

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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PREPARED BY:

Marc Ledwidge
Public Safety Specialist
Banff National Park
Box 900, Banff, AB
Canada T1L 1K2
marc.ledwidge@pc.gc.ca



Ken Phillips
Chief Emergency Services
Grand Canyon National Park
Box 129, Grand Canyon, AZ
USA 86023
ken_phillips@nps.gov

INTRODUCTION:

This year's congress was hosted by the Corpo Nazionale Soccorso Alpino E Speleologico (mountain rescue organization of Italy). The Air-Rescue Sub-commission met with participants representing 18 countries. They were Austria, Bulgaria, Canada, Croatia, Czech Republic, France, Germany, Greece, Italy, Norway, Poland, Slovakia, Slovenia, South Africa, Sweden, Switzerland, United Kingdom, and United States of America. The Chairman, Mr. Gilbert Habringer of Austria, directed the proceedings.

ACCIDENTS/INCIDENTS FROM MEMBER COUNTRIES:

Switzerland

Crash - A Llama crashed when it was conducting external sling work at a high mountain hut well above timberline. The hut had a small confined helipad constructed right against the building with a safety net suspended below due to the steep exposure to the glacier below. The pilot had turned the helicopter 90 degrees to the hut (parallel to the building). The tail rotor and main rotor struck the building during take-off. The helicopter crashed on the glacier below.





Norway

Norwegian Air Ambulance (Norsk Luftambulanse)-

Water Ditching Incident- During a winter water rescue training session on Lake Vågavatnet, a Norwegian Air Ambulance AS 365 Dauphin helicopter crashed into the near-freezing water. The training was being conducted 250 meters (820 feet) from shore of the lake, which has a few houses surrounding it in a very rural area. The training evolution involved a water rescue pick-up of an air rescue crew person via fixed rope. It required that the helicopter first move into a three meter (10 feet) hover, so the rescuer could jump into the icy lake. It was during this low hover that the

aircraft crashed into the lake, without injuring the rescuer already in the water. The pilot and doctor on board the stricken helicopter were only dressed in normal clothing. The doctor became so hypothermic after a few minutes in the water that he could not help himself and was assisted by the rescue crewman, who was wearing a cold-water survival suit. The pilot and doctor had been sitting on same side of the aircraft and were assisted on to the floating fuselage after the accident. A local resident in the area luckily witnessed the accident and contacted additional emergency rescue personnel.

The exact cause of the accident has not been officially released. However there is speculation that ice from the lake surface became airborne during the hover and impacted the Fenstrom tail rotor of the EC135. Additional factors relating to this accident were the fact that dunker training by the crew was indispensable in their personal survival and being dressed in inadequate PPE was a shortcoming. Operating procedures are being changed to eliminate the hover jump and utilize only a water entry via rescue sling on a fixed rope. This will eliminate exposing the aircraft to foreign debris at ground level. In the future, training site selection will not be so isolated or far from a shoreline in the event of rescue. Operating 50 meters (164 feet) from shore instead is recommended. Finally, it was noted that during water rescue operations the rescue crewperson in the water can experience difficulty with visibility from the rotor wash. An immediate mitigation technique for this situation is to move aircraft or change height.



Marginal Weather Conditions- Poor Incident Coordination - Initially a HEMS helicopter unit was requested to respond to an accident involving a fall victim. The weather en route to the accident scene was known in advance to be marginal. The HEMS aircrew encountered a cloud base that was too low and had to abort the mission. Secondly a Sea King with rescue climbers responded and then also subsequently aborted the mission due to the poor weather conditions. Finally a ground rescuer team was called out after a significant five-hour delay with the air rescue attempts. There was a poor incident organization with the rescue response leading to an unnecessary delay. In asking *"How can we do better?"*, it was concluded that a ground rescue should have been initiated at the same time as the air rescue attempt, when it was known in advance that the weather conditions were marginal.

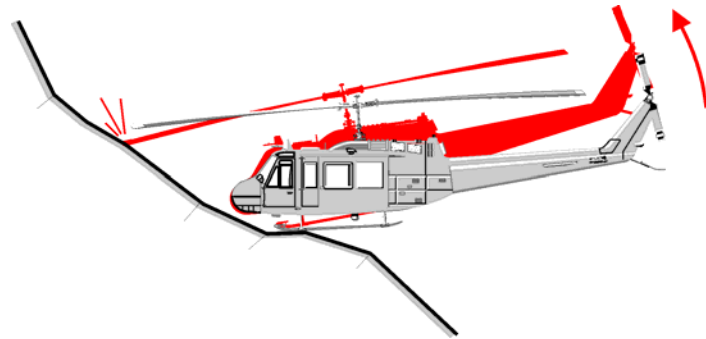
South Africa

HEMS Crash- A BO-105 crashed during a HEMS mission in October 2005. The patient had been transferred from a ground ambulance near the town of Southern Cape George. The helicopter left the scene with the intention of going up over the mountains, when they encountered fog. The flight route was aborted and the aircraft returned to the scene where the ambulance was located. The helicopter then attempted a second alternate route over the mountains when it crashed.

