



**AFFSC(E) SECRETARIAT
c/o DIRECTORATE OF AVIATION REGULATION
& SAFETY**

RAF Northolt
West End Road
RUISLIP
HA4 6NG
United Kingdom

Telephone: +44 (0) 20 8833-8075
Fax: +44 (0) 20 8833-8098
E-mail: dars-oprswmarso2@northolt.raf.mod.uk

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Date: 19 June 2009

**MINUTES OF THE 137th MEETING OF THE AIR FORCES FLIGHT SAFETY
COMMITTEE (EUROPE) HELD AT RAMSTEIN 18– 22 MAY 2009**

**Secretary's Note: The 137th Minutes should be read in conjunction with the
AFFSC(E) CD ROM issued at end of the meeting.**

Present:	Air Cdre I Dugmore Col R Einhauer Maj G Vermeulen-Perdaen Lt Col (Ret) J Michaud Col I Skala Lt Col V Bradac Lt Col G Brodsgaard Maj M Hietanen Maj K Nortaja Maj T Schuster Lt Col J Behnke Col A Athanasopoulos Maj C Grapsas Col G Benyo Lt Col H O'Keefe Capt E Hollingsworth Col Y Laor Maj B Gur-Lavie Col M Mucci Lt Col A Faruoli Maj K Maskoliunas Lt Col G De Rover Lt Col J Koedijk (Mon only) Lt Col D Kleppesto Col M Grochowski Col M Wierzbicki Lt Col M Carneiro Capt K Bornemisza Col M Klavzar Maj B Saric Maj J Sendin	Royal Air Force Austrian Air Force Belgian Defence Force Canadian Forces Czech Air Force Czech Air Force Danish Air Force Finnish Air Force Finnish Air Force French Air Force German Air Force Hellenic Air Force Hellenic Air Force Hungarian Air Force Irish Air Corps Irish Air Corps Israeli Air Force Israeli Air Force Italian Air Force Italian Air Force Lithuanian Armed Forces Royal Netherlands Air Force Royal Netherlands Air Force Royal Norwegian Air Force Polish Air Force Polish Air Force Portuguese Air Force Slovak Air Force Slovenian Air Force Slovenian Air Force Spanish Air Force	Chairman
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	Cdr L Hall Capt E Jonsell Col J Kobert Capt B Altun Lt Col C Stewart Lt Col R Brown Maj T Massa Lt Cdr A Pringle	Swedish Air Force Swedish Air Force Swiss Air Force Turkish Air Force UK Army Air Corps United States Air Force Europe United States Air Force Europe Royal Navy	Secretary
In attendance	Col M Almomani Maj B Alsmarat Mr A Ginati Mr D Thorn Col F Cervo Lt Col E Reuber Mr M Wilkins Mr E Griffin Mr R Turner Mr J Welch Mr M Skoog Mr D Swinhart	Jordanian Air Force (Observer) Jordanian Air Force (Observer) ESA/ESTEC (Monday only) Lockheed Martin EUROCONTROL (Wednesday only) EUROCONTROL (Wednesday only) Office of Secretary for Defence Lockheed Martin Lockheed Martin Lockheed Martin NASA Air Force Research Laboratory	
Apologies	Sqn Ldr S Rea Col N Grigorie Capt C Pecete Col M J Van Der Berg	NAEWFC Romanian Air Force (RoAF) Romanian Air Force (RoAF) South African Air Force (Observer)	

Item (a)	Discussion and Decisions (b)	Action (c)
1. Opening Address	<p>1. The conference was opened by Vice Commander USAFE, Maj Gen Rogers, who said that the key point of flight safety was to preserve people and assets. Good training ensures that personnel operate safely and, although the USAFE has made great strides, the work on improving safety will never be done. In the 80s the USAF lost around 100 fast jet pilots per year in mishaps, but with reliable equipment, better engineering and professional personnel the accident rate has been significantly reduced. That said, wherever people are involved there is a tendency to make mistakes or deviate from approved procedures and these are major causal factors in accidents.</p> <p>2. There are significant challenges in Europe, including finding the right airspace to train, crowded airspace and the availability of ranges. These pressures can cause mistakes. The fact that USAFE has had no accidents in the past year is a tribute to the effort applied but, with repeated operational deployments, there should not be any complacency. A professional safety culture was fundamental to preventing accidents with a key element being Human Factors and the need for adequate training and guidance to be able to identify problems and react to them before the accident happened. It was essential that senior leadership should accept and meet their safety responsibilities and, on occasions, it might require a draconian leader to make necessary changes to the safety culture.</p>	

