AIR RESCUE REPORT

International Commission for Alpine Rescue

Kommission für Luftrettung • Commission pour le Sauvetage Aérien • Commission for Air Rescue

IKAR-CISA

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INTRODUCTION:

This year's congress was hosted by the "Alpine Rettungs Schweiz" in Pontresina Switzerland. The Air-Rescue Sub-commission met with participants representing 16 countries. They were Austria, Bulgaria, Canada, Croatia, Czech Republic, France, Germany, Greece, Italy, Norway, Poland, Slovenia, Sweden, Switzerland, United Kingdom, and United States of America.

ACCIDENTS & INCIDENT REVIEWS FROM MEMBER COUNTRIES:

Brazil - Crash. Three firefighters (pilot and two crew) died when their rescue helicopter crashed during a body recovery operation in Chico, outside the capitol city of Brasília on September 8, 2007. The Bomberos (firefighters) were extracting the body of a 29 year-old female from a valley in an industrial area. The helicopter was an AS 350 B3. The helicopter was operated by the Fire Brigade. According to new reports, the rope/cable became detached from the "polycarbonate" litter and then struck the main rotor blade. There are differing media reports that a blanket covering the fatality came loose and blew up into the rotor systems as well. The aircraft was 20 meters above the ground at the time of the accident. A fourth member of the crew survived the accident. This crew member, a firefighter, was working on the ground at the extraction site.

Crash – Croatia

Mi-8 MTV-1 crash during a VIP flight in Vukovar. Three people died including one flight engineer and two persons on the ground. There have been eight crashes with the Mi8 in the past 15 years. This was the first with fatalities. In a separate incident involving wildlland firefighting operations, twelve firefighters died as a result of a firestorm. Four died on scene and 8 subsequently in hospital. One other firefighter survived. Extrication had been done with long line operations with three aircraft.

Fadec Failure Czech republic

EC-135- FADEC problem- one engine shut down in-flight. Although currently under investigation this incident, “very rare” is considered to be “technical” in nature. Subsequent investigation showed diode failure in FADEC resulted in “overspeed” indication and FADEC shut down engine.

Downwash incidents- Switzerland

During a house construction, an AS350 B2 working above the house created enough downwash to knock all four walls down. One construction worker was injured by wall section that fell inward.

Note: In 2007, six out of seven Swiss incidents with slinging involved aerial work.

Rotor Strike – Greece

During fire fighting operations, a CH-53 Sea Stallion in Greece collided with another similar aircraft while taxiing on an apron at an airfield. Rotor strike resulted in main blades one meter shorter. The aircraft was following taxi lines on ground which were constructed for a much smaller fixed wing space. The pilot assumed the markings were correct.

Mechanical malfunction – Holland

A Bristow Helicopters AS332 Aircraft was picking up 13 passengers on an oil rig. While descending from 3,000 to 1,000 feet, the pilot experienced ng problems on both engines. The pilot performed an autorotation into the ocean and washed up on to the beach.

United Sates - Crash

On December 10, 2006 an aeromedical Bell 412SP helicopter operated by *Mercy Air* (owned by Air Methods Corp.) crashed near Cajon Pass, California, killing the three flight-crew members on board. The aircraft, "Mercy 2" was in the process of re-positioning following a medical transport, from Loma Linda Medical Center back to the Victorville Airport. The crash occurred at 1742 hours. Although VFR conditions prevailed along the flight route, the first fire department responders reported that the area was covered by intermittent waves of fog, which made it difficult to locate the wreckage. Reported weather conditions from Victorville, 15 nautical miles northeast of the accident site, were visibility 10 statute miles; a broken cloud layer at 3,800 feet, and an overcast cloud layer at 4,900. *Mercy Air 2* had flown through Cajon Pass five times previously on the date of the accident.