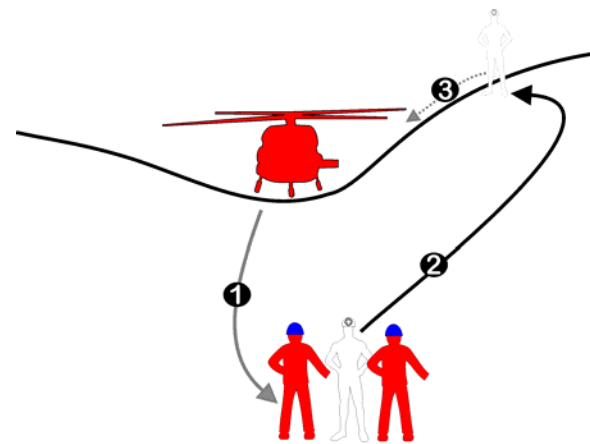
Hoist Incident- During a hoisting retrieval training the operator observed a broken strand on the hoist cable, which fouled the hoist. The joint military and mountain rescue SAR exercise was immediately aborted. The flight with the Atlas Oryx was immediately transitioned to a fixed line flyaway

Italy

Toe-In Landing Accident- During Spring 2005 the Italian Air Force was conducting toe-in landing training against a mountainous slope. The AB (Augusta-Bell) 212 had the front tips of its skids in contact with the slope during the toe-in procedure. During take-off the aircraft tilted forward on the tips of the skids. The main rotor struck the slope and resulted in a crash, which killed five out of the six personnel on board.



Hoist Operator Struck By Main Rotor- On April 20, 2005 another accident occurred when two police investigators were flown to a mountainous valley, for a follow-up investigation to a previous fatality. The landing zone being employed was in a depression with surrounding sloped terrain. Upon landing the investigators were escorted away from the helicopter by the hoist operator (crew chief), while the helicopter (Augusta- Bell 212) departed the scene. The hoist operator then repositioned himself to a slope above the landing zone, while the helicopter returned. Upon landing the hoist operator walked down slope directly into the main rotor blade and was killed when he was struck in the head.



Presumed Cable Strike- Six Fatalities (AS 350 B3)

- **Tourist chopper down in Italy**

"A sightseeing helicopter crashed on September 10, 2005 in the woods near a lake in northern Italy today, killing all six aboard – five tourists and the pilot, police said. The helicopter went down near the town of Porlezza, which is 16 kilometres (10 miles) from Lugano, Switzerland, and about 10 kilometres (six miles) from Lake Como's western shore. The craft exploded on impact with the ground, police said. The victims were believed to be Italians. The fire department said the helicopter was believed to be on a tourist flight at the time of the crash." (Source- Internet News Report)

Austria

Impaired Visibility- Fixed Rope Rescue- A helicopter rescue was initiated for three climbers who had become stranded on a high cliff face near a lake. The weather conditions included a low cloud layer with rain, which made accessing the accident site difficult from the air. A fixed rope helicopter rescue was commenced with a AS355- Twin Star, and a staging helispot was employed along the shoreline of the lake. During the rigging of the aircraft at the helispot, the pilot became soaked in the rain.



The rescue commenced and during the operation the inside of the helicopter suddenly fogged up with reduced visibility. The aircraft defroster had not been immediately employed. With rescuers suspended below the helicopter it was decided to immediately abort the rescue attempt. The pilot returned to the lake shore to land the rescuers. With reduced visibility and his concentration on instruments, the pilot initially began to set down the rescuers 250 meters (820 feet) from the landing zone. The rescuers radioed “up-up-up” to the pilot. The pilot then landed the rescuers in the shallows of lake up to their waist in the water prior to finally setting them on the established landing zone. Following the near-miss the crew suspended further operations. Two hours later the rescue was finally completed by another aircraft and crew from another operational base.

A mitigation technique for this problem of the aircraft windshield becoming fogged up during rescue missions is to aggressively use the heating/defroster prior to take-off. Remain on the ground until the cockpit is sufficiently warm and in no danger of fogging up.

External Load Accident-Multiple Fatalities- On September 5th a helicopter crossing an active gondola cableway dropped the 750 kg (1,654 lbs.) concrete bucket it was carrying beneath it. The bucket struck a cable car, which fell to the ground, while the impact caused the cable to swing violently and six children thrown from a nearby gondola. The accident resulted in nine fatalities, six of them were children. The Heli Alpin Knaus helicopter was transporting concrete for a new mobile phone and radar tower. The helicopter had been climbing to 3,048 meters (10,000 ft) with the concrete bucket and dropped the load from 274 meters (900 ft) above the gondola. The accident occurred in the ski-resort town of Soelden, 40 km (25 miles) southwest of Innsbruck.