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	<p>3. Gen Rogers closed his remarks by warmly welcoming the AFFSC(E) conference at Ramstein. There were challenges ahead and the conference was important as it involved the key Flight Safety players from across Europe and beyond, who were well placed to address the problems he had identified.</p>	
<p>2. Chairman's Opening Remarks</p>	<p>1. The Chairman welcomed delegates to the 137th AFFSC(E) meeting and thanked the Lt Col Brown and his team for all their outstanding efforts in organising this year's event.</p> <p>2. There had been a significant changeover in AFFSC(E) delegates since the last meeting and the Chairman asked all to introduce themselves. In outlining the busy schedule for the week, the Chairman asked nations to keep to the 20 minute guideline for national presentations, as detailed in the Working Rules. That said, he emphasised that it was important to have value from the various sessions and delegates were encouraged to ask questions or make points as necessary. He also asked delegates to begin to consider what they would wish to include in the AFFSC (E) Statement at the end of this conference and to consider themes for the next meeting. The Working Rules were last amended in 2007 and delegates were asked to review them for discussion at the end of the week.</p> <p>3. The Chairman advised the delegates that, due to other commitments, members from Romania and NAEWFC were unable to attend the meeting. However observers were present from Jordan. It was confirmed that Israel would host the meeting in 2010 and Slovakia in 2011. The Chairman asked for a volunteer to host in 2012.</p>	
<p>3. Approval of Minutes from 136th Meeting</p>	<p>1. It was confirmed that all delegates had received the minutes of the 136th Meeting and that they accepted the Minutes as a true and accurate record.</p> <p>2. This item was held over until later on the 1st day, after the arrival of the Polish delegation. The Polish delegate gave a short review of the meeting in Krakow and said that they had submitted a report to the Polish CGS to confirm that the goals of the conference had been reached, and he thanked all for their assistance. It was important for Poland to start the legislative process for accident investigation and privileged information. While their MOD was content for this new state aviation law there were difficulties with their Ministry of Transport. He also highlighted some additional equipment brought into the investigation inventory.</p> <p>Delegates should refer to the CD-ROM issued at the 137th meeting for a copy of the Polish presentation.</p>	
<p>4. Matters arising from the 136th</p>	<p>1. Item 4.3 - NATO Flight Safety Panel (FSP). It had been agreed that the Canada would forward NATO FSP minutes to AFFSC(E) members. It was confirmed that these had been</p>	

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Meeting.	<p>provided and Canada would continue to do so. Item closed.</p> <p>2. Item 4.14 – AFFSC(E) Website. The Secretary agreed to update the AFFSC(E) website but, rather than the website at www.affsce.raf.mod.uk, the Secretary utilised a page within the DARS Internet site. An updated introduction had been included and all relevant documents published. Delegates confirmed that they were content and all information for publishing would be sent to the Secretary. Item closed.</p> <p>3. Item 4.10 - AFFSC(E) Logo. Canada agreed to revise the design and provide 2-3 different designs for consideration. The 3 proposals provided were of a similar design with minor differences and were based on the Warsaw Memorial to Polish Airman. It is an abstract representation depicting the movement of flight “...the dynamic shape of the sculpture, soaring towards the sky, creates the impression of flight, symbolizing the soaring spirit of the youthful airmen, full of optimism and inspired by their passion for freedom. It expresses their hope, courage and faith in the final victory”.</p> <p>4. Decision. After a democratic vote it was agreed that Crest 1 would be the AFFSC(E) logo.</p> <p>5. Decision. It was agreed that the Chairman would write to Miss Michaud, the logo designer, to thank her for producing the designs. Post meeting note: Letter sent.</p> <p>6. Decision. Poland agreed to write to the Warsaw Memorial designer to ensure that they are content for AFFSC(E) logo to be based on their design.</p> <p>7. Item 7.4 - Birdstrikes. At the last meeting the USAFE delegate agreed to provide Predict –Detect, ID and Deter (P-DID) details to delegates. This was done but again a number of nations had not received the information.</p> <p>8. Decision. The USAFE delegate agreed to retransmit the P-DID details to all delegates.</p> <p>9. Item 9(4) – Airspace Infringement Initiative Draft Action Plan. It was agreed that nations would respond individually. Item closed.</p> <p>10. Item 11(1) – AFFSC(E) 136 Statement. All delegates were requested to confirm the statement was acceptable. No comments were received prior to this conference and the delegates confirmed the statement was accepted. Item closed.</p> <p>11. Item 12(2) – Observer Nations. It was agreed to invite</p>	<p>All members</p> <p>Chairman</p> <p>Poland</p> <p>USAFE</p>

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	<p>Bulgaria, Croatia, Jordan, Latvia and Ukraine to the 137th meeting. Jordan was present and apologies had been received from Bulgaria, Latvia and Ukraine, all requesting consideration for future meetings. Future attendance was discussed under Item 12. Item closed.</p> <p>12. Item 12(4) – Working Rules. This was covered under Item 12 but no amendments had been received prior to the meeting.</p> <p>13. Item 12(6) – AFFSC(E) Master Contacts List. It was decided that members would provide updated contact details each year with their Information Exchange returns. It was also agreed that the Address List would be updated at the earliest opportunity. Most member nations are providing updates annually and when changes occur but a number were still failing to do so. The Secretary asked all delegates to check the latest version and update before the end of the conference.</p> <p>14. Decision. All members are to ensure future updates to the Master Contact List are forwarded to the Secretary at the earliest opportunity and an annual update provided with their annual Information Exchange returns.</p> <p>15. Item 12(9) - Delegate seating at meetings. It was agreed that, where space was at a premium, the priority would be to allocate every nation a single seat at the table before filling any remaining space with seats for additional national delegates.</p> <p>16. Decision. The Secretary agreed to incorporate this advice into the Working Rules.</p> <p>17. Item 12(11) – EUROCONTROL attendance at the next meeting. It was decided that the Chairman would invite EUROCONTROL to provide a short update. The invitation had been accepted and is covered under Item 9. Item closed.</p> <p>18. Item 12(13) - Representation at EUROCONTROL Safety Team meetings. The German delegate agreed to investigate whether he could provide an observer at the Safety Team meeting on behalf of the AFFSC(E). Unfortunately this was not feasible. However the UK Vice Chair of MilHaG and the AFFSC(E) rep from the NATOAEW Force Cdr were able to attend ST32 and ST33 respectively. While the issues discussed were not specifically flight safety related both felt it appropriate for AFFSC(E) representation to provide an operator viewpoint.</p> <p>19. Decision. The offer from the NATOAEW Force Cdr delegate to continue to represent AFFSC(E) at future ST meetings was accepted.</p> <p>20. Item 12(15) – European Space Agency attendance at the</p>	<p>All members</p> <p>Secretary</p> <p>NATOAEW FC</p>

