

Looking back at 2009, we can see more activities to increase flight safety than in all the years before. We see the EHEST EASA team with Michael Masson in the forefront, but also Matt Zuccaro, president of HAI, who has been one of the most outspoken advocates of flight safety.

But there have been so many meetings, workshops, conclusions, letters of intent etc., that we all need more orientation to see through it all. With the help of EASA, 4ROTORS will start to shed more light on it and facilitate that orientation.

A Year For Flight Safety

Update on the Progress of the Major European Helicopter Safety Partnership

What has the European Helicopter Safety Team achieved after three years of operation? This article describes the initiative's organisation, mentions its links to the European Strategic Safety Initiative (ESSI) and the International Helicopter Safety Team (IHST), and introduces the various EHEST teams and sub-teams. It also reports on main achievements and unveils plans for 2010-2012. Ready to take off?

The European Helicopter Safety Team (EHEST)

EHEST took off in 2006 as the helicopter component of the ESSI and the European branch of the IHST. EHEST is committed to the IHST objective to reduce the helicopter accident rate by 80 percent by 2016 worldwide, with emphasis on improving European safety.

EHEST brings together helicopter manufacturers, operators, regulators, helicopter and pilots associations, research institutes, accident investigation boards and a few military operators from across Europe. EHEST has members from organisations including Eurocopter, AgustaWestland New EHA, EHOC, EHAC, Bristow Group, CHC Helicopter, Shell Aircraft Ltd, EASA, UK CAA, MoD UK DASC, DGAC France, BEA France, ENAC Italy, CAA Norway, FOCA Switzerland, RAeS, Irish AAIB, AIB Hungary, UK AAIB, BFU Germany, QinetiQ, NLR, DLR, AviateQ Int., AIB and CAA Spain, APYTHEL, Swiss Helicopter Association, and European Cockpit Association (the complete list is available on the EHEST website). In total the initiative counts around 50 organisations and 130 participants, of which around 70 are actively involved in the analysis and implementation work. EHEST addresses the broad spectrum of helicopter operations across Europe, from Commercial Air Transport to General Aviation and flight training activities.

The European Strategic Safety Initiative (ESSI)

The ESSI is a ten year program launched in 2006 to enhance aviation safety for European citizens. ESSI is a partnership between the European Aviation Safety Agency (EASA), European National Aviation Authorities (NAAs), manufacturers, operators, professional unions, research institutes, military operators and the General Aviation

community. Currently, more than 150 organisations participate. The basic principle is to improve aviation safety by complementing regulatory action by voluntarily committing to cost-effective safety enhancements. Analysis of occurrence data, coordination with other safety initiatives and implementation of cost-effective action plans are carried out to achieve fixed safety objectives. The ESSI has three components: the European Commercial Aviation Safety Team (ECAST), the European General Aviation Safety Team (EGAST), and the European Helicopter Safety Team (EHEST). ECAST is co-chaired by EASA and IATA, EGAST by EASA and ECOGAS and EAC, and EHEST by EASA, Eurocopter, and EHOC. Progress of the initiative is reported on a yearly basis in the EASA Annual Safety Review and in various publications, articles, and presentations in International Conferences.

The International Helicopter Safety Team (IHST)

EHEST is also the European branch of the International Helicopter Safety Team (IHST). IHST was formed as a major initiative to improve helicopter safety worldwide. It is a combined government and industry effort to reduce the helicopter accident rate - both civil accidents and noncombat military mishaps - by 80 percent by 2016. The IHST has an Executive Committee composed of representatives of the FAA, HAI, AHS International, Bell, Shell Aircraft, Eurocopter, and Sikorsky. IHST has two main working teams: the Joint Helicopter Safety Analysis Team (JHSAT) and the Joint Helicopter Safety Implementation Team (JHSIT). The term "joint" indicates that activities are performed in partnership between authorities and the industry. A similar organisation was adopted within the EHEST.