The requirement for external sling work in Austria is 800 hours of flight time. The 35-year-old helicopter pilot had only qualified a month prior to conduct external sling missions. The helicopter was not overloaded at the time of the accident, preliminary results showed. The hook was checked post-accident and there was reportedly “evidence of an electrical defect located”. Austrian government regulations prohibit overflying an active cableway at low level.

The accident evoked memories of another tragedy near Cavalese in the Italian Alps, where a low-flying U.S. Marine jet sliced a ski gondola's cables in 1998, killing 20 people.

Czech Republic

Collision-During a HEMS mission, an EC135 collided with a buzzard at a cruise speed of 120 knots and 500 feet AGL. The bird penetrated the cockpit and struck the pilot in the head. The pilot's headset was pulled off and the NVG lighting switch on the overhead panel was activated, darkening all instrument panel screens. Debris from the windshield became lodged under the collective and this jammed its functionality. The pilot was able to clear the debris, maintain control and safely land the aircraft. Following this incident, Eurocopter is increasing windshield thickness to 5 mm. Discussion followed on the use of helmets and a number of other pilots recounted other incidents with bird strikes.



Germany

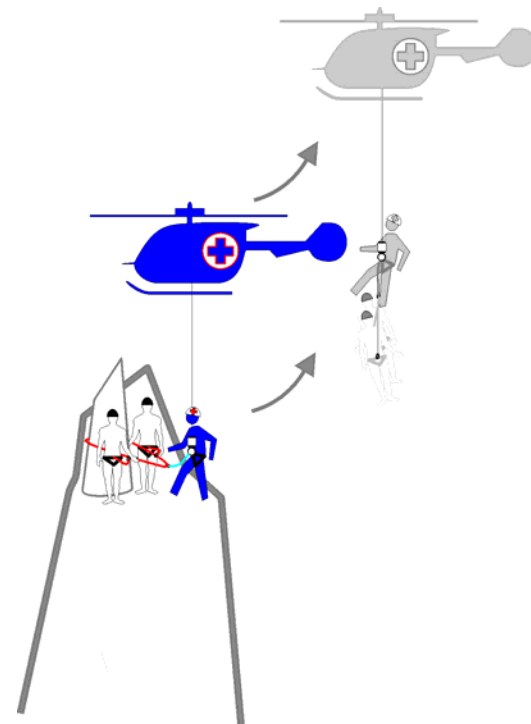
HEMS Accident- On September 28, 2005 a BK117 crashed into a slope at cruise speed in broad daylight (1115 hours) during good weather. The HEMS Christoph 51 helicopter, was operated by DRF Deutsche Rettungsflugwacht and stationed at the Stuttgart Airport. All four occupants of the aircraft, including the female patient, emergency doctor, paramedic and pilot, were killed in the crash. The accident occurred near Weilheim/Teck. Investigators are having a difficult time determining a cause of the accident. One possible cause was that the pilot had become unconscious from a medical problem.



- Eurocopter personnel attending IKAR pointed out how an *in-cockpit monitoring system* would have assisted with this particular investigation. Such a “black-box” system would involve a small video camera mounted directly behind the pilot with full view of the cockpit instrumentation and controls.

France

Hoisting incident- An EC145 was performing a hoist rescue on the Arête des Cosmiques of the Aiguille du Midi. With the aircraft well within its limits, a rescuer was hoisted down to two victims one of whom had suffered a minor ankle injury. Both climbers were secured to webbing tied around a rock horn. As the rescuer arrived at the site, he secured himself to the webbing prior to unhooking due to the exposed nature of the site. Before he had a chance to unhook from the hoist cable, the helicopter experienced a sudden updraft and gained altitude. The rescuer, now tied to the webbing, and consequently to the two victims, was lifted up. All three came off the ground when the webbing came off the rock horn. Although there were concerns initially that the people below might collide with the ridge, the pilot was able to fly away uneventfully and land nearby.



USA

Alaska- Selendang Ayu Rescue Accident, Aleutian Islands

On December 8, 2004 the Selendang Ayu, a 738-foot Malaysian freighter, went aground and the vessel broke into two pieces near the shore of Unalaska Island. The vessel was loaded with 483,000 gallons of heavy bunker fuel oil, 21,000 gallons of diesel fuel and a cargo of soybeans. When it broke apart it caused the *"worst oil spill disaster since the Exxon Valdez."*



Two US Coast Guard HH-60 Jayhawk helicopters based out of Kodiak, Alaska, provided rescue assistance. The flying conditions were terrible, with winds gusting up to 70 mph and periodic snow squalls cutting visibility to zero. The first Jayhawk, hoisted nine crew members off the freighter and transferred to a nearby Coast Guard Cutter. Once they got those crew members on board, the flight officers on the deck of the receiving USCG vessel said, *"Look, this is way too dangerous, and it's not worth it. Don't bring any more."*



The second Jayhawk hoisted nine more crew from the *Selendang Ayu* and transferred them to a landing spot on shore. A rescue swimmer was then lowered on to the vessel and six of the crew were hoisted aboard the Jayhawk. The seventh victim was on his way up, when a rogue 40 foot swell struck the helicopter. The rescue basket was pulled inside the helicopter just as icy seawater surged in the cockpit, causing the Jayhawk

to crash. It immediately rolled and began to sink. Three Coast Guard crewmen, wearing buoyant survival suits, floated to the surface, where a back-up USCG HH-65 Dauphin Helicopter picked them up. Six men from the *Selendang Ayu* drowned. The seventh, suffering from hypothermia, was rescued. The U.S. Coast Guard states they expect to publish the accident report on this incident in 2006.

