



SASCON '14

Swiss Aviation Safety Conference 2014

SASCON '14

“Human Factors in Complex Systems”

11th March 2014

Hotel Arte Konferenzzentrum, Olten / Switzerland



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Bundesamt für Zivilluftfahrt BAZL
Office fédéral de l'aviation civile OFAC
Ufficio federale dell'aviazione civile UFAC
Uffizi federal d'aviatica civila UFAC
Federal Office of Civil Aviation FOCA

Program

- 08:30** **Registration**
- 09:00** **Opening of SASCON '14**
Dr. Peter Müller, Director General of FOCA
- 09:10** **Supporting People at the Heart of the Aviation System**
Gretchen Lynne Haskins, Human Factors and Safety Specialist
- 10:00** **Decision Making in High Risk Systems**
Dr. Nadine Bienefeld, Human Factors and Safety Specialist
- 10:30* *Coffee Break*
- 11:00** **What Next for Human Factors**
Dr. Hazel Courteney, Head of Safety Strategy & Delivery, CAA UK
- 11:30** **Human and Organizational Factors in SAIB Safety Investigations**
Daniel W. Knecht, Director Swiss Accident Investigation Board
- 12:00* *Lunch Break*
- 13:00** **Introduction to the Workshops**
- 13:30** **Workshop 1:** Exercise in human factor analysis based on real world examples using widely recognized methods. How can human factors be identified and analyzed in the aviation environment.
- Workshop 2:** Examination of the effects of evolution and changes in the aviation system (regulatory requirements, new technologies, work processes) at the organizational level? How can they be dealt with?
Analysis of an accident scenario while attempting to answer the question «which of the aforementioned contributing factors led to that accident».
- 15:30** **Results and Feedbacks from Workshops**
- 16:30** **Open Discussion and Concluding Remarks**
- 17:00** **End of Conference**



Gretchen Lynne Haskins
Human Factors and Safety Specialist

Gretchen is an internationally recognised expert in human factors, and respected throughout the industry for her knowledge and leadership of safety performance improvement. She received both her Bachelor's and Master Degree's in Human Factors Engineering, and has been working in the field for over 25 years.

She has recently completed her term as a member of the Board of the UK Civil Aviation Authority as Group Director of the Safety Regulation Group (SRG). SRG provide oversight of aviation safety in the UK, including airlines, aerodromes, air traffic, airworthiness and licensing and training standards.

Prior to joining the CAA, Gretchen was the Director of Safety at NATS, where she championed and gave focus to those activities that provide front line operational safety benefit. She also worked to increase partnership within the global aviation safety community and was chair of the Global CANSO Safety Director's Steering Group.

Previously, she worked in nuclear certification and safety of intercontinental ballistic missiles, joint airworthiness trials for military aircraft, design and development of defence systems, and as an expert advisor to NATO on human performance and safety critical systems.

Gretchen has a strong aviation background, having served in the US Air Force, flown jet and piston aircraft, and led a multi-national team of test pilots and aircraft designers through the development and execution of a new approach to operational performance and safety certification.



Dr. Nadine Bienefeld
Human Factors and Safety Specialist

Nadine Bienefeld is a human factor specialist with over 15 years of experience in the aviation industry. She studied Neuropsychology at the University of Zurich and then gained her Doctor of Sciences from ETH Zurich, where she investigated flight crew and multi-crew behavior during high-risk emergencies. Besides, she has been working as human factor specialist, safety and CRM instructor at SWISS Int. Airlines, was member of the CRM steering committee at BAZL, and used to fly as senior cabin crew member for Swissair. Now, she is starting up her

own business consulting teams in high-risk industries such as aviation, health-care, and rescue services.