United Sates - Crash

On November 21, 2006 a Hughes 369E helicopter crashed during a search mission along the Green River near Jensen, Utah. The helicopter was owned by Pete Martin Drilling Company of Vernal, Utah who had donated the helicopter for use in the search effort to locate a missing woman. The Uintah Sheriff's Department (Utah) had started a search operation to locate Michelle Turney, a 25 year-old mother of two children who was missing. The helicopter crashed at 1250 hours, shortly after starting the aerial search effort, when it struck a set of power-lines suspended across the Green River. The Pilot Brian Grayson was accompanied by Detective Corporal Kevin Orr of the Uintah County Sheriff's Office. Both were injured in the crash. Detective Kevin Orr later died from his injuries in the hospital.

United Sates – Crash

A California Highway Patrol AS350 B3 crashed on July 13, 2007 during flight training. The accident occurred at the Paso Robles Airport in California causing significant damage to the aircraft. Two pilots and a "flight observer" aboard were uninjured. One pilot, a certified flight instructor, stated that the flight was to conduct training for the commercial pilot, who was positioned in right seat. The CFI intended to demonstrate the maneuver. The CFI turned the hydraulics off to simulate an emergency. As he turned onto final approach the forces on the cyclic were difficult to overpower. The CFI instructed the commercial pilot to assume control of the collective, as he needed his other hand to reposition his grip on the cyclic. The force to manipulate cyclic increased and he told the co-pilot "give me the hydraulics back," The collective for the right-seated pilot was the only flight control equipped with a switch for the hydraulics. When the CFI opted to "fly out" of the aircraft became completely uncontrollable and collided with terrain.

United States – mid air collision

The crash of two AS 350B2 news helicopters in Phoenix, Arizona in July 2007 was a tragic reminder of the limitations of flight crew performance during periods of “task saturation.” This incident is an important reminder for personnel working in congested airspace. The crash resulted in four fatalities. Both helicopters were covering a police pursuit on local streets. The suspect's vehicle had been moving, but he stopped, abandoned it, and acquired another vehicle. The collision occurred during this transition.

The following factors were present at the time of the accident;

- Class B airspace surrounding the Phoenix (PHX) Airport.
- A common radio frequency was used by all operators.
- In contact with PHX ATCT (Air Traffic Control Tower).
- The news helicopters were in contact with their stations.
- Monitoring a dynamic and rapidly evolving event.
- Monitoring positions of other aircraft over the scene.

These news helicopters were staffed by a pilot reporter and photographer. A news helicopter pilot must carry out the following tasks;

1. Coordinate aircraft position with the photographer,
2. Talk to a producer or editor at the television station,
3. Communicate with air traffic control and nearby pilots
4. Monitor aircraft instrumentation

Exert from NTSB report:

According to Advisory Circular (AC) 90-48C Pilots' Role in Collision Avoidance, "...the flight rules prescribed in Part 91 of the Federal Aviation Regulations (FARs) set forth the concept of "See and Avoid." This concept requires that vigilance shall be maintained at all times, by each person operating an aircraft, regardless of whether the operation is conducted under Instrument Flight Rules (IFR) or Visual Flight Rules (VFR).

"Pilots should also keep in mind their responsibility for continuously maintaining a vigilant lookout regardless of the type of aircraft being flown. Remember that most MAC [mid-air collision] accidents and reported MAC [near mid-air collisions] occur during good VFR weather conditions and during the hours of daylight."

The AC further states, "pilots should remain constantly alert to all traffic movement within their field of vision as well as periodically scan the entire visual field outside of their aircraft to ensure detection of conflicting traffic. The probability of spotting a potential collision threat increases with the time spent looking outside, but certain techniques may be used to increase the effectiveness of the scan time. The human eyes tend to focus somewhere, even in a featureless sky. In order to be most effective, the pilot should shift glances and refocus at intervals. Pilots should also realize that their eyes may require several seconds to refocus when switching views between items in the cockpit and distance objects. Peripheral vision can be most useful in spotting collision threats from other aircraft. Pilots are reminded of the requirements to move one's head in order to search around the physical obstructions, such as door and window posts."

