the more strategic, high-level activities from En-Route and Airport Unit Safety Plans, the Engineering Safety Plan, the College Safety Plan, the Operational Evolution Plan and the Long Term Investment Plan, including both Technology and Airspace developments, with actions specifically identified to address the safety improvement areas.

The document is organised in four sections:

In the air

Our strategy for approach operations, level busts and oceanic airspace

On the ground

Runway safety and activities on the ground

Sharing airspace

With general aviation (GA) light aircraft, military flights and aircraft entering and leaving from other sectors

In the ops room

People and human performance, operational risk management, new technology and engineering, and airspace and procedures

Strategic vision

Being Proactive in Safety is one of our major brand values. **We work with the aviation industry to anticipate and manage risk before it impacts safe operations. We continuously develop our capability to set the standard in safety leadership.**

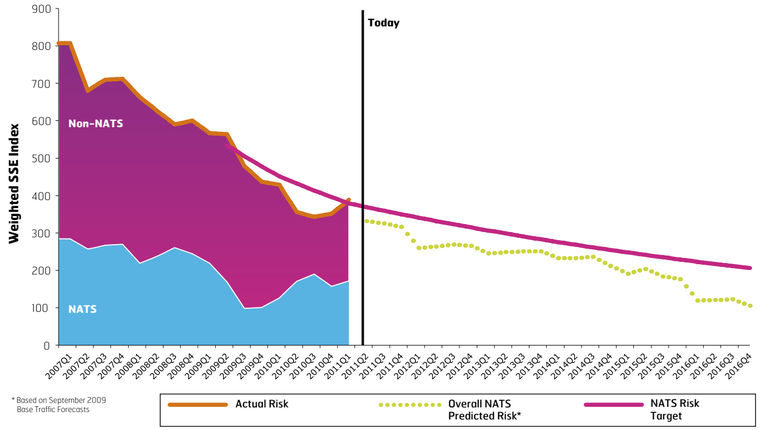
Our strategic vision is designed to deliver a real improvement in safety for aircraft receiving a NATS service. **Our strategic objective is to deliver an average 10% reduction per annum in the Weighted Safety Significant Event Index until 2015.**

The target and upper limit is illustrated in Figure 1. The shaded areas before the 'today' line represent our Weighted Safety Significant Event Index performance since 2007. The shaded areas also indicate that some risks to our customers are attributable to NATS (or partly to NATS), but that most originate outside NATS' actions or direct responsibilities.

We will also ensure that there are no Category A or B Airprox events attributable to NATS.

NATS is committed to being proactive in safety and so we actively pursue safety improvement for any risk that affects the safety of aircraft receiving our service, whether or not it is our responsibility.

NATS Safety Improvement Strategy and Predicted Benefits



* Based on September 2009 Base Traffic Forecasts

Figure 1: NATS Strategic Vision showing the Weighted SSE Index (see Understanding risk) and Safety Targets.

Understanding risk

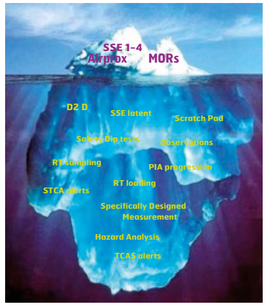


Figure 2: The data 'iceberg'. This includes many sources of data at various levels, ranging from incidents that have occurred to data that may be relevant to the likelihood of future events, such as traffic complexity and the frequency of safety prevention behaviours actually occurring in the operation.

Understanding risk is particularly important to assure safety and to understand where to target our actions.

All reported incidents in NATS are investigated to ascertain firstly, the Event Type and secondly, and more importantly, the Causal Factors (see Figure 3).The Causal Factors are associated with all human performance issues from all persons involved and also the Context in which these operational personnel work. The NATS Causal Factor scheme is being offered to the CANSO ANSP's as best practice in incident investigation.

The NATS Causal Factor database, Safety Significant Events (SSE) scheme and open reporting system for Observations are all held in our Safety Tracking and Reporting (STAR) database.

The SSE scheme categorises safety events based upon severity (1-4) and separation distance (a-d), where 1a is the most severe and 4d the least severe. Figure 4 shows the rate of SSE 1-4 events since 2006.

Our 'Weighted SSE Index' is a single figure calculated by giving a weighted value to our 4 event scores (SSE 1-4). These values are combined in the index (see Figure 1). This is a measure of safety performance used within the company to track our overall safety progress over time, and it distinguishes between those events that are attributed wholly or partly to NATS, and those that are not (although both are addressed in our safety activities).