California- Sacramento Sheriff's Department

On July 13, 2005 the Sacramento Sheriff's Department EC 120B crashed moments after a "mayday" call from the aircraft was received. The aircraft crashed near Nimbus Dam about 12 miles northeast of Sacramento. Sheriff's Deputy Joseph Kievernagel, 36 and Deputy Kevin Blount, 29 were killed in the crash. Deputy Eric Henrikson, 28 was hospitalized in critical condition.

- **Witness- "We started to see some flames shoot out the back of the helicopter."**

Investigators discovered a diaphragm in the Turbomeca Arrius 2F's fuel control unit (FCU) was installed upside down at the factory. The diaphragm ruptured allowing maximum fuel to the engine. The only way to control the unit was to shut down the engine. The engine had become so out of control it blew itself apart. Turbomeca issued a mandatory service bulletin on Aug. 3 advising of the problem.



Florida- Airheart One Helicopter,

The October 20, 2004 crash in Santa Rosa Beach, Florida resulted in the firing of Walton County Emergency Dispatcher, Richard Grippo. He was fired for allowing the fatal crash of a helicopter ambulance to go undetected for five hours. The Airheart One Eurocopter BO-105S crashed resulting in three fatalities.

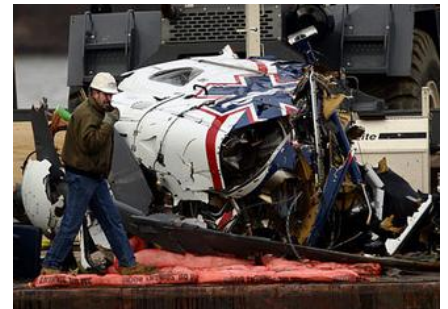


At 0041 hours Airheart One responded to a hospital ten minutes away. Two minutes after take-off the flight was aborted due to weather with a transmission of "returning to base." The dispatcher did not talk with the flight after this transmission. At 0050 hours, the dispatcher cleared the Airheart One call, believing that they were back at base. At 0610 hours, a relief pilot, arriving on duty, observes Airheart One is not at the base. Then at 0820 hours the wreckage was located in Choctawhatchee Bay in about ten feet of water.

Maryland- LifeEvac Air Ambulance

On January 10, 2005 a LifeEvac Air Ambulance (subsidiary of Colorado-based Air Methods Corp). crashed in the Potomac River, near Washington DC, at night near the Woodrow Wilson Bridge. The Eurocopter EC 135 helicopter was returning to its base in Stafford County and no patient was on board at the time. The accident resulted in two fatalities and one significant injury to the crew. ATC radar data revealed a 70-passenger Canadair Regional Jet 700 (CRJ-7), passed over the Woodrow Wilson Bridge a minute and 45 seconds before the accident helicopter passed over the bridge. Radar data showed the helicopter passed 900 feet beneath the flight path of the CRJ-7, in the opposite direction.

- **Survivor, Jonathan Godfrey, a flight nurse found himself strapped in his seat beneath the 39-degree river with a broken back, chest and arm. "I did not do the normal reaction, which is to gasp when you hit cold water," he says. "I kept the sense of mind not to inhale."**



This HEMS accident, adjacent to the nation's capital, was one of many numerous tragedies within the U.S. aeromedical industry during the past few years.

Four days later on January 14, 2005 the FAA & NTSB convened a **Helicopter EMS Air Safety Conference** in Washington, DC with AAMS, HAI NEMSPA, National EMS Operators Executive Forum and several commercial operators.

Meanwhile the media picked up on the increasing number of accidents and USA Today published two in-depth reports on the problem-

- ***“Surge in crashes scars air ambulance industry”***
By Alan Levin and Robert Davis, USA TODAY- July 17, 2005
- ***“Reconsidering air ambulance usage”***
By Robert Davis, USA TODAY, July 18, 2005

The statistics associated with USA HEMS (Helicopter EMS) Air Safety showed;

- *Since 2000, 60 people have died in 84 crashes — more than double the number of crashes during the previous five years.*
- *During that period, more than 10% of the U.S. air ambulance helicopter fleet crashed.*
- *If commercial airlines lost the same proportion of large passenger jets as air ambulance companies lost helicopters, 90 airliners would crash each year.*

-Source-USA Today

The FAA published the following documents in response to the Air Safety Conference;