Dr. Hazel Courteney
Head of Safety Strategy & Delivery, CAA UK

Dr. Hazel Courteney worked for 12 years in aircraft design and manufacture including the Eurofighter Typhoon cockpit design at British Aerospace and helicopters at Westland Helicopters. She joined UK CAA in 1994 with a specific remit to introduce flight crew related requirements for large aeroplanes, which she succeeded in doing in June 2001 for Europe, and subsequently led the European team to harmonise with the USA, where the requirements have now been adopted. She Chaired the JAA Human Factors Steering Group, and trained UK CAA and international staff in HF. She became Head of Research & Analysis and generated the first externally published Safety Plan.

In 2009 Hazel joined NATS where she was responsible for Safety Performance reporting, the NATS Safety Plan, safety aspects of Airspace & Procedures and Safety Investigations, and internal safety audits of operational ATC units. She returned to CAA in 2011 as Head of Safety Strategy & Delivery, responsible for the State Safety Programme, Safety Performance Analysis and Human Factors. She is Chairman of the ICAO Safety Management Panel, who recently produced the first new ICAO Annex in 30 years, Annex 19. Hazel has a degree in Psychology, a Masters in Production Engineering and a PhD in Aircraft Design from London University and is a current licensed GA pilot.



Daniel W. Knecht
Director Swiss Accident Investigation Board

Daniel W. Knecht is director of the investigation unit of the Swiss Accident Investigation Board (SAIB). In this role, he leads two divisions, one responsible for the investigation of accidents and serious incidents in civil aviation and one dealing with accidents and incidents of railways, ships, trams and funicular railways. Daniel W. Knecht holds a Master's Degree in interdisciplinary sciences (physics, mathematics and chemistry) of the Swiss Federal Institute of Technology Zurich. He was trained as a fighter pilot in the Swiss Air Force, is a former commander of an air defense squadron and still an active flight instructor on Pilatus PC-7. Until now he was investigator in charge for more than 90 accidents and serious incidents of commercial air transport aircraft, large helicopters and all kind of general aviation aircraft. Daniel W. Knecht holds an airline transport pilot license both for airplanes and for helicopters. He regularly flies in an airline as first officer on Airbus A319/A320 and is current on single pilot and multicrew helicopters of the Swiss Confederation.



SASCON '14 Workshop Information

Workshop 1, Group Yellow

Exercise in Human Factors Analysis

Facilitator: Dr. Hazel Courteney

Case study: Airprox at Zurich airport between SWR1xx and SWR2xx

Synopsis: On 15 March 2011 at 11:41:15 UTC, an A320 aircraft, with the ATC call sign SWR 1x, received clearance to taxi to the take-off position on runway 16. While taxiing to the take-off position, the air traffic control officer (ATCO) of aerodrome control (ADC), cleared SWR 1x for take-off at 11:42:19 UTC. The crew of SWR 1x acknowledged this clearance and initiated their take-off roll at 11:43:12 UTC. At 11:43:05 UTC an A320 aircraft, with the ATC call sign SWR 2x, which was waiting in the take-off position on runway 28, received clearance for take-off. The crew acknowledged this clearance and immediately initiated their take-off roll. During the take-off roll, at 11:43:47 UTC, the crew of SWR 2x noticed SWR 1x, which was converging from the right on runway 16, and immediately initiated an aborted take-off. At approximately the same time, the ADC air traffic control officer gave the crew of SWR 2x the order to immediately abort their take-off. The speed of SWR 2x at this time was 135 kt. The aircraft came to a standstill in the safety area of runway 16 and then taxied to the assigned stand. The crew of SWR 1x had not noticed the serious incident and continued their flight to their destination...

Methodology: Traditional Barrier Model

Objective: The workshop group will discuss the human factors issues around the Accident Report 2136 and construct them using a traditional barrier model. This will enable the group to discuss the various stages at which issues can arise and how they can combine to allow an incident to occur. It will also help to assess systematically where and how mitigations might be introduced.