Understanding our risk is crucial to the effective development and implementation of this safety plan; both in being confident that we are addressing our key risks and in monitoring and refining how well we are tackling them. The key to this, is effective measurement of risk performance and identifying and tracking a wider view of risk The Weighted SSE Index is a convenient way to express risk as a single value, but we recognise its limitations. Risk has many facets and it is a challenge to depict it in a way that is both simple and comprehensive We are therefore constantly working to improve Our understanding of risk; its causes and mitigations.

The second core activity is the creation of a common framework for the classification of risk associated with incidents and events. This work is focused, at this stage, primarily on the wider international aviation community, and the decision to adopt the concept of the European Risk Analysis Tool (RAT) is a key step for NATS. (The use of the RAT by European ANSPs will be measured as a European Safety performance indicator from January 2012.) This activity seeks to facilitate the development of a single Risk Performance Metric that can be used to measure the risk associated with a very wide range of events within the airspace system. Ultimately, data from a wide range of sources and different levels will be used.

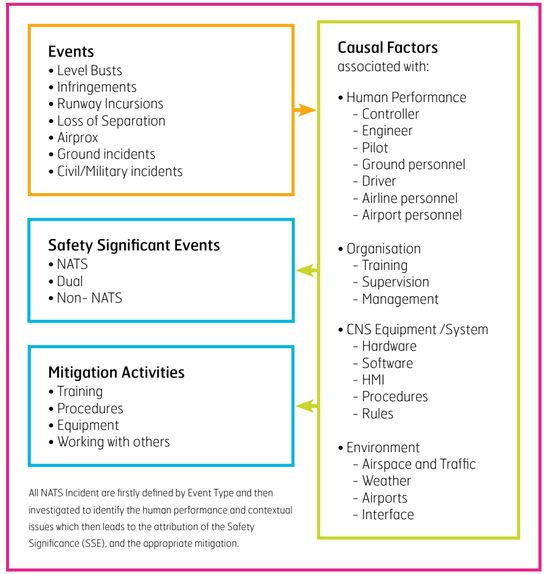


Figure 3: Typical analysis of NATS Incidents

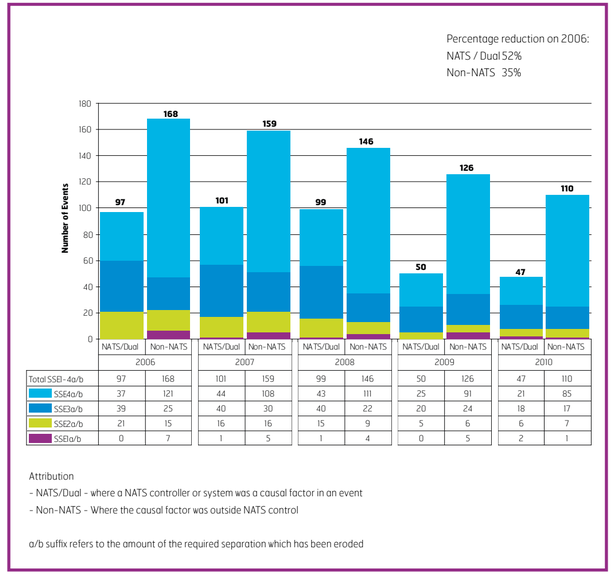


Figure 4: SSE Performance from 2006 to 2010

Safety Management System

Sustained safety is achieved through our Safety Management System. This operates a continuous cycle of monitoring performance to understand our safety risks, improving safety where risks are identified, controlling the implementation of change, and actively managing operational risk during service delivery. These processes inform, and are informed by our organisational culture and policies. All our activities are set in the context of working with our customers, regulators and other ANSPs whenever we can.

Front line engagement

Operational safety activities occur in the front line operation and the interaction between Air Traffic Controllers and the Pilots they serve. All too often, in safety critical industries such as ATC, the 'safety' activity takes place away from the operation, in documents and action plans that are remote from, or possibly not recognisable to, the people doing the job where safety responsibility resides.

It can be a difficult balance, because operational staff are typically busy with the task at hand and may have little time to take part in additional projects for strategic improvements in safety. However, safety that is detached from the operation is clearly not the best answer and the risks perceived by front line staff and their preferred solutions must play a leading role in any safety improvement programme. It is also crucial that operational staff take ownership of the safety of their service and do not regard safety as something that happens somewhere else.

Professional standards in operations

ATC is a professional role in a safety critical environment. The consequences of inappropriate action are potentially catastrophic, so we pay close attention to professional standards in our operations. We will offer guidelines and training to support the practice of Just Culture and help determine acceptable behaviours.

Conformance to correct ATC procedures is essential. We continue to enhance professional standards in the operations room and address the causes of procedural non-conformance. To support this, operational staff are developing measures of our capability for key aspects of their performance, such as procedural conformance and change management.