- Advisory Circular-Air Medical Resource Management
(09-22-2005; Advisory Circular Number 00-64)
[http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rqAdvisoryCircular.nsf/0/b643be7ddea4b3af8625708c006529fc/\\$FILE/AC00-64.pdf](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rqAdvisoryCircular.nsf/0/b643be7ddea4b3af8625708c006529fc/$FILE/AC00-64.pdf)
- Operational Risk Assessment Programs for Helicopter Emergency Medical Services (FAA Notice 8000.293)
http://www.faa.gov/library/manuals/examiners_inspectors/8000/media/N8000.293.pdf

The Helicopter Association International (HAI) published the following white paper *“Improving Safety In Helicopter Emergency Medical Services (HEMS) Operations”* - August 2005

<http://www.rotor.com/membership/rotor/rotorpdf/fall2005/30.pdf>

- ***127 HEMS Accidents Since 1991- 85% Involved Human Factors Failures***

The recommendations of HAI included:

- Risk management training.
- Pilot training in inadvertent IMS and night cross-country.
- Emphasize a safety culture.
- Aeronautical decision-making training.
- Emphasize use of radar altimeters for night flights.
- Use of NVG and Terrain Awareness Warning Systems (TWAS)
- Use of current weather briefings.
- Pilot compartment free of glare and reflections.
- Adopt fatigue management program.
- Crew resource management training.

PRESENTATIONS:

Jindrich Nemec/Czech Republic - Operations with the EC135

Over the past year and a half, the Czech police Aviation Department (CPAD) has integrated the EC135 into their fleet to complement the BH412 and the BO105. The CPAD is celebrating its 70th year of operation this year. The aviation unit is currently operating five BH412s, two BO105s and four EC135s. Four more EC135s are to be added by 2008. The fleet is used for tactical work, HEMS missions and SAR work although the BO105s are used primarily for training new pilots.



Miha Avbelj /Slovenia –Hoist operations in marginal weather with the BH412

During a rescue operation for stranded and injured hikers, the crew flying a BH412 encountered a low ceiling and marginal visibility. They were searching for a group of 10 youths aged 17-19 years of age who had gotten lost in poor weather. The party was located and one of them had fallen 150 meters down a cliff. Two others tried down-climbing to assist him but got stranded. Once the rescue crew arrived, the victim who had fallen appeared deceased. This was later confirmed. With approaching clouds, the crew had a discussion about whether to continue with the mission. They evaluated the urgency and decided that with no obstacles away from the cliff and good reference near the cliff that they would continue with the hoisting operation. They completed the mission without incident. This incident was presented to generate discussion on decision making in marginal weather. Options were discussed including aborting the mission or completing the mission with ground rescue techniques.

Patrick Fauchère/Switzerland — Decision making for night operations



An evaluation was made of risk management decisions for night missions between 2002 and 2003. A number of missions were analysed to determine severity and whether the night-time response had a positive effect on the outcome to the incident. As expected, this was not the case in all responses. One of the suggestions was that taking the time to fully evaluate the situation including options may sometime avoid a potentially dangerous situation. This may sometime be difficult when an operation's SOPs often include a rapid deployment of helicopter rescue crews.

Leo Rind/Germany — Rescue of injured workers from windmills

Techniques were shown for removing injured workers from wind-powered turbines with the BH205. The SOPs included having the generator shut down and the blades locked into a V position to allow the aircraft to hoist up a patient. Rescuers climb up the shaft of the windmill and the technique is used only for extracting the patient.



Miha Avbelj /Slovenia–High elevation rescue, Nanga Parbat

The rescue and preplanning for the sling rescue of a stranded climber at the 6200 meter elevation on the Rupal Face of Nanga Parbat was presented. After attempts with an Allouette III, the mission was eventually completed with a military Lama. Part of the pre-



planning through the connections of the IKAR Air-rescue Commission was contacting experienced rescue pilots on the Lama from Switzerland. Air Zermatt, Air Glacier and Rega were all contacted for their expertise



and to look at the possibilities of having a Pakistani and Swiss crew perform the rescue. The Air Zermatt crew went to Pakistan to assist the Pakistani. A Pakistani crew completed the rescue, as the Air Zermatt crew arrived in base camp. The sling operation was done with an ad-hoc 8-metre sling rope. Once the victim was able

to hook into the sling rope, he forgot to release himself from his ice screw anchor. Fortunately, this anchor eventually failed, but the resulting elastic effect resulted in him almost hitting the bottom of the aircraft.

Leo Rind/Germany - Rescue from mine fields in Kosovo

There are special requirements for helicopter rescue of injured persons in minefields. Although 80% of minefields are mapped or cleared, the areas bordering Albania and Macedonia still present significant hazards. Most of the people entering these areas are weapons smugglers. People that detonate mines are usually either killed or severely injured. SOPs include special protective equipment for the rescuer called a “Spiderman” and minimum hoisting heights of 120 feet.

Ken Phillips/USA-Hurricane Katrina

“Most Destructive Hurricane To Strike U.S.”