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	<p>next meeting. It was decided that the Chairman would invite ESA to provide an update on the Fly Safe programme. The invitation was accepted and is covered under Item 8. Item closed.</p> <p>21. Item 13(2) - Theme for 137th AFFSC(E). It was decided that Human Factors, to include National environment, Culture, Actions, Organisation and Training would be the theme. Item closed.</p> <p>22. Item 14(1) - Aircraft type specific information exchange. The Secretary agreed to provide the initial coordination with the master list having 28 aircraft types currently included. Proposals were received to include the Gripen and UAVs, with the latter grouped into a single section. These have now been included and a copy of the latest version is at Enclosure 1 and a copy will be published on the web page shortly.</p> <p>23. Decision. All members are to ensure that updates are forwarded to the Secretary at the earliest opportunity.</p>	All members
5. United States Air Force (Europe) Overview	<p>1. Lt Col Brown outlined the USAF Safety Organisation, Flight Safety training, education and other programmes, as well as the mishap response. As an initial point he highlighted that the financial cost plays an integral part in the classification of each mishap, noting that cost increases due to inflation could lead to a revision of the categorisation banding.</p> <p>2. Over the past 25 years, the USAF has drastically reduced the number of Class A mishaps from over 100 in 1979 to the best year on record in FY06 with only 19. This has been achieved with a high operational tempo and aging aircraft fleets. Currently the USAF active duty fleet comprises some 4200 aircraft flying around 2 million hours per year. So far in FY09 the USAF has had 9 Class A mishaps, on track for the best year ever. With a fleet of 220 aircraft and 80,000 flying hours USAFE has also enjoyed a dramatic decrease in mishaps, including a number of years without any Class A mishaps; USAFE is currently rated the best Major Command for safety. Dedicated staffs work directly for the commanders at each level and are able to focus on safety issues and mishap prevention in all environments: flight, ground and weapons. He then highlighted the differences between his role as a Major Command Safety Officer and that of a Wing Safety Officer, with the latter having the ability to tailor programmes based on local conditions.</p> <p>3. Lt Col Brown highlighted a number of programmes and initiatives that have improved safety across the Command. These range from specific targeted programmes such as FOD prevention and the Bird Aircraft Strike Hazard (BASH) to a range of courses to meet the specific needs of key individuals such as Mishap Investigators and Board Presidents. Achievable goals are</p>	

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	<p>set, which can be changed or adapted based on the conditions; goals were met in FY08. There are also a wide range of publications to spread the safety message and regular meetings are held at all levels. As part of the ethos of preventing mishaps, the USAF has created a database that can be used to identify trends or potential problem areas before they grow into serious problems.</p> <p>4. Finally, Lt Col Brown described the investigation process to be followed if mishaps should occur. With both the Interim Safety Board, who gather the evidence and the Safety Investigation Board who look at accident prevention witness statements are privileged to encourage the free flow of information without fear of prosecution. The Accident Investigation Board is outside of the safety investigation process and are responsible for disciplinary action should it be considered. In this case witnesses would need to be re-interviewed in the presence of a lawyer.</p> <p>Delegates should refer to the CD-ROM issued at the 137th meeting for further information.</p>	
6. Theme – Human Factors	<p>1. The theme of the 137th Conference was Human Factors, including national environment, Culture, Actions, Organisation and Training. A number of US guest speakers covered various aspects of the subject.</p> <p>2. Fatigue Management Overview. In a presentation entitled “Keep your eyes open” Maj Vito Massa of USAFE provided background on sleep deprivation, how to manage it and some the mitigation strategies available. Over 200 Class A mishaps were attributable to fatigue, which was therefore a significant challenge. Individuals are never taught how to sleep and many have bad sleep habits. The briefing highlighted the basics of fatigue and how to spot the warning signs. For example typical individual performance after 24 hours awake was the equivalent to that with twice the blood-alcohol limit for driving. Despite alertness levels being at their lowest from 0200-0500, and therefore individuals being at their most vulnerable to error, many missions occurred in that time frame. The USAFE methodology of hazard assessment was then highlighted with how they managed the risk, including the strategic use of caffeine and fatigue management plans. The Chairman asked whether there was any guidance for ground crews; it was pointed out that the Fatigue Avoidance Scheduling Tool could be used.</p> <p>3. Maintenance Resource Management (MRM). Using a C17 ground accident as a case study MSgt Machie described some of the human factors issues facing maintenance staff. There were a wide range of causal factors ranging from failure to follow procedures to fatigue and organisational culture. Despite the ethos of “safety comes first” and “missions could depart late in</p>	