PRESENTATIONS:

Improving risk awareness

Patrick Fauchère, Air Glaciers, Switzerland

The European Aviation Safety Agency (EASA) has created its own flight safety team to look at accidents and incidents in European aviation. Not surprisingly, human factors have shown up in over 80% of accidents indicating the continued need to address these. The EASA is developing close working relationships with counterpart organizations across the world including the International Civil Aviation Organization (ICAO), the Federal Aviation Administration (FAA) in the United States and the aviation authorities of Canada, Brazil, Israel, China and Russia. Working arrangements between the Agency and these organizations are aimed at harmonizing standards and promoting best practice in aviation safety world-wide.
http://www.easa.eu.int/home/

Rescue hoists- cycles, cable, angle loads and hooks-

Geoff Dinsdale, Airdale Aerospace, United Kingdom

This presentation covered equipment safety considerations for the rescue of human cargo. The certification process for hoists includes quantifying of up and down cycles and the maximum load that can be attached to the hoist. It is important to note that the manufacturer counts a partial cycle of the hoist as a complete cycle for the purpose of counting.

Breeze Eastern Hoist cables are 19X7 mil spec stock wire. Breaking strain is close to 4000 lbs or ten times 600 lb load. 133 wires of the cable are in constant movement during use. Shock Loads are managed by a shock clutch (reactive overload clutch). This is incorporated to limit shock load impact on the cable. High Fleet Angles on the hoist cables and their potential for damage were discussed.
Fleet Angle: In hoisting gear is the deviation of the hoist load from the vertical caused usually by Environmental Conditions (wind, waves or fast water). It can cause the hoist load to deviate from vertical by as much as 45-degrees

Operational length capability of the hoist is often done by rapelling from the hoist hook when it is extended or partially extended. Both Breeze Eastern and Goodrich said that the hoist and cable are not designed or rated for this application. There is potential for shock load to the hoist cable. The “elastic” nature of rope causes the change in forces to be transferred to the hoist cable.

“Safety Notice”

Manufacturers do not endorse abseiling from hoist hooks whether the cable is extended or the hoist hook is housed.

TOPR helicopter rescue techniques

Wojtek Mateja, Tatra Mountain Rescue Service,
Zakopane, Poland

The TOPR mountain rescue organization of Poland presented a number of techniques used for long line operations. They are flying with a PZL (Polskie Zakłady Lotnicze - Polish Aviation Works), Sokol twin engine hoist equipped helicopter. This helicopter is equipped with a rescue hoist but it is currently inoperable. While they are waiting for a replacement hoist, they are using a number of fixed line techniques for high angle work. A few examples were shown on variations of rappel and fixed line techniques. Most of these require significant hover times.

Option 1 – Standard Technique
This method is applied when the rescuers may reach the victims without advanced climbing techniques (easy terrain, but helicopter can't land). The rescuers land as close to the victims. The rescuers and victims are extracted from site of accident by HEC technique.

Option 2 – Wall Rescue Technique
It is applied for wall rescues when the victims are below the summit or a convenient place for rappels from helicopter, but in the range of climbing ropes (max.50-60 m below the summit or descent site). Usually four persons are required to apply this technique. The rescuers are dropped off in a convenient site and access the accident site by rappel. Rescuers and victims are then evacuated using the HEC technique.

Option 3 – Exra Long Line Insertions
It is applied in wall rescues for high angle situations where long helicopter fixed line lengths are required. The length of rope required is determined by altimeter differences between the accident site and a suitable hover location. The pilot, hoist operator and hanging rescuer create the „radio comunication's triangle". These radio communications are critical given the long lengths that are required.

Option 4 – "Fast Cut" Technique
This technique is used for wall rescue if the victims have not sustained any serious injuries. The same approach is used as in option 3 but the rescuer stays on the line, secures the victim to the line and then cuts the victim from his anchors.

External cargo hooks for Human External Cargo (HEC)
Geoff Dinsdale, Airdale Aerospace, United Kingdom

The Federal Aviation Regulations (FAR 27.865) and Joint Airworthiness Regulations (JAR sec 29.865) for external loads are nearly identical;
External Loads. Sec. 27.865 External loads.
(a) It must be shown by analysis, test, or both, that the rotorcraft external load attaching means for rotorcraft-load combinations to be used for nonhuman external cargo applications can withstand a limit static load equal to 2.5, or some lower load factor approved under FAR Sections 27.337 through 27.341 (JAR 29.337 through 29.341), multiplied by the maximum external load for which authorization is requested. It must be shown by analysis, test, or both that the rotorcraft external load attaching means and corresponding personnel carrying device system for rotorcraft-load combinations to be used for human external cargo applications can withstand a limit static load equal to 3.5 or some lower load factor, not less than 2.5, approved under FAR Sections 27.337 through 27.341 (JAR 29.337 through 29.341), multiplied by the maximum external load for which authorization is requested. The load for any rotorcraft-load combination class, for any external cargo type, must be applied in the vertical direction. For jettisonable external loads of any applicable external cargo type, the load must also be applied in any direction making the maximum angle with the vertical that can be achieved in service but not less than 30 deg.