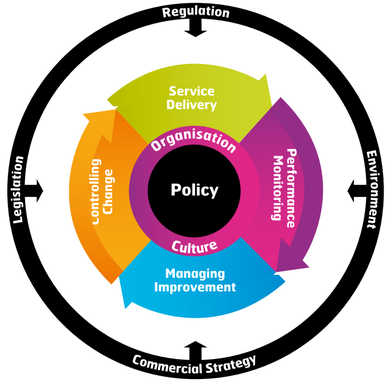


Figure 6: The NATS Safety Management System wheel

Safety culture

Aviation is one of the most highly regulated industries in the world. ATCOs, pilots, radar engineers, aircraft engineers and other key personnel are selected, trained and examined to similar standards worldwide. Airlines fly similar aircraft under similar operating conditions globally. So why is it that, depending on where you are in the world, the safety risk varies so much?

Evidence from accident investigations and analysis of safety system failures points to safety culture as a key element. Loss of life in the Chernobyl, Space Shuttle, Herald of Free Enterprise, Überlingen, King's Cross and Nimrod disasters all show an organisation's safety cultures as the key causal factors.

That is why it is important to understand what our safety culture looks like – and how we can improve it. Leadership plays a vital part in setting the right safety culture in an organisation. Managers need to demonstrate that, when it comes to safety, what they do is consistent with what they say and think.

But leadership alone will not change safety culture for the better. We all need to demonstrate that the way we think about safety is reflected in how we talk about it and, ultimately, is demonstrated by how we behave when it comes to safety.

Our work will shape how we think, talk and act about safety culture from the first day a controller walks through the door at the college, through unit training and beyond. This will be supported by measures to enhance the safety capability of our operation. We will develop our understanding and make improvements through the use of a Safety Capability Model.

Lesson learning

The ability to learn lessons is an essential ingredient for strengthening our safety resilience. Good reporting rates have enabled NATS to build a set of potential safety lessons from which to learn, such as improving procedures or making event replays available for controllers to view in safety kiosks.

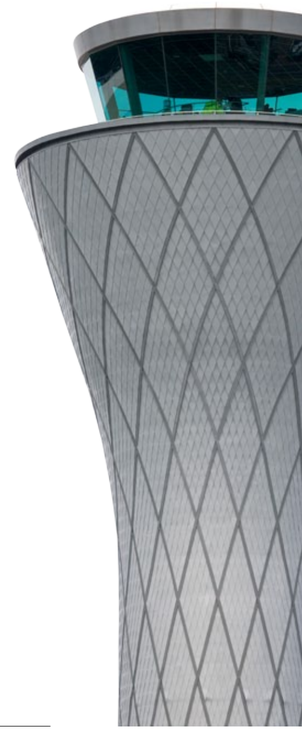
However, as a proactive organisation, we do not want to rely solely on incident data to help us learn and improve. Increasingly we recognise the importance of identifying risks and implementing best practice before an incident occurs.

To this end, we will consult both internally and externally to gather and prioritise the key lessons to be learned from our own and other industries. Operational staff, our cross industry partners and industries beyond aviation all have information and experience which we can learn and use to help protect ourselves. Our Safety Management Manual will formalise the process to support this and ensure it is robust and effective.

Working with others

In a complex international industry such as aviation, much more is achieved by working with others than alone. Many of the risks to aircraft receiving our service originate outside NATS and so it is essential to work with others to address those issues effectively. Both within our safety improvement areas and in NATS' wider activities, we are proud to work with our partners. Here are some of our key partnership activities:

- With the Civil Air Navigation Services Organisation (CANSO) to improve the measurement and prediction of ATM risk and drive risk reduction at a global level
- With our Regulators to ensure that new regulation enables a sensible and pragmatic approach is taken by UK Air Traffic Providers
- With EASA and the European Commission to assist in development of a European ATM safety regulatory framework that supports the delivery of operational safety improvements
- With the Single European Sky ATM Research & Development (SESAR) programme to deliver safety benefits and play a leading role in the trial of the Eurocontrol Accident Incident Model
- With the Safety Partnership Agreement (SPA) to create a safer future in partnership with our customers
- With the IAA, other Northern Alliance partners and our customers to improve safety through the UK-Ireland Functional Airspace Block and across Northern European Alliance Partners airspace



In the air

Our strategy for approach operations, level busts and oceanic airspace.

We work with all stakeholders to address the issues that affect aircraft in flight.

Approach

Definition: Approach risks relate to any occurrence within the vicinity of an aerodrome on either the approach or tower frequency and which includes incidents classed as airspace infringements or level busts.