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	<p>order to achieve rules compliance” a significant number of maintainers felt under time pressure and would use workarounds. A MRM training course of 6-8 hours has been introduced with refresher training available at the discretion of the Maintenance Group Cdr. Compared with FY07 preventable maintenance mishaps have significantly reduced in FY08; 79% in Cat A and 86% in cost.</p> <p>4. Implications for Risk Management – Human Factors in USAF Class A Mishaps. The Class A flight mishaps attributed to HF have remained fairly constant at around 64%; the Secretary for Defence has challenged the USAF to reduce that by 75%. After an update on the evolution of CRM up to the 6th generation, which was Threat and Error Management, Maj Massa described the elements that constituted threats. These are the influences that can affect performance and lead to errors, including time pressures, weather and fatigue. Having highlighted the various Risk Management (RM) skills it was pointed out that 3 of the team skills (Situational Awareness, Task Management and Decision Making) account for over 90% of operations-related Cat A mishaps; Maj Massa provided background, definitions and mitigations for each. A good example of team skills working across formations was provided by the successful “dead-stick” recovery of an F-16 assisted by the 3 other members of his flight. Overall the aim was to learn from the past to build a better understanding of HF and become proactive rather than reactive. It was difficult to measure the effectiveness of CRM and RM measures, but trends could be identified through mishap data.</p> <p>5. Human Factors – DoD Human Factors Analysis and Classification System (HFACS). Maj Massa briefed the conference on the HFACS, which provides a method to analyse the HF mishaps by looking at human (ergonomic, cognitive, behavioural, medical, physiological etc) systemic and organisational factors. Each factor is assigned a code and one incident can generate a significant number of codes. These are incorporated into a database that can be reviewed horizontally or vertically noting up to 4 levels of coding. The key is to establish relationships between the codes and assign a rating to each: cause, contributor or outcome. Maj Massa then went through a number of Case Studies to demonstrate the utility of HFACS. Currently the USAF exploitation of HFACS is limited by technical issues that prevent users at all levels from accessing the database, which is accessible only at the USAF Safety Centre. The system also lacks automated metrics and is a manual process. The USAF is looking to improve this as well as the weighting of factors.</p> <p>6. The presentation generated significant discussion. Israel felt that while the Reason model and HFACS provided a good framework, it was a process that leads to a blame culture. He felt</p>	

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	<p>that HFACS can lead to a narrow investigation that did not examine every aspect of a mishap. The Chairman agreed that slavish use of HFACS as an investigative tool could, but would not necessarily, lead to “box ticking” rather than a comprehensive investigation; the UK intended to use HFACS for classification once an investigation was complete. However, the Chairman disagreed that the use of HFACS would lead to a blame culture. Determining whether blame is appropriate or whether an individual made an excusable error was a separate issue from determining the causes, contributory factors and effects. A Just Culture would ensure that all personnel were judged fairly and consistently when determining the balance between culpability and excusability. Given that HFACS was already in use in many of the AFFSC(E) member nations, it was proposed that HFACS should be used as the standard baseline taxonomy for HF related occurrences. This was agreed.</p> <p>7. During their national presentation Ireland gave a short briefing on the European Helicopter Safety Analysis Team (EHSAT) work currently underway. It uses HFACS as the taxonomy foundation and, while work is still underway, it was generally accepted to be a worthwhile process. This is a European wide initiative and more information can be found at www.easa.europa.eu/essi/EHSAT2.htm</p> <p>8. Decision. HFACS is recognised as the default Human Factors foundation taxonomy and it is recommended for use across the nations.</p> <p>9. F-16 Human Factors Mishaps. Mr Davy Thorn, Lockheed Martin Senior Staff Flight Safety Engineer and former USN back-seater, used a series of HF-related mishaps to describe some of the issues facing modern aircrew. These mishaps occurred from 2004-08 and, although they all occurred on F-16s, the lessons are applicable to almost any platform. Current areas of HF concern included Spatial Disorientation (SD), Pilot Induced Control Loss (PICL) and G Induced Loss of Control (GLOC). The overall HF attributed rate for mishaps was similar to the rate seen elsewhere although in this presentation it was split into 2 categories: Ops and Ops & Maintenance, the latter of which involves maintenance errors compounded by pilot action. This was a well received presentation which provided practical examples of what had been discussed in other presentations on the theme. The Chairman thanked Mr Thorn for taking the trouble to travel from the US to brief the AFFSC(E).</p> <p>Delegates should refer to the CD-ROM issued at the 137th meeting for further information on the HF presentations. However, due to proprietary reasons, the F-16 Mishaps presentation given by Davy Thorn could not be included. A copy of the DoD HFACS guide is included on the CD-ROM.</p>	<p>All members</p>

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7. Flight Safety Occurrences since last meeting	<p>1. Each nation provided a short presentation on accidents and serious incidents that had occurred since the last meeting. These presentations included background on national Human Factors processes and current issues. Common themes included:</p> <ul style="list-style-type: none"> ▪ Shortfalls in experience levels and saturation of key personnel. ▪ Reduction in flying hours affecting currency. ▪ Spatial disorientation. ▪ Availability of spare parts – having to cannibalise unserviceable aircraft and therefore increasing the workload for maintenance personnel. ▪ Resource and task imbalance. <p>2. Human factors. Extracts from the national presentations, in addition to, and expanding on, the common themes were:</p> <ul style="list-style-type: none"> • Belgium. Although there are fewer flying hours available, there are fewer pilots, so the hours per pilot have remained about the same. However, there has been no reduction in exercise or operational tasking, thereby increasing the stress felt by remaining aircrew. A near miss system, similar to Error Management System available for maintenance personnel. ▪ Canada. Increase in Class C accident rate. ▪ Czech Republic. Increase in flying hours to prepare for operations abroad with the number of pilots reduced through a reorganisation. 13 of 14 fatal accidents were attributed to HF. ▪ Denmark. Although there were operational considerations during the organisational change there was no risk assessment or consideration for knock-on effects. Compared with 07 there has been an increase in HF related accidents from 33% to 50%. ▪ Finland. Open and honest culture with ease of reporting and no disciplinary actions. The goal is to get the pilot to assess why the incident happened. The FS HQ provides feedback on the reports submitted 3 times per year and this is widely distributed at all levels. ORM is mandatory for all exercises for all engineers, aircrew and fighter controllers. ▪ France. Requirement for 7 hours MRM per year and it is intended to introduce stress management training for all personnel working with aircraft. ▪ Greece. Trying to instil wingman concept (ie a buddy system in which a young aviator is mentored by a more senior colleague) across the Air Force and a willingness to speak about errors. ▪ Hungary. Flight safety training for the leadership and key personnel is essential. There is an ongoing training in the Hungarian Home Defence Forces to have an ability to view 	