Hurricane Katrina (Category 4 Hurricane) struck New Orleans on August 29th leading to 1,242 fatalities (as of October 2005), \$200 billion in damage and displacing one million people.

A total of 5,000 estimated aircraft were involved in the post Hurricane Katrina disaster response efforts. There were 374 Department of Defense (including Coast Guard & National Guard) helicopters, supporting recovery efforts along the Gulf Coast as of September 5, 2005.

The U.S. Coast Guard Response:



- were some initial 50-60 USCG Helicopters deployed in New Orleans
- USCG conducted an estimated 12,000 hoist rescues
- On occasion two helicopters were hoisting victims from the same larger buildings simultaneously.
- No reported hoist failures, although many hoist cables showed noticeable wear.
- USCG crew limits (six hours of flight time) were adhered to, although there were waivers.

During the Post Hurricane Katrina Response there were no reported helicopter accidents directly relating to “rescue” efforts. However there were two helicopter accidents involved in “support activities” within New Orleans.

- Sept 4, 2205- AS332 Super Puma (N330CC) suffered damage when it rolled on its side while operating in New Orleans. The aircraft was operated by Sky Cats Super Puma Corp, Lakeview, OR. No reported injuries.
- Sept 7, 2005- Bell 206 (N230CA) owned by GO Interests LLC, Manvel, TX. The pilot reportedly lost control and impacted the roof of a house while in an orbiting turn during a photo flight over New Orleans. The pilot and passengers immediately rescued by a military Black Hawk helicopter which was overhead.



During the preparation for Hurricane Rita, the U.S Coast Guard personnel from Air Station Houston shared important lessons learned from Hurricane Katrina.

1. Airspace de-confliction.
2. Communication.
3. Pre-designate safe casualty drop-off points.
4. Fuel is “gold.” Identify fuel resources in advance.
5. Stage resources in advance.

Airspace De-confliction

► **UNBELIEVABLY, THERE WAS INITIALLY A 6:1 RATIO OF MEDIA AIRCRAFT TO DISASTER RESPONSE AIRCRAFT IN THE AIRSPACE OVER NEW ORLEANS.**

Federal aviation regulations (FAR) establish airspace flight restrictions.

Title 14 Code of Federal Regulations- FAR § 91.137 **Temporary flight restrictions (TFR) in the vicinity of disaster/hazard areas.** There are two levels of TFR’s “A-1” and “A-2”. The distinctions in restrictions are outlined below;

(a)(1) No aircraft may operate within area unless directly participating in the hazard relief activities.

(a)(2) Aircraft may operate within the designated under the following conditions:

- 1) Participating in hazard relief activities.
- 2) Carrying law enforcement officials.
- 3) Aircraft operating under the ATC approved IFR flight plan.

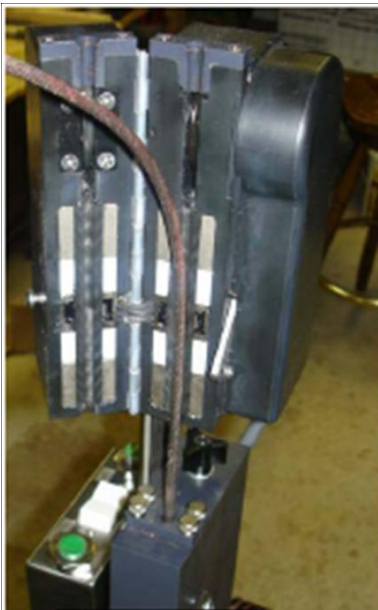
- 4) Operation directly to or from an airport within the area.
- 5) Carrying properly accredited news media.



With no ground radar stations operational, AWAC (Airborne Warning and Control) Aircraft were brought in over New Orleans to assist with airspace de-confliction. The AWAC's provided "flight advisement only"- SEE & AVOID was still the overall essential task of aircraft operating in the airspace according to Julie Stewart, National Airspace Coordinator- BLM/USFS.

- E-2 Hawkeye & E-3 Sentry AWAC were in contact with Department of Defense Aircraft-
- U.S. Customs P-3B AEW (airborne early warning) were in contact with Civilian Aircraft.

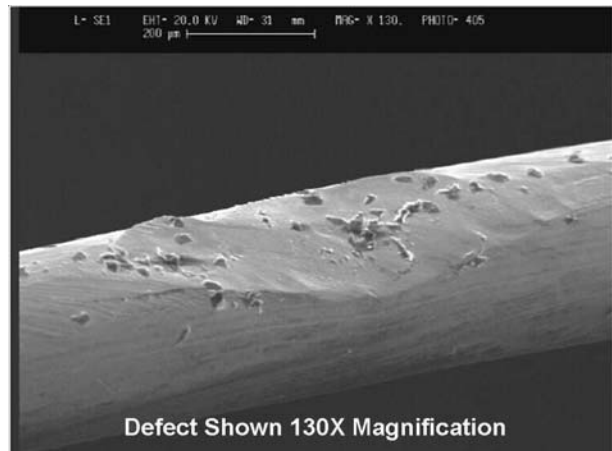
Ken Phillips/USA-New Products & Technology