High level strategy: We will identify existing and latent safety risks and engage with all NATS Centres and Tower and third party stakeholders to deliver actions to mitigate those risks. This work will include evaluation of both current and planned safety nets, with particular emphasis on the introduction of airspace and ATC procedures that are fit for purpose.

To improve we will...

- Work with all stakeholders to reduce the number of controlled airspace infringements
- In conjunction with the human performance work stream, work with all stakeholders to reduce the number of level busts
- Work with all stakeholders, including the airport companies, to ensure that controlled airspace managed by NATS Towers is fit for purpose both now and into the future
- Ensure that the risks associated with airborne incidents in the immediate vicinity of airports are sufficiently mitigated. These include missed approaches, descent below the glide and wake vortex

Level busts

Definition: Occasionally, aircraft unexpectedly deviate from, or fail to level off at, their cleared level. This may bring aircraft receiving a NATS service into conflict with other aircraft, creating risk of a Mid Air Collision. Aircraft on approach to NATS airfields may also deviate from their altitude clearance and risk Controlled Flight into Terrain (CFIT).

High level strategy: We intend to mitigate risk from level busts by minimising the inherent risk in airspace design, alerting controllers in advance when the potential for a level bust arises and supporting operators and aircrew to always use the best known methods to ensure conformance to their cleared levels.

To improve we will...

- Work with aircraft manufacturers to enable all aircraft to downlink barometric pressure settings to NATS systems
- Conduct studies with airlines, using everyday observations on the flight deck to identify issues and improve altimeter setting procedures and recommend improved SOPs
- Target business aviation pilots with communications and information on level bust prevention
- Trial new 'challenge and response' radio phraseology on departures to reduce vulnerability to error
- Expand and standardise the use of Mode S down-linked parameters
- Transmit transition level on ATIS, enabling pilots of new generation aircraft to set an automatic warning on FMS to change the pressure setting
- Introduce technical advances to allow the Met Office QNH to be data-linked directly to the aircraft and automatically updated within the aircraft instrumentation

Oceanic

Definition: Oceanic operations differ from domestic operations due to the lack of radar coverage and VHF communication. Although separations are larger than those applied in domestic airspace, any deviation by an aircraft from its planned flight profile or any loss of separation can remain undetected and hence unresolved for an extended period of time. In particular, there is an ongoing issue with aircraft flying undetected at the wrong height – called an LHD – which means that operations over the North Atlantic do not meet the ICAO TLS in the vertical dimension.

High level strategy: We will seek to reduce the risk in Shanwick Oceanic Operations through a structured education programme and pro-active involvement with airspace users, ANSPs and international aviation safety organisations. We will promote technological improvements, thereby creating an environment in which controllers are fully aware of the position of aircraft and can identify and resolve actual and potential LHDs and Gross Navigational Errors in a timely and effective manner.

To improve we will...

- With SRG, influence ICAO and Oceanic ANSPs to mandate ADS-C for all aircraft flying in 'core' oceanic airspace (to be defined)
- Enhance systems that provide controllers with accurate and timely current and predicted position data for all aircraft in Shanwick Oceanic airspace and the ability to contact them in a timely manner
- Improve lesson learning across the North Atlantic Operation
- Be strongly represented within ICAO groups to influence safety improvement activities
- Through the ICAO Safety Oversight Group, monitor and communicate individual airline operator and ANSP safety performance

On the ground

Runway safety and activities on the ground.

Through working with all parties that operate on an airport, we seek to reduce the risk of incidents in the aerodrome environment.

Ground safety

Definition: Safety incidents on the ground include any occurrence at an aerodrome on the manoeuvring area, excluding runway safety occurrences, and any occurrence between aircraft and vehicles on the apron area.

High level strategy: Our strategy is to work with our airport operators, pilots and airside vehicle drivers to minimise the risk of aircraft ground collisions involving other aircraft on the apron areas and with obstacles on the ground or vehicles on the manoeuvring area.

To improve we will...

- Understand the risks in current airport design
- Work with airport operators to effectively manage work in progress
- Effectively manage low visibility operations
- Improve driver capabilities through effective driver training
- Identify, understand and manage the risk from
  - Taxiway error hotspots
  - Unauthorised and incorrect pushback
  - Stand allocation error
  - Helicopter operations on the manoeuvring area
- Understand the relationship between capacity/service delivery and safety

Runway safety

Definition: Runway safety concerns any hazardous occurrence on an airport runway characterised by three main types of event – incursions, excursions and confusion.

High level strategy: Our strategy draws together a systematic approach to managing the runway with technology-based safety nets designed to mitigate errors made by pilots, drivers and ATC. This differs from previous runway safety strategies by clearly placing each action in context, starting with how aircraft are delivered to the runway and working through how they interact with other aircraft and vehicles using the runway. This will allow us to accurately identify where we are carrying risk, challenge our current operation and maximise capacity for our customers.