To meet these requirements extra considerations to be taken into account
1. Dual failure mode paths. Specifically designed hook or twin hook system designed to give no single failure path.
2. Increase electrical test from 20 volts per meter to 200 volts per meter
3. Dual activation for the primary quick release system - plus

Separate dual activation device for the backup quick release system

Night vision imaging systems (nvis)-
Per Linderberth, Swedish Police Air Support Unit, Sweden

This presentation focused on the physiology of night sight and the application of night vision goggles (NVGs) in helicopter operations. It should be noted that in the northern Scandinavian countries, there are extensive periods of darkness in the winter months. Stockholm is at 60 degrees latitude. NVGs are used routinely in the Swedish Police Air Support Unit. The effects of moonlight, starlight and artificial light sources on the efficiency of the goggles were discussed. Flight planning should include looking at weather forecasts and ambient light level forecasts. When flying at lower light levels, considerable experience is required. Basic training for the NVGs is 40 hours and 15 hours of flight time are required.

NVG mountain rescue operational & flying aspects
Leo Rind, German Air Force, Germany

The requirements of an NVG program were presented. One of the key points was there is more to a NVG program than just buying expensive equipment. NVG greatly improve safety and enhance most night SAR ops When a proper program is in place.

Organizational requirements include:

- Number of crews available for training
- Number of supporting personnel
- Crew duty time/spare crews
- Accessibility of weather and astronomical data
- 24 hour availability and public expectations
- Training opportunities and routine

Equipment requirements include:

- Goggles; current third generation commercially available or "4th generation"
- NVG compatible cockpit; goggles are very sensitive to any red light
- External aircraft lights; position lights; search lights

Training requirementsinclude:

- Crew concept- one or two pilots, HEMS crew member NVG trained and crew coordination concept. Specialized flying training
- Standardized recon pattern and talk-down
- Confined area operations, vertical rock faces, bowls and ridgelines
- Precision hovering under IR, white light, no lights
- Flying under whiteout conditions
- Emergency procedures , OEI (one engine inoperative), autorotation

** ***The Future*** – coming on the NH-90--- Helmet Mounted Sight Display HMS/D

Latest hoist technology
Bob Strickland, Goodrich Corporation, United Sates

Hoist use and operational limitations were presented. Excessive fleet angle situations can occur in maritime SAR because of pitching of vessels.

Rescue Hoist Trends:

- Multi-mission Use-- hoist/winch/fast
- Dual hoist installations (redundancy)
- Continuous duty cycle (non-stop operation)

- Greater load cap (410 kg- 900 lb)
- Greater velocity (1.78 m/sec – 350 feet per min)
- Greater fleet angles (45 degrees plus)
- Greater customization due to new aircraft
- Increased integration into aircraft systems
- Increased time between overhauls

Increased System Integration

- Health monitoring
- Maintenance
- Active Load sensing
- Integrated communication
- Searchlight control
- Cameras

Future hoist trends include, increased UAV usage, new hoist capability for deepwater rescue, high altitude and combat SAR, dual hoist installations.

The United Sates Army new Light Utility Helicopter (Homeland SAR) is the UH-72 Lakota (EC 145). There are 322 units which are to be constructed and many will be equipped with the latest generation of Goodrich hoist by 2016. Other new installations include the AW139 and the Augusta Grand.