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	<p>the organization, tasks, conditions, actors and leadership as a system.</p> <ul style="list-style-type: none"> ▪ Ireland. Just about to start the process of setting up a MRM (I) course and finished the setting up of ORM. The new Flight Authorisers course will eventually be part of the appropriate career course. ▪ Israel. While the overall accident rate remained the same there was an increase in the rate of medium and severe accidents, particularly with fast jet and multi engine. Of note the day rate is worse than the night rate. HFACS is used in a translated and simplified framework. ▪ Italy. Reduction in availability of flying hours means that it may be necessary to select a few of the available pilots to maintain currency. Despite high levels of reporting there remains a culture of not reporting among the fast jet and multi engine community. ▪ Lithuania. Expect Military Flying Regulations to be issued this year. There is a different approach by the younger personnel. Safety audits will involve an annual inspection. ▪ Norway. Risks arising from NATO exercises that have too much divergent activity in one small area, exacerbated by the lack of a Safety Cell in the Operational Commander's HQ. A number of examples were given; this was discussed further under Item 14. With more output being demanded from fewer people there is a need to better define rest/off-duty requirements and a mechanism for communicating any requirement for a 'time out' to the top of the organisation. A Just Culture paper has been submitted to the MOD and there is optimism that it will be adopted along with civilian legislation already in place. There is a requirement to provide feedback on mishap reports but due to a lack of resources and system design weaknesses there is a 2 year back log. Many power lines are not on the maps or at the right height. This risk was rediscovered as Norway has a revised low flying concept where aircraft are not restricted to low level corridors when flying at 200' but can generally fly at 200' unless specific restrictions apply. ▪ Poland. Since 2004 all but one fatal accident has been caused by HF and blame has always been attributed. There is a need to have rules to provide the framework for a Just Culture together with tools to help the assessment. ▪ Sweden. CRM training mandatory followed by refresher every 3 years. ▪ Switzerland. Full Flight Safety organisation in place by end of 2010. The increase in personnel is to be moderate and the special general conditions of the air force are to be taken into account. No serious incidents for a number of years but, as there is no such thing as total safety, an accident could be imminent. There is an indication that many incidents are not being reported. The Swiss 	

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	<p>delegate has succeeded in gaining a clear demonstration of top-level buy-in for Flight Safety with the signing of the Flight Safety Policy document by the Commander of the SwiAF; a copy is at Enclosure 2.</p> <p>Delegates should refer to the CD-ROM issued at the 137th meeting for further information.</p>	
<p>8. Guest Presentation – European Space Agency</p>	<p>1. The aim of the presentation by Prof Amnon Ginati was to refresh the conference on the use of space-based capabilities to further aviation safety. He gave an overview of ESA and its relevance to Flight Safety, including the ability to analyse all levels of the atmosphere.</p> <p>2. Prof Ginati then provided an update on the Fly Safe project, part of the 1.2Bn Euro Integrated Application Programme (IAP). The aim was to better understand the local and seasonal bird movement and migration; for example using temperature detection as it was known that birds wait until the right temperature before making the next leg of their journey. To date four European Air Forces (Belgium, France, Germany and the Netherlands) are involved; the costs to them have been to provide radar information and very limited manpower. Currently health authorities are interested in the research as part of the efforts to minimise the spread and effects of bird flu. Since the last briefing to the AFFSC(E), the Fly Safe website has been updated and a demonstration was given to delegates. The models appeared to have good coherence and had been validated. A practical example of the potential of the research was improved programming of night flying in the Belgian Air Force, taking into account forecasts of bird movement.</p> <p>3. The Fly Safe project was into a pre-operational phase for 12 months from June 2009 and Prof Ginati urged other nations to consider joining the programme – a win-win situation with no additional costs. If more nations joined there would be more radar data and therefore improved forecasting. Netherlands confirmed the forecasting had proved useful with a 2 hourly bird notification to inform the planning and conduct of flying. It was agreed that operators needed to be involved in guiding the project so that it was tuned to operator requirements; this would be discussed under Item 11.</p> <p>4. As part of the Fly Safe programme Prof Ginati invited AFFSC(E) representation at the forthcoming final presentation to take place on 29 May 2009 at ESA/ESTEC. Members were asked whether any would be willing to represent AFFSC(E), and Denmark stated they would investigate. Netherlands confirmed that they would be attending and would ensure a read out was distributed to AFFSC(E) members.</p> <p>5. Decision. It was agreed that Netherlands would provide</p>	<p>Netherlands</p>