EHEST Organisation

The EHEST is composed of the following teams and sub-teams:

European Helicopter Safety Analysis Team (EHSAT)

Using a process inherited from the JHSAT, the EHSAT analyses accident investigation reports and, from this analysis, identifies suggestions for safety enhancement called 'intervention recommendations'. To tackle the variety of languages in the accident reports and account regional characteristics, EHSAT regional teams have been formed in France, Germany, United Kingdom, Italy, Spain, Switzerland, Norway, Sweden, Finland, Ireland and Hungary. So far the countries covered by the regional teams account for more than 90% of the helicopters registered in Europe. The analysis of the different regional teams is consolidated at European level by the EHSAT Core

Team composed of all regional team leaders and EASA. This initiative is unique in its efforts to prepare a Europe-wide analysis of helicopter accidents. The EHSAT will ultimately also be involved in the measuring of results and effectiveness of safety improvements developed within the initiative.

European Helicopter Safety Implementation Team (EHSIT)

Launched on 5 February 2009 the EHSIT uses the accident analyses and the intervention recommendations produced by the EHSAT to develop safety enhancement strategies and action plans. The EHSIT retains the same regional organisation as the EHSAT because of clear advantages: relations between partners are already established, teams are aware of local context, and action plans will eventually be implemented at regional level to account for language differences.

Achievements and Plans

EHSAT

The Preliminary EHSAT report of helicopter accidents which occurred in Europe between 2000 and 2005 was published by the EU Publications Office at the end of November 2009. Accessible in electronic format on the EHEST website, the report presents the results of 186 accidents where a final investigation report has been issued by the appropriate Accident Investigation Board. It is estimated that this number covers some 58% of the accident reports currently available and some 25% of the estimated total number of accidents within this time frame.

Of the 186 events, 72 accidents involved General Aviation operations, 66 Aerial Work, 40 Commercial Air Transport, and 8 State Flights. 68% of the fatal accidents and 34% of all accidents occurred during the en route phase of flight. In 33% of the accidents, the pilot had less than 1000 hours total helicopter experience. In 26% of the accidents, the pilot had less than 100 hours flight experience on the helicopter type involved in the accident. However, accidents also occurred to very experienced pilots. The analysis also aimed at identifying all factors, causal or contributory, that played a role in the accidents using a standard taxonomy system developed by the JHSAT.

The top three identified areas are 'Pilot judgement and actions', 'Safety Management and Safety Culture', and 'Pilot situation awareness'. Different patterns were observed for Commercial Air Transport, Aerial Work and General Aviation and the latest EHSAT presentations provide typical accident scenarios for illustration purposes. To address Human Factors in a more structured manner, EHSAT also used a second taxonomy and classification system, namely HFACS, which was developed by Wiegmann and Shappell. HFACS features four layers: unsafe acts, preconditions of unsafe acts, unsafe supervision, and organisational influences. Focusing on unsafe acts only would be like focusing on symptoms without looking at the disease that caused them. The report provided interesting information on *why* 'Pilot judgement and actions' and 'Pilot situation awareness' figures were amongst the top three accident factors. EHSAT also derived intervention recommendations from its analysis.



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The top categories are 'Training and Instruction', 'Safety Management, Safety Culture and Operations', and 'Regulatory Matters'.

In total, 400 copies of the report have been distributed, in particular at the 3rd EASA Rotorcraft Symposium organised by EASA Rotorcraft Certification on 2-3 December 2009 in Cologne.

The EHSAT Regional Teams continue their analysis of 2000–2005 accidents and some have started analysing those accidents from after 2005 and/or before 2000. Whilst the preliminary EHSAT report covered the first 186 accidents analysed, the EHSAT database now contains more than 380 accidents of which 301 are in the 2000–2005 timeframe.

The analysis of the helicopter accidents occurring in Europe between 2000 and 2005 is expected to be completed by the end of March 2010 in view of the final EHSAT report for this reference period being planned to be published by mid 2010. The Regional Teams will then continue the analysis of accidents reports at the rate of one year of accidents per year. This is to monitor the effects of future safety enhancements and identify any emerging safety issues related, for instance, to operational, technological and regulatory developments.

EHSIT

In 2009 the EHSIT defined a process to aggregate, consolidate, and prioritise the intervention recommendations produced by the EHSAT and also defined safety strategies and action plans using an adapted version of the JHSIT process.

To address the top intervention recommendation categories identified by the EHSAT, the EHSIT has launched

three Specialist Teams on 'Operations and SMS', 'Training', and 'Regulation'.