Future of rear crew licensing-

Dan Halvorsen, Norwegian Red Cross, Norway

The implications of JAROPS licensing of rear crew members was discussed. Currently, the Norwegian standards for “rescueman” when he sits in the left seat are high. This crewman works as navigator and assists the pilot. Training and certification requirements include:

- SAR
- Offshore
- HEMS operations
- Medical
- Physical
- Rescue
- Water
- Avalanche
- Alpine
- Takeoff and landing (clearing rotors)
- Rope operations

Some of the differences across the member countries regarding the type of training that crew members get is mostly due to operational differences.

USA Operational Updates
Ken Phillips, Grand Canyon National Park, USA

U.S. COAST GUARD PERSON IN WATER (PIW) DETECTION- Contributed by ASTC Mario Vittone, USCG Aviation Technical Training Ctr, Elizabeth City, NC

Conclusions from person-in-water (PIW) tests conducted by USCG Air Station Elizabeth City, North Carolina:

- Personnel in immersion suits were more difficult to detect on FLIR from above 200 feet. ***(IKAR Discussion- There are variances in FLIR units by manufacturer and the Norwegian IKAR participants noted they have good detection of subjects in immersion suits routinely above this height)***.
- Having a FLIR equipped helicopter does not necessarily increase Probability of Detection.
- Splashing dramatically increases visibility over waving when viewed from 300 to 500 feet. Far above waving, lateral splashing of the water created the largest visual signature besides sea-dye marking and rescue-streamers. This was true on NVG and FLIR as well.

- Smoke flares also make excellent night-time signals for FLIR equipped aircraft. The smoke is hot and creates a large target at night for both FLIR as well as NVG with moderate illumination.

FLIGHT HEMET SAFETY- Department of Interior

The U.S. Department of Interior issued an *Interagency Safety Alert* on the possible hazards associated with improperly "donning or doffing" an SPH-5 flight helmet. This can lead to cracking of the helmet shell. The alert highlights the proper procedures for donning an SPH-5 flight helmet. The safety alert can be downloaded from the internet;
http://amd.nbc.gov/safety/alerts/IA_Alert_0701.pdf

REPORT RELEASED- Aviation Safety; Improved Data Collection Needed for Effective Oversight of Air Ambulance Industry. Published by GAO (Government Accountability Office) in February 2007.

► 89 air ambulance (HEMS) accidents occurred from 1998 to 2005 that resulted in 75 fatalities and 31 serious injuries.
► *There are currently 750 emergency medical service helicopters operating from 614 bases in the USA.* *(based on 2005 data).*
► 10 percent of the air ambulance operations in the United States are publicly operated (public aircraft).

A nationwide 2005 Air Medical Pilots Survey supported by the Foundation for Air Medical Research & Education (FARE) listed the following items as the most important safety concerns and what equipment was needed to fly more safely:

1. A gold standard for air medical operators be established that would include annual crew resource management training for all personnel.
2. Flight simulation training.
3. Night vision aid or mission-oriented unaided night flight training for all crew members.

FAA FACT SHEET -EMS Helicopter Safety
Published March 7, 2007

Below are some the listed actions that FAA has initiated to address EMS Helicopter Safety;

- Involvement with HEMS industry representatives.
- Decision-making skills Operational Risk Assessment Programs.
- Air Medical Resource Management (AMRM).
- Controlled Flight Into Terrain (CFIT).
- Terrain Awareness and Warning Systems (TAWS).
- Aeronautical Information Manual.
- Aviation Rulemaking Committee (ARC).
- International Helicopter Safety Team (IHST).
- Surveillance of large HEMS operators.
- Improved weather products and services.
- Facilitating use of night vision goggles.
- Flight Data Recorders.
- Terrain Awareness Warning Systems.