- Hoist Cable Inspection System- Zephyr International (www.zephyrintl.com) has introduced their MagSens™ Rescue Hoist Wire Rope Inspection System. Helicopter rescue hoists use stainless steel 19 X 7 rotation resistant wire rope. The 3/16" hoist cable has a static breaking strength of 3300–3800 lbs. The two major hoist cable suppliers to the rescue hoist manufacturers are Loos & Company, Pomfret, CT (supplies Breeze-Eastern) and Strand Core, Milton FL (supplies Goodrich). Previously typical rescue hoist cable inspection has been limited to visual and tactile examination. The MagSens™ System uses magnetic flux leakage inspection techniques, which have been employed by the oil industry since the 1950's. This procedure relies on the "circuit lines" of magnetic flux. As a hoist cable is passed through large electromagnets, a cable defect causes a disruption in these lines of flux and is observable on a

computerized display. This is currently the only type of equipment on the market. First units were delivered to REGA (Switzerland) in Feb 2005. The pricing starts at \$14,000 (stand alone unit) to \$24,000- \$44,000 (combined with a ground handling unit).

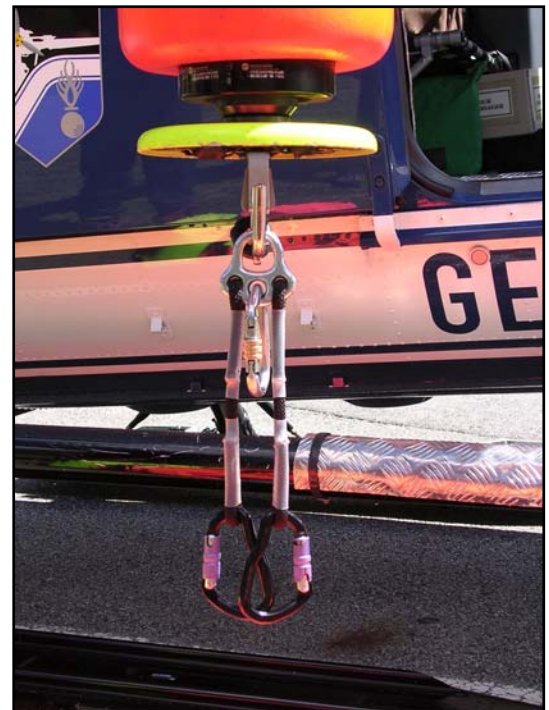
- Automated Flight-Following- A significant improvement in flight-following for federal land management aircraft is occurring with new contracting requirements which require the installation of



Automated Flight-Following (AFF) equipment. The satellite-based equipment permits a dispatcher to monitor all activities of a particular aircraft in real-time via a graphic interface website (<https://aff.gov>). The U.S. Forest Service (USFS), along with several other DOI agencies, has fitted 200 primarily contract aircraft with Iridium equipment in support of the interagency Automated Flight-Following (AFF) program. The equipment is installed on contracted helicopters as well fixed-wing airtankers. Iridium partners Blue Sky Network, Latitude Technologies, Sky Connect and SkyTrac Systems provide flight-following as well as cockpit voice and data communications.

Hervé Fabry/France –Rescue operations with the EC145

This was the third presentation in three years of the full integration of the EC145 for rescue operations in Chamonix by the Gendarmerie Nationale. With increased training and greater familiarity with this aircraft, Gendarmerie flight crews are becoming more proficient in dealing with the majority of incidents previously done with the Alouette III. The standard operating procedures for rescue operations with the EC145 were shown in detail including procedures for hoist operations. Of note is the development of an interface for the hoist hook. This interface is designed for hooking up rescuers, stretchers or uninjured victims. This interface was designed to avoid inadvertent rollout from the hook if rings or various carabiners of varying diameters were to be used.



Hervé Fabry/France Partial Landings

Objective: gain power and time over the option of a hover exit or hoisting operation.

Note: a second crew-member is essential because the pilot cannot control all of the factors including the loading and unloading of passengers.

Considerations:

- Avoiding blade strikes with the ground or obstacles is of critical importance.
- Before loading or unloading, the pilot must have the aircraft in a stable position.
- This is particularly important for aircraft using a rigid rotor system.
- The crew-member must communicate with the pilot during the procedure.
- The direction of rotation of the main rotor and, the counter effect provided by the tail rotor, have to be considered. On the EC145, during a partial landing, on the right side (pilot



side), the tail rotor will push the aircraft to that side. This means the pilot does not need to incline the main rotor to that side in order to hold the aircraft in position. This gives more rotor clearance. Conversely, when doing a partial landing on the left side, the main rotor must be inclined down and this results in less rotor clearance.