EHSIT Specialist Team on Operations and SMS

This Specialist Team is tasked to process the intervention recommendations related to Operations, SMS, and Safety Culture produced by the EHSAT. Rapporteur is S. Burigana, Elilombarda.

Throughout 2009 the Team's terms of reference have been developed and approved, membership has been consolidated, and a global strategy and work plan have been drafted.

In 2010-2012 the team will finalise consolidation of the EHSAT intervention recommendations, consolidate its strategy, and develop detailed action plans targeting the industry, the authorities and the operators including private individuals in the GA community. The team will make the best possible use of materials and actions plans produced by other groups such as the JHSIT and the ECAST SMS WG, and will coordinate with European and international partners.

After the convincing presentation by Brian Humphries, Chairman British Helicopter Association, at the EASA Rotorcraft Symposium in December, EHEST has recently decided to promote in Europe the use of IS-BAO by IBAC (which has been granted in August 2009 European recognition through a CEN Workshop Agreement), in addition to the IHST SMS Toolkit. IS-BAO covers more than just SMS and provides an accreditation scheme. To better serve the needs of helicopter operators, a helicopter adaptation of IS-BAO will be developed in 2010.

A section will be created on the EHEST website to provide a selection of links, products, and references

Helicopters fly in riskier conditions than most other aircraft

NASA Chopper Drop Tests New Technology

NASA aeronautics researchers recently dropped a small helicopter from a height of 35 feet (10.7 m) to see whether an expandable honeycomb cushion called a deployable energy absorber could lessen the destructive force of a crash.

On impact, the helicopter's skid landing gear bent outward, but the cushion attached to its belly kept the rotorcraft's bottom from touching the ground. Four crash test dummies along for the ride appeared only a little worse for the wear.

Researchers must analyze the test results before they can say for sure whether the deployable energy absorber worked as designed.

"I'd like to think the research we're doing is going to end up in airframes and will potentially save lives," said Karen Jackson, an aerospace engineer who oversaw the test at NASA's Langley Research Cen

According to the National Transportation Safety Board, more than 200 people are injured in helicopter accidents in the United States each year, in part because helicopters fly in riskier conditions than most other aircraft.

For the test at Langley, researchers used an MD-500 helicopter donated by the U.S. Army. The rotorcraft was equipped with instruments that collected 160 channels of data. One of the four crash test dummies was a special torso model equipped with simulated internal organs. It came from the Johns Hopkins University Applied Physics Laboratory in Laurel, Md.

Technicians outfitted the underside of the helicopter's crew and passenger compartment with the deployable



The MD 500 just before being pulled up by the cranes

regarding SMS, Safety Culture, Risk Assessment, and Operations. This Section will primarily be developed for the small operators, who constitute the great majority of operators in Europe.

EHSIT Specialist Team on Training

Led by C. Marchal, Head of Training at Eurocopter, this Specialist Team will process the intervention recommendations produced by the EHSAT addressing training.

In 2009, terms of reference have been adopted, a training action strategy has been drafted, and the team has been formed. The strategy consists of identifying the main objectives and suitable actions according to forces in place and of anticipating as far as possible the helicopter world evolution by 2016 or later. A road map has been suggested as part of the strategy.

In 2010–2012 the team will develop detailed action plan targeting major stakeholders in Europe: helicopter manufacturers and suppliers, Flight Training Organisations (TRTO & FTOs), Synthetic Training Devices (STD) manufacturers, authorities (ICAO, EASA, and NAAs), helicopter and instructors associations, and operators and private individuals in the GA community.

EHSIT Specialist Team on Regulation

A third Specialist Team was launched in December. Led by Dave Howson, UK CAA, the team will identify potential areas for rulemaking. The Team will not deal with helicopter regulation in general but will process those intervention recommendations of a regulatory nature derived from the EHSAT analysis. The work of this Specialist Team could result in rulemaking proposals being submit-

ted to the competent authorities (ICAO, EASA, or NAAs), using standard rulemaking processes.

As this Specialist Team has just been created, terms of reference will be drafted early in 2010, and a work program will be defined. First task will consist of finishing to aggregate and consolidate the intervention recommendations produced by the EHSAT.

EHEST Communication Sub-Group

Led by D. Trapp, CHC Helicopter, this EHEST team has been tasked to define a process to efficiently communicate to the helicopter community, in particular to small operators and GA. To facilitate coordination with the EHSIT Specialist Teams, a member of the Communication SG will sit within each Specialist Team.