LEGISLATION UPDATE

Senate Aviation Bill will mandate EMS Safety Changes

The US Senate considering a bill to authorize additional funding to the FAA over the next three years. The ***"Aviation Investment and Modernization Act of 2007"*** has a section that directly **addresses a number *Helicopter EMS safety initiatives.***

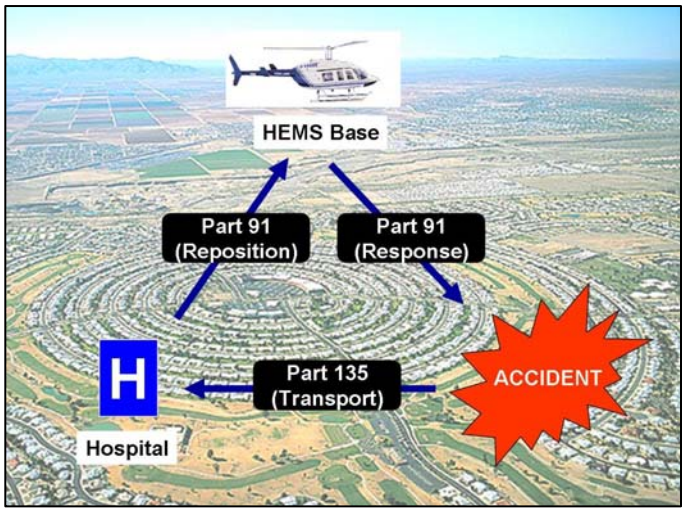
These initiatives address the following topics:

1. Compliance with Part 135 for all transport legs with crew on board.
2. Complete a Risk Assessment for all missions
3. Standardized Dispatch procedure for all HEMS programs
4. Terrain Avoidance Warning System for all HEMS aircraft
5. Cockpit Voice/Video/Data Recorders- feasibility & requirement

"Medevac Rescues Risky Business- Fatalities Double; Questions Raised"

By Catherine Wilkinson, Daily Press Victorville (California). Published 12/14/2006

> *Three out of four of those accidents occurred when no patient was on board the aircraft — a fact aviation lawyer and helicopter-pilot Justin Green said is attributed to lax regulations by the FAA……*
>
> *…..Stacey Friedman said those stricter regulations could have prevented the death of her flight nurse sister and the crew. In January 2006 she states, the NTSB asked the FAA to require all EMS flights fly under Part 135 aviation code. Part 135 requires stricter weather minimums — a 1,200 foot ceiling — and 3 miles visibility once a patient or organ is aboard. Friedman said those requirements change when the patient is no longer on the aircraft. Now the crew can reposition to the Part 91 aviation code.*
>
> *"You can take off with visual flight rules," she said. "It may be clear when you take off and clear where you're going, but you don't know what's going to happen in between."*
>
> *Much was the case in Mercy Air 2. Weather conditions were not favorable for flying through the pass. Fog was heavy due to a marine layer that rolled in at 4,000 feet and winds were said to be erratic.*



Air Ambulance Scene Response involves flight legs that fall under Part 91 and Part 135. The two sets of flight rules differ in two key areas, which are weather and visibility requirements as well as crew rest requirements. The FAR Part 135 requirements are more restrictive.

Loss of tail rotor effectiveness (LTE)- "*That Yawing Sensation"*

Patrick Fauchère, Air Glacier, Switzerland; Jean-Marc Pouradier, Eurocopter; Ray Prouty (An aeronautical engineer with 35 years in the helicopter industry working for Hughes, Sikorsky, Bell, Lockheed, and McDonnell Douglas as a helicopter aerodynamicist).

Concerns with LTE were brought up last year and it was decided to look at this more closely particularly with newer aircraft. Various configurations are shown followed by discussion on issues associated with various designs.

Different configurations of main rotor and tail rotor combinations are show below:

Bell 204
Robinson R 22

- Main rotor counter clockwisie (anti-clockwise)
- Power pedal- Left
- Tail rotor is pushing

1

Bell 205 / 212 / 412
Agusta AW 139

- Power pedal- Left
- Tail rotor is pulling

2

Bell went back with the tail rotor on the left side, but turning clockwise

Bell 206 / 407 / 430 / 427 / 230
Agusta 109 / 119

- Power pedal- Left
- Tail rotor is pushing

3

Eurocopter SA 315 / SA316 / AS350

- Power pedal- Right
- Tail rotor is pushing

4

Eurocopter EC 145 / BO 105 / BK117

- Power pedal- Left
- Tail rotor is pushing

5

Robinson R 44

- Power pedal- left
- Tail rotor is pushing turning clockwise

6

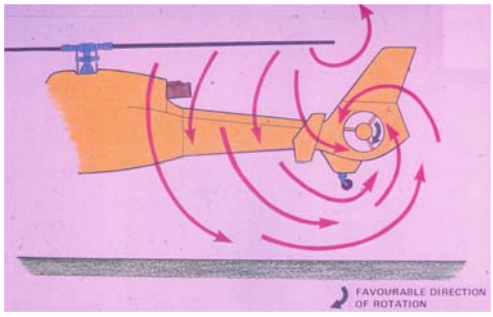
Illustrations by Ken Phillips

Is it better to have a pushing or a pulling tail rotor when working at power pedal? Does it make any difference for LTE ?