To improve we will...

- Ensure that each aerodrome has thoroughly analysed and fully understands the particular risks associated with its operation
- Work with airport customers and other stakeholders to introduce robust, specific and targeted processes to address that risk
- Adopt a systematic management approach to runway safety, where actions are addressed in context
- Closely integrate this approach with the work being conducted by the Airborne & Approach and Human Performance work streams
- Ensure that our approach is interoperable with international standards
- Develop and integrate new technology to provide timely warnings to pilots, drivers and ATC where appropriate

Sharing our airspace

With general aviation (GA) light aircraft, military flights and aircraft entering and leaving from other sectors.

Working together to ensure the interoperability of our airspace.

Operational interfaces

Definition: Risks here stem from the adoption of ineffective ATC procedures, non-compliance with agreed procedures and the ineffective presentation of air traffic between sectors and units. Aircraft operating outside controlled airspace generate safety incidents when aircraft join or leave controlled airspace.

The pilot/controller interface is vulnerable to misunderstandings caused by the use of non-standard phraseology and through a lack of common understanding or non-alignment of procedures and/or information. These misunderstandings can lead to incidents such as level busts and runway incursions.

High level strategy: Our strategy is to highlight and focus on the operational interfaces that NATS believes generate the highest risk to the operation, ensuring that good practice in procedures, operating methods and defensive controlling techniques are employed.

Through education and alignment of procedures, we will promote mutual understanding of pilot and controller working environments and ensure that procedures or methods of operation do not contribute to incidents.

We will share safety data and joint safety plans, predominantly through the SPA. This will maximise the use of resources for safety-related activities and encourage the alignment of safety objectives.

To improve we will...

- Mitigate against the risks of controllers misinterpreting or not hearing pilot transmissions
- Develop a method to assess the safety risk of wake vortex encounters and assess the impact of FAA/European plans for vortex re-categorisation
- Deliver a system to operations rooms to provide accurate and real time danger area and route availability information
- Generate an awareness campaign and defensive ATC measures for the potential risks from aircraft operating outside CAS against those joining or leaving controlled airspace and receiving a service from NATS
- Standardise procedures with reference to Transition Altitude across the UK/Ireland Functional Airspace Block