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	<p>AFFSC(E) with feedback on the Fly Safe final presentation. Post meeting note: Feedback provided and distributed separately to members.</p> <p>A copy of this presentation was not available for the CD Rom but was issued to each country by ESA/ESTEC by e-mail.</p>	
<p>9. Guest Presentation EUROCONTROL</p>	<p>1. As agreed at the last meeting Col Francois Cervo and Lt Col Edgar Reuber gave a series of presentations to provide an update on the issues of interest for the delegates.</p> <p>2. Civil/Military ATM Coordination Safety Developments. After an introduction about EUROCONTROL, its role and membership, Col Cervo gave a short presentation to promote the civil-military safety developments in ATM. Although the on-going credit crunch had seen a 7% reduction in traffic levels there remained a need to examine proactively the efficiency of the ATM system to take into account likely future traffic growth. A global approach was required and the involvement of all key stakeholders, including the military, from the beginning was essential. To that end the AFFSC(E) representation at the Safety Team meetings was most welcome. As discussed under Item 4 it was confirmed that this representation would be provided by the NATOAEW Force Cdr rep and that he would be made aware of the forthcoming meeting on 9-10 June 2009 at EUROCONTROL. This meeting would discuss the European Safety Plan (ESP). The ESP is part of the Single European Sky (SES) initiative and, although the focus is on General Air Traffic (GAT), any changes will affect military aviation. A copy of the draft ESP has not been provided.</p> <p>3. Decision. EUROCONTROL would be requested to provide a copy of the draft ESP for distribution among AFFSC(E) members. Post meeting note: Copy of draft ESP received and distributed to members.</p> <p>4. Harmonisation of OAT and GAT interface. Lt Col Reuber highlighted the difference between Operational Air Traffic (OAT) and GAT. He pointed out that National OAT arrangements were not harmonised across Europe resulting in major differences in how the rules were used and the handling of OAT. Following the harmonisation of GAT ATM through the SES, there was a need to do likewise for OAT. It is a 3 step process; harmonise and standardise the OAT rules, develop an OAT transit system, and develop options and requirements for cross border operations and cross border areas. The harmonisation proposals were currently with the member nations for comment (until June 2009), and it was expected that the new procedures would be in place by the end of this year.</p> <p>5. Safety Knowledge Initiative. Col Servo briefed the Conference on 'SKYbrary', a web-based encyclopaedia of global</p>	<p>Secretary</p>

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	<p>aviation information. The information is divided into easy-to-recognise, intuitive categories and includes a Google-type search facility. The knowledge base is similar to Wikipedia, but with more restrictive control over the authorship rights to aid credibility. A short demonstration was given to the delegates and all were urged to use the SKYbrary which is available at www.skybrary.aero.</p> <p>Delegates should refer to the CD-ROM issued at the 137th meeting for further information.</p>	
<p>10. Automatic Ground Collision Avoidance System (AGCAS)</p>	<p>1. Automatic Collision Avoidance Technologies (ACAT) and the Fighter Risk Reduction Programme (FRRP). Mr Mark Wilkins of the Defence Safety Oversight Council (DSOC) with a team from Lockheed Martin, NASA Dryden and the Air Force Research Laboratory gave a series of presentations on the programme to develop an Automatic Ground Collision Avoidance System (AGCAS) and an Automatic Aerial Collision Avoidance System (AACAS). These presentations covered: why the programme was required; its objectives and tasks; an overview of AGCAS and the F-16 programme coordination; and an update from the test and evaluation undertaken to date.</p> <p>2. A decision in 2000 to remain with the Predictive GCAS was based on the change in predominant tasking from low up to medium level and a perceived reduction in CFIT risk by the Command. However since that decision, all but one of the losses have been at medium level and as a result of CFIT, SD, GLOC, distraction or task saturation. CFIT remains the primary cause of USAF fatalities and the second most common cause of mishaps. Consequently, AGCAS is now the highest priority upgrade programme within the Air Combat Command.</p> <p>3. AGCAS is intended to be modular in nature, not platform specific, and fully passive. It is designed to provide minimal false alarms and be 98% reliable or better. The system does have both manual and automatic switch off capabilities; the manual switch-off is accessible in flight through the aircraft system menus and the system is automatically disabled when the landing gear is selected down or in the event of an ejection. There is also a facility to manually select the Minimum Safe Distance. The test and evaluation programme was in progress, with the 12th flight due during the conference week, and due for completion by the end of the year. There are technical issues with the integration into the Block 40 analogue F-16 but there has been significant progress in recent months.</p> <p>4. The Chairman thanked the team for an excellent set of presentations which provided the conference with far better understanding of this key safety equipment. The AFFSC(E) was grateful for the team travelling from the US to provide these briefings.</p>	

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	<p>Delegates should refer to the CD-ROM issued at the 137th meeting for further information.</p>	
<p>11. Discussions</p>	<p>1. 137th AFFSC(E) Statement. During extensive discussions on the final day consensus was reached on the 137th AFFSC(E) statement, at Enclosure 3</p> <p>2. Decision. All delegates are requested to confirm the statement is acceptable.</p> <p>3. NATO Flight Safety Panel (FSP). During its national presentation, Canada gave an update on the work being conducted by the NATO FSP, noting that many AFFSC(E) delegates were also members of the FSP. One key area of work was the requirement to standardise terminology and a concept paper was currently being staffed. There was significant discussion with regard to the role of the FSP and the areas of overlapping responsibility with the AFFSC(E). There was a suggestion that the work could be combined into one conference, albeit it would require an additional 1½ days. Canada advised that non-NATO nations would be able to attend the FSP as observers. It was agreed that there needed to be better coordination between the 2 groups and that AFFSC(E) should influence the work being undertaken by the FSP. Unfortunately there had been a lack of consistency with the Chairman and Secretary of the FSP changing for each of the last 3 meetings.</p> <p>4. Decision. The Chairman agreed to discuss the role of the NATO FSP with the NATO Standardisation Authority (NSA), to whom the FSP report.</p> <p>5. Decision. AFFSC(E) members who are eligible to attend the NATO FSP are strongly encouraged to do so.</p> <p>6. Strategic Flight Safety organisation. Italy proposed the requirement for a higher level standing European Military Flight Safety organisation sitting above the nations, providing strategic guidance and advice as well as collecting and collating statistics. While many nations felt this was a laudable aspiration it was agreed that this was a significant step forward with resource implications; it was more likely to be achieved in smaller incremental steps. Among the first steps would be better coordination with the NATO FSP and the setting up of AFFSC(E) sub committees to continue work between conferences. In the interim the FSP may have a more central coordination role and this would be investigated.</p> <p>7 Work between conferences. While significant work is conducted at the AFFSC(E) conference, relatively little is done to pursue specific issues in the interim. It was agreed that a series of sub-committees should be set up, each with 3-4 members, who</p>	<p>All members</p> <p>Chairman</p> <p>All members</p>