The pushing tail rotor has more effectiveness on vertical tail rotor than a pulling. The pushing sucks the air through the fin to get acceleration. On the new type with oriented tail rotor the effect is not the same. Oriented tail rotors are primarily designed to reduce the noise pollution. The LTE effect can not be described as similar to a conventional tail rotor and to obtain more information we should make contact with the manufacturer.

Is the sense of tail rotor rotation important, if yes what does it makes? It is interesting to note the changes which occurred with the Bell, Robinson and even Agusta 139 models.

The rotation orientation of the tail rotor is important and the goal is to have the leading tail rotor blade at it's lower point where it should be going forward. The tail rotor blade should go upward (against) the downwash of the main rotor, thereby generating greater effectiveness. (refer to the Eurocopter diagram below).



I understand that vertical fins would interface in LTE as well, but do you think that the most important is the thrust of the tail rotor.

Vertical fins do interfere, but as mentioned above, going through them causes acceleration. Thrust (rotor design) is the key.

How is a Fenestron tail affected by LTE ?

The Fenestron is effected basically the same as a conventional tail rotor, but sometimes more dependent on the wind direction. They are less influenced by the main rotor vortices due to their position inside the fin.

The following were identified as important considerations for LTE

- Tail rotor maintenance
- Pilot anticipation
- Awareness of the characteristics of the specific aircraft.
- Familiarity with recovery techniques
- Early identification followed by the immediate corrective action

Ropes used in HEC and mountain rescue applications
Enrico Ragoni, Air Work & Heliseilerei, Switzerland

The advantages and disadvantages of Dynemma ropes were discussed. These ropes can be found in a number of mountain rescue operations and in helicopter rescue applications. Dynemma is high modulus polyethylene (HMPE). It started as a yachting rope and has a high resistance to alkali and petroleum based products. It is 10 X lighter than steel but has the same elongation as steel. Creep is a disadvantage as is its low melting point (70 C). Some abseiling equipment, depending upon design, produces over 80-100 C degrees.

German Tornado Accident- Mittahorn, Switzerland
Patrick Fauchère, Air Glaciers, Switzerland

This accident was discussed due to its unusual nature and rescue requirements. A military Tornado jet crashed into the face on the Mittahorn. Both crew members ejected prior to impact. The pilot was killed after ejecting but the navigator survived the crash. The rescue was performed by an Air Glacier crew using a Lama. This was a challenging technical environment with an attempt at medical intervention at the scene ineffective. Urgency at the scene required securing patient and extraction. There were difficulties trying to deal with the parachute harness of the victim for extraction.

Although not an issue in this particular case, consideration for crash responses to military aircraft accidents- The HAZMAT danger associated with burning of composite bodies- **life threatening!**

Icing On Fenestrom
Peter Kahrs, Norwegian Air Ambulance, Norway

A situation was presented where icing occurred on a Fenestron tail rotor with conditions not normally associated with icing. Due to decreasing visibility, a flight with an EC135 ended in high hover so that the pilot could maintain reference. Although no decrease in performance was noted, a post flight inspection on the Fenestrom detected ice buildup. This was brought to the attention of Eurocopter and the company offered the following information.

HOGE (Hover out of ground effect) is the flight condition that accumulates the most ice on the Fenestrom shroud and stators

- *Read Eurocopter Technical Note: Icing on Fenestrom shroud.*

Following the incident with a Dauphin hovering over water a few years ago, there is increased awareness of icing over water in potential icing conditions.