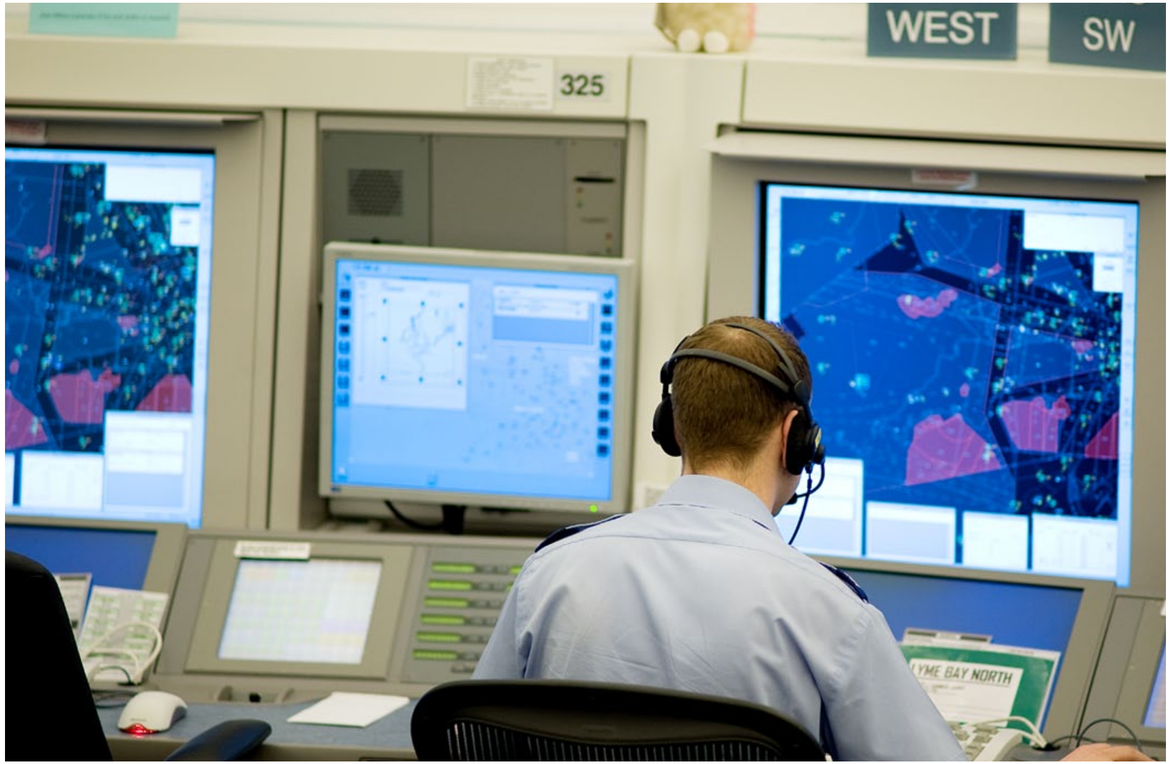
Airspace infringements

Definition: Airspace infringements are infringements into controlled airspace or interactions outside controlled airspace and where no effective mitigation or safety net exists to prevent collision.

High level strategy: We intend to remove the risk from infringements into controlled airspace and operations outside controlled airspace by creating an aviation environment where all known data is available to all participants in the situation.

To improve we will...

- Deploy a web-based flight planning tool for GA pilots that will alert the user if the flight plan transits controlled airspace
- Continue to promote the use of the controlled airspace alerting tools for GA pilots
- Enhance situational awareness for IFR flights, especially with respect to airspace boundaries and type of airspace/service, by developing a GPS-based device
- Share all known data for the benefit of the aviation community, such as airspace definitions, flight information and surveillance data so that external avionic suppliers can create new tools for pilots
- Improve the detectability of all airframes in all environments, either through emissions from the airframe or improved surveillance to generate a complete 'known environment' for air traffic
- Develop a roadmap with CAA and other key stakeholders, to facilitate seamless and safe transition from Controlled Airspace to Class G and vice versa
- Support airlines in conducting risk assessments of new routes that include segments in Class G



Civil-military interaction

Definition: Civil-military safety risks relate to unexpected interactions between civil and military aircraft within controlled airspace, or interactions outside controlled airspace where incompatible expectations lead to a perception of increased risk.

High level strategy: Our aim is to remove the unexpected interactions inside controlled airspace and minimise the risk to all aircraft operating in Class F/G airspace, without unnecessarily restricting the flexibility of either operation. This will be achieved by creating a collaborative understanding of de-confliction services and risk management, and jointly agreeing and implementing procedural and technological solutions.

To improve we will...

- Enhance the Controlled Airspace Infringement tool, to include reverse engineering to alert for danger area penetration
- Improve defensive controlling techniques for controllers
- Develop a tool to indicate in the military cockpit if the aircraft is inside or outside controlled airspace
- Run multi-crew resource management courses for civil/military controllers and pilots, focused on operations outside controlled airspace
- Develop and implement a joint NATS-Military method for assessing event severity
- Develop a capability for strategic/pre-tactical de-confliction of civil and military operations, such as scheduling planned activity against scheduled civilian traffic

In the ops room

People and human performance, operational risk management, new technology and airspace and procedures.

Ensuring we are developing our human capability, employing the right technology, effective airspace design and day to day management techniques for the future.

Operational risk management

Definition: Safety in NATS is delivered by operational controllers who tactically control aircraft, supported by supervisors and network managers who manage traffic flows.

The environment of the Operations Room is focused and dynamic, responding to the demands of traffic peaks and troughs. It embodies the typical issues inherent in an industry that relies heavily on human performance and skill. They are:

- Effective supervision
- Workload management
- Sustaining skills and competence
- Rostering and seamless handovers
- The management of alertness and fatigue

High level strategy: Our strategy is to change the way that the organisation thinks about safety such that it becomes an integral part of the organisation at all levels. We will consider the safety problem in two ways. Improving our ability to detect and safely recover a dynamic situation when something starts to go wrong during operational controlling

To improve we will...

- Develop continuous professional training within the ATM operational environment – giving a practical opportunity to develop new ways of performing each function
- Provide dedicated assessment and training activities that provide safety skills for the career as well as the role for managers and supervisors
- Develop alternative measures of risk assessment that supports staff to get better at what they do, particularly with respect to sector configuration
- Recognise what we do right for safety and extend this to everyone
- Manage operational workload by developing a method which accurately predicts the workload impact of changing traffic patterns. Use this to avoid overloads and under-loads
- Understand performance levels:
  - Present data on human performance that is timely and meaningful to operational staff
  - Provide information on which techniques or circumstances have produced the best safety results in the past
  - Provide a means for practising infrequently used advanced or unusual skills

Technology and engineering

Definition: ATC today relies extensively upon the human controller. Technology is being introduced to increase the opportunity for advance planning and reduce the amount of tactical intervention required to alert pilots and controllers to the possibility of incorrect situations and to improve sequencing and traffic management.