Deliverables: A summarized analysis of the main causal factors, focused on the Human Factors aspects



SASCON '14 Workshop Information

Workshop 1, Group Red

Exercise in Human Factors Analysis

Facilitator: Dr. Nadine Bienefeld

Case study: Airprox at Zurich airport between SWR1xx and SWR2xx

Synopsis: On 15 March 2011 at 11:41:15 UTC, an A320 aircraft, with the ATC call sign SWR 1x, received clearance to taxi to the take-off position on runway 16. While taxiing to the take-off position, the air traffic control officer (ATCO) of aerodrome control (ADC), cleared SWR 1x for take-off at 11:42:19 UTC. The crew of SWR 1x acknowledged this clearance and initiated their take-off roll at 11:43:12 UTC. At 11:43:05 UTC an A320 aircraft, with the ATC call sign SWR 2x, which was waiting in the take-off position on runway 28, received clearance for take-off. The crew acknowledged this clearance and immediately initiated their take-off roll. During the take-off roll, at 11:43:47 UTC, the crew of SWR 2x noticed SWR 1x, which was converging from the right on runway 16, and immediately initiated an aborted take-off. At approximately the same time, the ADC air traffic control officer gave the crew of SWR 2x the order to immediately abort their take-off. The speed of SWR 2x at this time was 135 kt. The aircraft came to a standstill in the safety area of runway 16 and then taxied to the assigned stand. The crew of SWR 1x had not noticed the serious incident and continued their flight to their destination...

Methodology: Human Factors Analysis and Classification System (HFACS)

Objective: The group exercise will provide the participants with firsthand experience of human factor accident/incident analysis. They will:

- a) understand the basic principles behind root cause analysis from a human factors perspective
- b) get introduced to a methodology used for human factors root cause analysis and
- c) apply it to a real world example

Deliverables: A summarized analysis of the main causal factors, focused on the Human Factors aspects.



SASCON '14 Workshop Information

Workshop 2, Group Blue

Effects of Changes in the Aviation System

Facilitator: Gretchen Lynne Haskins

Case study: Loss of Control Inflight

Synopsis: Owing to a technical problem in the onboard electrical system, the pilot decided when south of Zurich to abort the flight with three passengers on board from Geneva to Berlin-Schönhausen and to land at Zurich airport. After an instrument approach on runway 14 associated with navigation problems, the pilot attempted, by means of visual flight navigation, to bring Nxyz into a position from which a landing on runway 14 would have been possible. In the course of this manoeuvre, shortly before the beginning of runway 14, Nxyz collided with the ground from a right turn. The pilot and the male passenger in the front right seat were fatally injured in the crash. The female passenger in the rear right seat died a few days after the accident from her injuries. The male passenger in the rear left seat was seriously injured. The aircraft was destroyed during the accident. Fire did not break out...

Methodology: Reason's Model, Human Factors Analysis & Classification System (HFACS)

Objective: The participants will gain a better understanding of the range of human factors that can prevent accidents, with a particular focus on organisational and regulatory/external factors.

Deliverables: A list of causal factors, potential actions to prevent reoccurrence and ways of measuring or judging whether or not the actions have been effective.



SASCON '14 Workshop Information

Workshop 2, Group Green

Effects of Changes in the Aviation System

Facilitator: Daniel W. Knecht

Case study: Loss of Control Inflight

Synopsis: Owing to a technical problem in the onboard electrical system, the pilot decided when south of Zurich to abort the flight with three passengers on board from Geneva to Berlin-Schönhausen and to land at Zurich airport. After an instrument approach on runway 14 associated with navigation problems, the pilot attempted, by means of visual flight navigation, to bring Nxyz into a position from which a landing on runway 14 would have been possible. In the course of this manoeuvre, shortly before the beginning of runway 14, Nxyz collided with the ground from a right turn. The pilot and the male passenger in the front right seat were fatally injured in the crash. The female passenger in the rear right seat died a few days after the accident from her injuries. The male passenger in the rear left seat was seriously injured. The aircraft was destroyed during the accident. Fire did not break out...

Methodology: Reason's Model, Human Factors Analysis & Classification System (HFACS)

Objective: The participants will gain a better understanding of the range of human factors that can prevent accidents, with a particular focus on organisational and regulatory/external factors.

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