In 2009, terms of reference were developed and approved, a global communication strategy was drafted, and team composition was consolidated. The team is currently developing a comprehensive list of organisations and existing distribution networks that could be used as an 'entry point' to the helicopter community focusing on the GA small operator but also reaching out to pan-European organisations and linking to International forums.

In 2010-2012, the EHEST Communication Sub-Group will implement its strategy consisting of performing effective transfer of information to the EHEST, IHST, EASA, NAAs, ICAO, and other international forums, and with peer group organisations within IHST, EGAST, and other Safety Teams. The team will also address individual safety promotion communications to individual pilots, instructors and mechanics through Associations, and through safety promotion communications to organisations.

energy absorber. Created by engineer Sotiris Kellas at Langley, the device is made of Kevlar and has a unique flexible hinge design that allows the honeycomb to be packaged and remain flat until needed.

Kellas initially came up with the idea as a way to cushion the next generation of astronaut-carrying space capsules, but soon realized it had many other possible applications. So the concept became part of a helicopter drop test for the Subsonic Rotary Wing Project of NASA's Aeronautics Research Mission Directorate in Washington.

Jackson said researchers tested the deployable energy absorber under realistic conditions. "We crash-tested the helicopter by suspending it about 35 feet (10.7 m) into the air using cables. Then, as it swung to the ground, we used pyrotechnics to remove the cables just before the helicopter hit so that it reacted like it would in a real accident," she explained.

The test conditions imitated what would be a relatively severe helicopter crash. The flight path angle was about 33 degrees and the combined forward and vertical speeds were about 48 feet per second or 33 miles per hour (14.6 meters per second, 53.1 kph).

"We got data to validate our integrated computer models that predict how all parts of the helicopter and the occupants react in a crash. Plus the torso model test



A sort of "honeycomb airbag" created to cushion future astronauts may end up in helicopters to help prevent injuries instead.

dummy will help us assess internal injuries to occupants during a helicopter crash."

Engineers say the MD-500 survived relatively intact as a result of the honeycomb cushion. They plan to recycle the helicopter and drop it again next year, but without the deployable energy absorber attached, in order to compare the results.

NASA Langley Research Centre

EHEST is actively seeking new participants for the EHSIT, EHSIT Specialist Teams, and EHST Communication Sub-Group. Anyone who is interested is encouraged to contact the EHEST Secretariat by sending an email to EHEST@easa.europa.eu.

IHST Toolkits

In parallel to EHEST work, IHST has developed a series of toolkits freely accessible on the IHST website. Four toolkits are now available covering: SMS; Risk Assessment; Training; and Helicopter Flight Data Monitoring (HFDM).

Outreach

In 2009 the EHEST presented in the following international events:

- American Helicopter Society (AHS) Forum 65, 27–29 May, Grapevine, Texas, USA, www.vtol.org
- European Rotorcraft Forum (ERF 09), 22–25 September, Hamburg, Germany, www.erf2009.org/index.php,
- International Helicopter Safety Symposium (IHSS 09), 29 Sep-1 Oct, Montreal, Canada, www.ihst.org,
- Conference “Working on Fire”, 3–4 November, Frankfurt a.M., Germany, www.airtec.aero/documents/Dokumente/2009/090812_heliworld_2009_conference_programme_kl.pdf,
- 3rd EASA Rotorcraft Symposium, 2–3 Dec, Cologne, Germany, www.easa.europa.eu/ws_prod/g/g_events.php,

In 2010, the EHEST will present in at least the following events:

- Helipower India, 12-13 February 2010, New Delhi, India <http://www.rwsi.org/helipower/default.htm>
- CHC Safety and Quality Summit, 22-24 March 2010, Vancouver, BC, Canada <http://www.chcsafetyqualitysummit.com/summit-program/overview.aspx>. (At this event, a proposal to advance the creation of a global Helicopter Flight Data Monitoring committee will be taken forward by representatives from a large number of cross-industry organisations.)
- Internal Helicopter Safety Seminar (IHSS), 2-3 October 2010 (immediately prior to Helitech), Cascais, Portugal.
- 4th EASA Rotorcraft Symposium, December 2010 (dates to be defined), Cologne, Germany.