As the use of technology increases, so does reliance on engineers. Engineering has invested greatly in recent years to improve its resilience, processes, systems and safety culture and the strategies below aim to build on that, targeting both technical and human capabilities with an overall theme of embedding a strong positive ownership of safety into every individual.

High level strategy: To support operational human performance through technology, and to support that technology with engineers who are acutely aware of the safety consequences of their work and who prepare themselves and their workplace accordingly. Develop cultural, process and behavioural barriers to mitigate the operational risk from engineering.

To improve we will...

- Introduce new technology to maintain cutting edge systems to support our Air Traffic Controllers. Provide safety nets to reduce any vulnerability to human error
- Improve system design. We will learn from existing systems and use current best practice to ensure that future systems are more robust and error resistant
- Measure and manage risk. There will be a scheme to better measure the safety impact from engineering events, identify mitigations and support staff in managing the risks
- Improve quality assurance. Our Quality Management system embeds process improvement in the culture and methodologies of engineering
- Improve competence. Our training is timely and at the right level thereby ensuring staff are both confident and competent. Ongoing training, including system exposure and Training for unusual circumstances will be scheduled into operational rosters
- Ensuring better operational Service Management. A closer relationship across the Engineering and ATC interface builds a clear picture of the ATC tactical requirements, allowing engineering to respond effectively to service delivery issues
- Encourage a safety culture. Our ongoing programme of safety culture and awareness activities gives our engineers positive ownership of safety

In the ops room

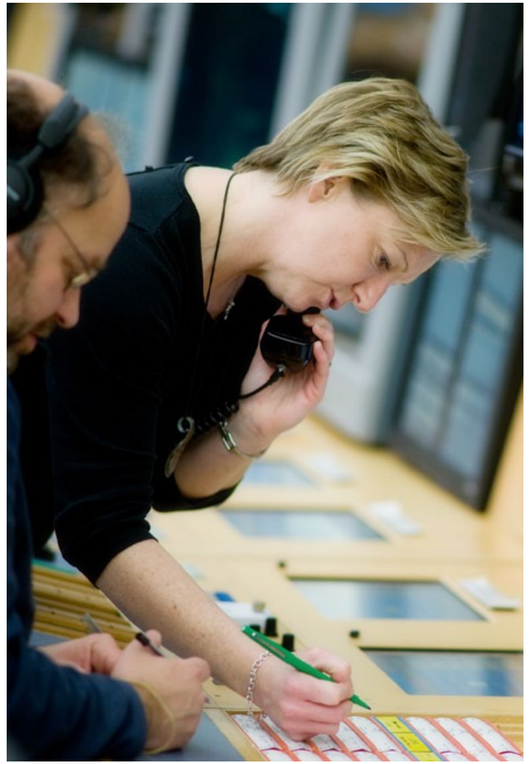
Airspace and procedures

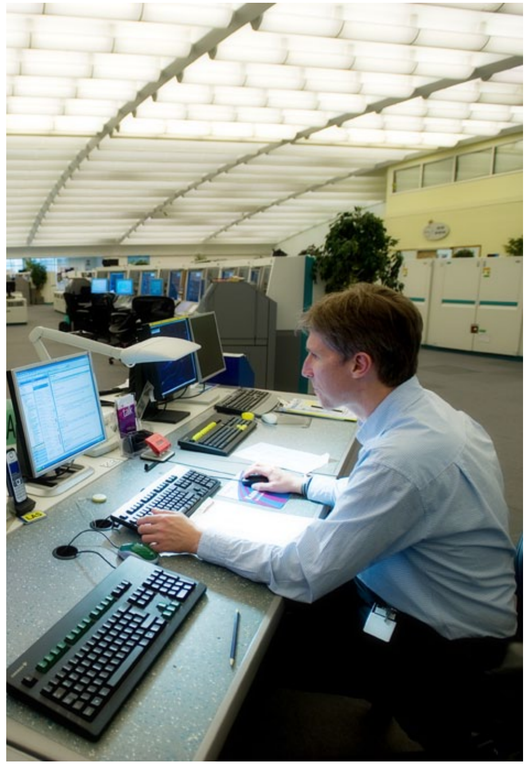
Definition: Airspace design can make a significant contribution to improving safety performance. There are a number of competing demands and constraints to manage as part of this process, especially in southeast England. Nevertheless, the level of safety risk can be reduced by applying best practice design principles, either by resolving intrinsic issues such conflicting traffic flows or high workload for Air Traffic Controllers, or by creating a managed environment where pilots are less likely to make a mistake, or if mistakes occur, can be more easily recovered.