Bergwacht Air Rescue Simulation Training Facility
Leo Rind, German Air Force, Germany

A review of the Air Rescue Simulation Training Facility being designed and constructed by the German Bergwacht (Volunteer Mountain Rescue Organization). The plan is to be operational with the facility by Fall 2008.

The need to develop a nationwide helicopter air rescue training facility revolves around standardization for proficiency and safety. Annually there are 1200 rescue missions nationally, which include 100 missions involving fatality recoveries. 1100 rescue missions involve helicopter support.

Within Germany there are 2,700 mountain rescue volunteers who staff 108 operational bases. Within this group there are a smaller sub-set of 540 mountain rescue team leaders and 145 mountain rescue doctors, who are involved in a higher frequency of incidents.

There are five air rescue agencies providing support to these missions. These include ADAC (German Auto Club), DRF (Aeromedical helicopter), German Federal Police, German State Police and the German Air Force (Huey with internal hoist). These agencies employ four different helicopter types, which means maintaining proficiency/familiarity with all ground rescuers who might be involved in a helicopter rescue is a staggering task.

50-60% of all airborne helicopter rescue training done by the Bergwacht is done in conjunction with the German Air Force (53 training days annually). The projection is that when the new NH90 (NATO twin-engine medium helicopter) will not be available for mountain rescue training. This is due to the increased size of the aircraft as well as the fact that they will be based in northern Germany away from the mountains.

Each field mountain rescuer receives a very limited amount of annual refresher training on helicopter rescue. The Bergwacht's goal is maximize the effectiveness of this training time.

A former military barracks area has been obtained as a site for the training facility. Old helicopter fuselages have been obtained for retrofitting into simulators at the facility. As part of the research phase these fuselages were suspended from a crane to test possible configurations and training heights.

Within the training facility itself a fuselage will be suspended on an overhead crane system, which will thereby permit movement in a simulated three-dimensional mode. There are several simulator stations which are being developed to permit varying cabin familiarizations.

The air rescue training facility has been designed to have a high degree of realism in the training simulators. The helicopter fuselages will have a turning tail rotor of constructed Styrofoam to highlight hazards. The effect of sun flicker through main rotor blades will be simulated to create realistic field conditions.
Huge mounted fans will create downwash below the simulators, which will be combined with aircraft noise for realism. The simulators will have rescue hoists with realistic cable speeds which will enhance familiarity with the equipment. The research and design phase determined that suspending the helicopter simulators at 12 meters would place them at a height, which is above the “fun factor” level for participants and cause them to treat the experience more seriously.

Additional simulator stations include an artificial climbing wall for both helicopter rescue training as well as climbing training. Due to the increased frequency of flooding incidents within

Germany there are plans for a water rescue station, which involves a pool and an adjacent building to simulate rooftop extractions.

The projected training plan is to have all team leaders complete a basic helicopter training program as well as eight hours on the simulators annually. All qualified mountain rescuers will complete a basic training program along with four hours of simulator time annually. Lesser members will receive a basic helicopter safety class only. A major benefit of having this training facility operational is that it is projected that it will lead to a reduced need for German Air Force training flights by 75%. This represents a significant risk management accomplishment. Projected cost of this training facility? 6 million Euros (8.6 Million USD), which includes the site, building, design costs and simulator.

Avalanche Searching from helicopters
Manuel Genswein, Switzerland

Techniques for using the system manufactured by Girsberger Elektronik AG for beacon searching was discussed. The following recommendations were made.

Setup

- Setup with intercom- qualified technician is imperative
- Impedance and voltage of the intercom
- Interference must be isolated and analyze
- Mount transceiver near collective within reach of pilot

Application

- Shut off all other external radio channels- distraction factor
- Turn off the transponder close to the ground- interference factor
- Only open the doors to lower the antenna
- Transceiver on hot mic
- No other mics on hot-mic!!!!!!
- Intercom volume not higher than approximately 2/3
- Pilot changes volume level himself
- Fly search pattern across the avalanche path from bottom to top- 150 M search strip width (across avalanche path)

IKAR/CISA 2008
The chairman of the Air Rescue Commission, Gilbert Habringer, indicated that he will be stepping down after this year. Patrick Fauchère was selected as the new chairman of the Air Rescue Commission beginning in 2008.