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	<p>can work together on specific issues in order to maintain momentum and liaison with other key stakeholders across the aviation community. The Chairman of each sub-committee would then present an update on work in progress to the annual conference. Based on discussions the following sub committees were proposed to start the process:</p> <ul style="list-style-type: none"> ▪ Unmanned Aerial Systems (UAS). ▪ Legal imperatives and constraints/Protection of Data. ▪ European Space Agency/Fly Safe. ▪ EUROCONTROL/Safety Team. <p>8. Germany offered to be part of the Legal sub committee and, as the SO2 UAV for DARS, the Secretary offered to be part of the UAS team. It is anticipated that NAEWFC, in their role as the AFFSC(E) representative at the Safety Team would be part of the EUROCONTROL sub committee. Other members and a Chairman for each of these sub-committees are required and volunteers are requested.</p> <p>9. Decision. Volunteers are requested to form the various sub committees proposed. Once formed a Chairman should be selected and Terms of Reference proposed for agreement out of committee. Proposals for further sub committees should be provided to the Secretary. The Secretary is to amend the Working Rules accordingly.</p>	<p style="text-align: center;">All members</p> <p style="text-align: center;">Secretary</p>
<p>12. AFFSC(E) Composition and Working Rules.</p>	<p>1. Membership. There were no applications for full membership of AFFSC(E).</p> <p>2. Observer nations. There was significant discussion on the potential number of nations that could be invited as observers; observer status generally led to full membership and a number of members felt that the conference had reached its maximum capacity to remain effective. Portugal highlighted the Mediterranean Dialogue nations and the potential benefit of inviting those nations, while Italy cautioned against discrimination. Given the balance to be struck between the AFFSC(E) becoming unwieldy and the requirement to encourage, assist and learn from new members, it was agreed that the AFFSC(E) would not to actively seek further observer nations, but it would be inappropriate to reject applications from 'new' nations. Existing observer nations would continue to receive invitations unless and until they applied for full membership or failed to attend 3 consecutive meetings. The status of South Africa was discussed. South Africa has not applied for full membership and, despite being invited, has not attended as an observer for the past 3 years. Accordingly, they will be removed from the observer nation list.</p> <p>3. Decision. It was agreed that the Chairman would invite Bulgaria, Croatia, Jordan, Latvia and Ukraine to the 138th</p>	<p style="text-align: center;">Chairman</p>

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	<p>AFFSC(E) as observer nations.</p> <p>4. Decision. It was agreed that South Africa would be removed from the observer nations list.</p> <p>5. Decision. It was agreed that a maximum of 3 invitations would be sent to each nation before removal from the observer nations list and this rule would be extended to member nations who failed to attend 3 consecutive meetings. The Secretary undertook to include this in the revised Working Rules.</p> <p>6. Working Rules. Although there had been no proposed amendments to the Working Rules since 2007, the Secretary recommended that the Working Rules should be reviewed. This will enable the incorporation of the additional guidance provided at both the 2008 and 2009 conferences as well as the addition of key areas such as sub committees.</p> <p>7. Notwithstanding the guidance provided previously, there remains a lack of consistency and compliance across the nations both for the Information Exchange returns and the national presentations. A number of Information Exchange returns were not received and others were incomplete with the spreadsheet summary of hours and accidents not included. Although national presentations were generally good, the repetition of statistics already contained in the Information Exchange returns reduces the time available to highlight issues or points related to the conference theme. It is important to stick to the 20 minute limit for national presentations.</p> <p>8. Some nations are represented by joint representatives with access to the navy, army and air force statistics. There is no requirement to separate out the air force statistics for presentation to the AFFSC(E); nations should simply make clear on their returns whether the data is joint or single service. It was agreed that it would be useful to include UAV accident rates in the returns, if available, but the UAV rates should not be part of the overall accident rate as this is very likely to skew the results. The inclusion of an accident rate for parachutists was also discussed and it was agreed that only those accidents where an aircraft or its crew contributed to the causal factors should be included.</p> <p>9. Decision. It was agreed that the Working Rules would be updated to include guidance on guest speakers, observer and member nation attendance and the Master Contact List, as well as the proposed sub committee structure. It would also include revised guidance on the Information Exchange returns and the national presentations. Any other proposed amendments should be sent to the Secretary by 31 August 2009. The Secretary would circulate a draft update to the Working Rules by 30</p>	<p>Secretary</p> <p>All members Secretary</p> <p>All members Secretary</p>