High level strategy: To create a step-change in capability such that new airspace designs are inherently low risk. We will achieve this by reducing conflicting traffic streams, increasing systemisation and reducing the likelihood of human error on the ground and in the Flight Deck, focusing on the terminal airspace environment.

To improve we will...

- Make sure Air Traffic Controllers are actively engaged to identify and prioritise areas of risk and possibilities for improvement
- Carry out regular 'Airspace safety audits' to ensure that our airspace infrastructure and procedures remain fit for purpose in the context of an evolving operational environment
- Develop the Future Airspace Strategy Implementation Programme with the Directorate of Airspace Policy and make sure it supports NATS needs
- Redesign the London and Manchester Terminal Manoeuvring Area to modernise our airspace structures
- Develop UK High Level Sectors to accommodate flexible routing strategies and align with neighbouring Air Traffic Service Providers.
- Develop queue management techniques airspace related tools.
- Adopt a 'total system' approach when considering the integration of new airspace and technology developments
- Introduce a higher common UK-wide Transition Altitude as an enabler for more systemised and environmentally friendly controlling methods in Terminal Airspace





People and human performance

Definition: Humans are and will remain pivotal to the safe and efficient operation of Air Traffic Management (ATM). Over the next few years, the role of the human controllers, pilots or airside drivers, will change with the introduction of increasingly sophisticated support tools, new airspace designs and the return of traffic levels. These changes will place new demands upon people working in ATM. Acceptable levels of human capability will not emerge by chance.

High level strategy: To provide a foundation of human capability such that future changes are inherently low risk. We will achieve this by selecting and training the right people to do the operational jobs of the future and equipping them with the right knowledge; providing new ATM technology that is safe and resilient to human error; understanding and managing causes of workload within the operation and monitoring and encouraging positive safe attitudes and behaviour.

To improve we will...

- Select and train people to do operational jobs
  - Understand the operational roles within the organisation (now and in the future) and the competencies that are demanded
  - Select people who demonstrate these competencies or can acquire them
  - Provide the training to develop the necessary skills and knowledge
- Provide operational staff with the right tools
  - Provide equipment, airspace and procedures that support human abilities and avoids traps for human vulnerabilities
  - Proactively design safety risks out of the ATM system
- Manage operational workload
  - Create and validate a method which accurately predicts the workload impact of changing traffic patterns and use this to avoid overloads (and under-loads) during operational periods.
- Understand performance levels
  - Collect, analyse and present data on human performance that is meaningful to operational staff
  - Provide information on which techniques or circumstances have produced the best safety results in the past
  - Provide a means for practicing infrequently used, advanced or unusual skills
- Develop partnerships
  - Develop and implement framework agreements with key stakeholders designed to reduce the level of third party risk to NATS operation in the airport operating environment.

Afterword

The next four years are a time of enormous change for NATS, with the Olympics in 2012, performance- based navigation uptake in the airlines, security issues, significant new technical systems being implemented in our operation and the forecasted return of higher traffic levels.

Change presents challenges for safety. It takes our attention. We may have to do things in new and unfamiliar ways and we have to make sure that in the operation, the whole process is as seamless as possible. Our changes are carefully managed, but any change can unsettle a stable situation. This means that we have to be especially vigilant in periods of major change.

We may have a sense that some factors in our environment are increasing or reducing our safety risk, but measuring the level of risk with any certainty is more difficult. It's not an exact science and the fact that one issue has a higher statistical risk does not make it the only risk to acknowledge. Risk is often viewed differently by different people; the risks perceived by operational staff may not be the same as those highlighted by statisticians. My own career in NATS has given me direct experience of both the operational and data driven perspectives. Both have their value. I believe that we should expand our sources of information to provide a more complete picture of both operational and event based information. This may mean collecting additional information or being smarter with our use of the supplementary data and feedback that we already have.

I am always conscious that the current economic climate is difficult and our customers are facing tough challenges of their own. We are keen to support them by working together and achieving economies of scale by collectively addressing safety issues. We are delighted to be working with some airlines who are seeking to conduct safety improvements using techniques that we can facilitate with information or specific experience. Such collaboration benefits us all.

We are all facing challenges, yet we have achieved so much and are continuing to aspire to greater safety improvement. We are increasingly aware of the potential for risks beneath the surface that have not yet manifested themselves as events. We have unprecedented ability to collect data and model new situations and we are recognising the importance of managing human performance like never before. As we move towards and past the London Olympics we aim to continue our journey in learning to increase resilience and safety and our first steps have been set out in this strategic plan.

David Harrison,
Safety Director NATS

NATS Corporate & Technical Centre
4000 Parkway
Whiteley
Hampshire
PO15 7FL
+44 (0) 1489 616001
www.customer.nats.co.uk

June 2011