Calendars of Meetings

EHEST, EHSAT and EHSIT meetings calendars are published on the EHEST website.

EHEST Governance

- EHEST co-Chairs: John Vincent, EASA, John Black, EHOOC, and Jean-Pierre Dedieu, Eurocopter.
- EHSAT Co-Chairs: Michel Masson, EASA, and Andy Evans, AviateQ International.
- EHSIT Co-Chairs: Gunter Carloff, NewEHA, and John Steel, IAA.
- EHSIT Specialist Team Operations & SMS Rapporteur: Stefano Burigana, Elilombarda.



EASA building and tower in Cologne, Germany

- EHSIT Specialist Team Training Rapporteur: Christophe Marchal, Eurocopter.
- EHSIT Specialist Team Regulation Rapporteur: Dave Howson, UK CAA (acting).
- EHEST Communications Sub-Group Rapporteur: Duncan Trapp, CHC Helicopter.
- Secretariat: Michel Masson and Clément Audard, EASA

M. Masson

EASA, EHEST Secretary and EHSAT co-Chair

D. Trapp

CHC Helicopter,

EHEST Communication Sub-Group Rapporteur

www.easa.europa.eu/essi/ehestEN.html

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With deep sorrow we must inform you about a helicopter accident on January 21. The SAR AW139 crashed near Almeria, southern Spain, with four crew members on board. One rescuer sustained injuries, the captain, copilot and the second rescuer on board died. The dead rescuer was a family member of Captain David Abad, ECA's representative in EHSIT.

The Final Safety Gate

Generally, accidents are not the result of any one single event, but the product of several. My view is that every flight must pass through several gates in sequential order for the accident to happen ~ the final gate being the pilot. Logically, we as pilots have the final opportunity to prevent an accident.

... Like it or not, in all material respects, the pilot shoulders the final responsibility and authority for each flight. ...

So what are we to do when the realities of life are upon us? Consider this; if we as pilots truly want to positively affect our environment and ensure safety of flight, we must never forget a flight cannot start, or continue, without passing through us, the final safety gate.

On a daily basis it means pilots must make safety decisions upon aeronautical factors and the current operational situation only, absent other influences. Do you really want to say, „I had an accident or incident because the boss or customer made me do it, or the company should have provided me with the proper aircraft and equipment?

If you cannot do it safely, do not fly. ... Yes, even to the point of yelling at you while threatening your job or organization. I also know it is difficult to hold firm on your decisions when other pilots or operators will take the flight.

No, I am not naïve to the real world considerations that are present. Yes, you could be exposed to criticism, or negative effects on your job or company etc. However, in my mind the actual reality check is this; if you succumb to this line of thinking and pressure, your actions could result in the injury or death of others and yourself. Personally, I would rather be unemployed, although alive and having dinner with my family. Nor would I like to explain to the family of another why their loved one will not be coming home due to my actions.

To the helicopter owner/operators I respectfully request the following; ensure that you provide a supportive and just safety culture for your pilots to operate within. Provide them with the necessary training, equipment, and guidance to safely carry out their duties and responsibilities. Provide the pilots with a non punitive safety input system

to management. After all, who knows the flight operation problems better than the pilots, they experience them daily.

Understand the fact that respective of all the safety initiatives you put in place, every flight you conduct must always pass through the final safety gate, your pilots. So goes the final outcome of the flight. As an industry we have saved hundreds of thousands of lives, relieved suffering, and enhanced society for the greater good. But we must come to the realization that we cannot fulfill every flight request. We will not save every life, nor fly every tourist or personal use flight, put out every fire, cover every news story, or perform the hundreds of missions we mostly excel at. Collectively, we must acknowledge that No, Cannot, and Will Not, are acceptable responses to certain flight requests.

However, for those flights we do accept, we must strive to ensure they are all performed to the highest level of safety, and to bring everyone home, every time.



That is my story, and I am sticking to it. What are your thoughts? I sincerely want to know. Whether you agree or disagree, ... let me know what is going on in your world. As always have a Safe Flight and Fly Neighborly.

**Best regards
MATT**

*Matt Zuccaro is President of HAI.
The HAI President's Message is a standard in RotorNews.*

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