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	<p>the theme again, albeit another aspect, in 2010.</p> <p>4. Decision. It was decided that the theme of the next meeting would be “Human Factors: System Safety to include risk management in the context of reduced budgets and high operational commitments” would be the theme for the next meeting. It was also envisaged that a number of aspects such as brownout, impact of operations on training and crew proficiency and rewards/awards could be included.</p>	<p>All members</p>
<p>14. Any Other Business.</p>	<p>1. In Theatre Flight Safety Study. The UK Delegate highlighted UK concerns about the monitoring of In-Theatre (Afghanistan and Iraq) flight safety issues, particularly in relation to UAVs, AIRPROXs and reporting mechanisms. He said that a UK Study had determined that, although there were a number of effective Flight Safety organisations and processes at the tactical level, there was no effective method of sharing in-theatre Flight Safety information across national, command chain and regional boundaries. As a result, it was difficult to establish an accurate picture of the total risks and hazards faced by crews. Furthermore, with the high operational tempo over an extended period, aircrews appeared to have an increased tolerance of risk that resulted in them failing to report ‘near miss’ incidents that would almost certainly have been reported in other circumstances. It was agreed that flight safety should not be based on “inspection and control” but on “culture and ethos”.</p> <p>2. The Conference discussed the merits of pooling in-theatre reports, making them available on a limited access web page; however there was a lack of a standard format for in theatre incident reports and Canada confirmed that the Hazardous Air Traffic Report (HATR) STANAG had been deleted a year previously. Canada stated they could have issues with pooling information. They provide a bi-weekly report covering all flight safety issues and incidents across the Canadian Defence Forces, but there have been security concerns with some of the in theatre information included. The in-theatre information is now sent out on a limited distribution.</p> <p>3. The Chairman felt that NATO needed to take more of an active flight safety role. Canada agreed, stating that in general flight safety within units was good but less so within the NATO organisation or regional commands. Canada pointed out that when there were problems with one of the smaller Afghan airports they sent in a Fight Safety officer to assist and this had proved successful.</p> <p>4. Decision. The Chairman agreed to write to the NATO Component Commander Air at Ramstein to highlight the concerns raised and offer to provide advice and guidance. Post meeting Note: The Chairman has written to the NATO ACC at Ramstein, a copy of the letter is at Enclosure 6.</p>	<p>Chairman</p>

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15. Chairman's Closing Remarks	<p>1. In closing the meeting the Chairman summarised what was needed to drive down the occurrences that could be attributed to Human Factors. These were:</p> <ul style="list-style-type: none"> ▪ The buy-in of senior leaders. ▪ A Just Culture. ▪ Reporting systems that are easy to use. ▪ Analytical tools that are available from top to bottom of an organisation. <p>With these in place the organisation would be well on the way to harvesting the “below the waterline” incidents currently not being reported.</p> <p>2. On behalf of the AFFSC(E) the Chairman thanked Lt Col Brown and his staff for their outstanding efforts and hospitality in organising a highly successful and thoroughly enjoyable Conference. He also offered Lt Col Brown best wishes for his new assignment back in the USA. He thanked and congratulated the delegates for their professionalism and openness in discussing potentially embarrassing incidents, reflecting their confidence in each other.</p> <p>3. This was the final conference for the Chairman and he thanked all for the kind words received at the Conference dinner. He felt that the AFFSC(E) had a leading role to play in military flight safety across Europe and he wished them all the very best. In particular he thanked the Danish delegate, who was also at his last meeting, for his excellent support over the years and wished him well.</p>	

Tony Pringle

A Pringle
Lieutenant Commander Royal Navy
AFFSC(E) Secretary

Enclosures:

1. Flight Safety Information Exchange – Master List dated 1 Jun 09.
2. Swiss Air Force Flight Safety Policy.
3. Draft 137th AFFSC(E) Statement.
4. AFFSC(E) Members Delegates Address List dated 27 May 09.
5. Topic Shortlist for 138th AFFSC(E).
6. D/DARS 3/1/18/13 dated 9 Jun 09 (Flight Safety in Afghanistan).

Distribution:

External:

Action:

All AFFSC(E) Members

Information: (Less Enclosures)

Internal:

PSO/ACAS
RNFAIC
HQ AAC
ASG
JHC

Information:

D DARS
AD DARS
SO1 Ops FW
SO1 Ops Spt

137th AIR FORCES FLIGHT SAFETY COMMITTEE (EUROPE) STATEMENT

The members of the 137th AFFSC(E), assembled at USAFE Ramstein from 18 to 22 May 2009, agree that:

1. AFFSC(E) is concerned that tasking and resources are misaligned at a time when experience levels are in decline. The cumulative effect over time will result in a reduction in Flight Safety.
2. There is a requirement to raise the profile of military Flight Safety in Europe. There may be a requirement for a standing organisation to improve coordination, cooperation and representation of military Flight Safety issues across all member nations.
3. Reducing the number of occurrences and near misses caused, or contributed to, by Human Factors is vital in improving Flight Safety.
4. A common taxonomy for classifying Human Factors will increase the size of the data set across the nations and facilitate the exchange of information and advice.
5. HFACS is recognised as the default Human Factors foundation taxonomy and it is recommended for use across the nations.
6. AFFSC(E) recognises the potential of the ESA Fly Safe project provided ESA is given adequate guidance to ensure the project meets aircraft operator requirements.
7. AFFSC(E) is unaware of any international forum for military UAV operators to share information and best practice, which may inhibit the safe integration of UAVs with manned aircraft. AFFSC(E) intends to promote a regular UAV incident information exchange, regardless of the UAV weight.
8. AFFSC(E) strongly encourages AFFSC(E) member nations to maintain a Flight Safety organisation in accordance with STANAG 7160 and to attend the NATO Flight Safety Panel.
9. AFFSC(E) recognizes the potential of that Automatic Ground Collision Avoidance System being developed under the US Fighter Risk Reduction Programme to reduce accidents and save lives. AFFSC(E) fully supports the ongoing work to bring this capability into service.

TOPIC SHORTLIST FOR 138th AFFSC(E)

1. Collision Avoidance including Auto GCAS, TCAS and UAVs.
2. Human Factor System Safety including Risk Management in the context of reduced budgets and high operational commitments.
3. Impact of Operations on Training/Crew proficiencies.
4. Protection of flight safety data and EU Law.
5. Information sharing and common reporting systems.
6. Brownout/Spatial disorientation.
7. CFIT.
8. Safety Management Systems.
9. OAT v GAT (Airspace Management in Operational Theatres).
10. Definitions of Operating Boundary (Air v Ground Incident).
11. Birdstrikes.
12. Flight Safety Audits.
13. Rewards and Awards.