- Of additional concern is that it is more difficult for the pilot to visualize the blade clearance on the left side.
- On that aircraft, all other things considered, a partial landing on the right side is preferable.
- The fact that power is continually applied to the main rotor during partial landings also results in a conical effect to the blades. This increases rotor clearance.
- Partial landings have the advantage that the aircraft is more stable than during a hover exit or entry. This means that the helicopter is less susceptible to sudden movements while people embark or disembark.



Peter Kars/Norway –Wire hazards in Norway

The operational capability and challenges faced by the Norwegian Air Ambulance was presented. The EC135 has been added to the fleet and the use of night vision goggles is part of SOPs. Some of the challenges that are faced include long distances, severe weather and power lines that are not always shown on maps. These wire hazards present significant risk particularly during night operations. It should be noted that during the winter months, in northern countries like Norway, the nights are long and therefore the likelihood of night operations is high.

Patrick Fauchère/Switzerland –Operational safety systems

The system used by Air Glaciers for tracking incidents was presented. There was unanimous agreement that such systems are valuable in providing feedback to all members of flight crews in any operation. Of equal importance is that for any safety reporting system to work, there must not be any possibility for punitive actions by either the operator or the regulatory body for that country. Incidents are tracked and graphed to indicate causal trends such as helicopter type, pilot experience, maintenance issues etc.

Mike Holman/United Kingdom-Use of FLIR and NVG in aerial searching

Experience has shown that, when using NVG during night searching, that reflectors on people's clothing and LED headlamps are visible from long distances. The high resolution FLIR and cameras in use are also proving useful in locating victims from distances as far away as a few kilometres. This equipment has limitations during the day but is proving effective at night. Zooming in on victims from a long distance away with the onboard equipment was shown with a video.

Patrick Fauchère /Switzerland – Maintenance in India

The maintenance challenges presented by operating helicopters in India were presented. Aircraft that were deemed airworthy in that country would not be considered airworthy in some other countries. A number of inspections were outlined showing deficiencies that needed correction before the aircraft could be put into operational use for a heli-ski operation.

Gilbert Habringer & Joe Redolfi/Austria-OATMC operations

The operational capability for OATMC was presented. They operate with 16 bases, 46 pilots, 650 crewmembers and 24 EC135s. The operational challenges including types of missions, terrain where operations take place and techniques used to deal with various

incidents were outlined. Missions for HEC, extended rope situations and special requirements such as cable car extractions were shown. In addition there were video presentations of partial landing techniques used by the EC135 flight crews.



Marc Ledwidge/Canada – High elevation rescue Mt. Logan, Kluane National Park, Canada

The rescue of three climbers at the 5487 m (18,000') elevation was presented. This was a joint operation by the US Air Force, the US National Park Service and Parks Canada. The rescue helicopter under contract to Parks Canada is a BH206. This helicopter is equipped with the Allison C20R engine that boosts the Jet Ranger's capability at elevation. The pilot on that aircraft had done work and landed on Mt. Logan at similar elevations previously. Given that this would require heli-slinging to perform the rescue, the request was made to Denali National Park in Alaska for the use of their Lama helicopter under contract to the United

States, National Park Service. This machine located 700 km away responded to the incident along with a Jayhawk helicopter and Hercules fixed wing aircraft. The three stranded and injured climbers were evacuated by the Lama and then transferred to the hospital in Anchorage Alaska for treatment. Of note is that at this latitude (about 61 North), the density altitude makes this long line operation comparable to the one on Nanga Parbat. The density of the air and available oxygen for combustion gets less as you go further north due to a thinning of the atmosphere at northern latitudes. The Lama crew completed this rescue without incident. These crews perform difficult rescues at these elevations routinely.

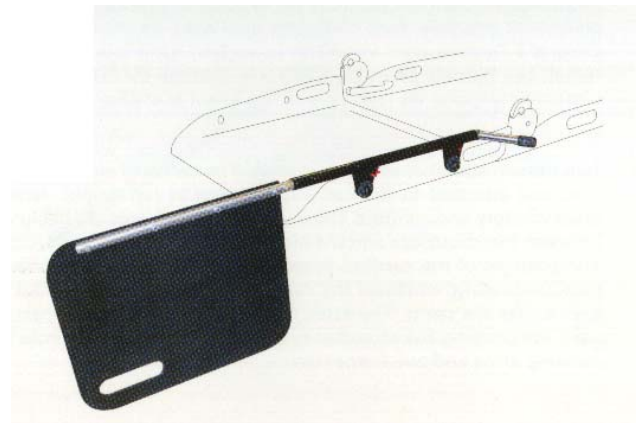


TSL Mountain Rescue Stretcher-



TSL Sport of France (<http://www.tslsportequipment.com>) was contacted by the PGHM (*Peloton de Gendarmerie de Haute Montagne*) to develop a new mountain rescue stretcher constructed of composite material, which would replace their old equipment. The replacement stretcher development started in 2001, which involved several prototypes as well as field testing in typical conditions. The new stretcher is constructed of Twintex[®], which is a combined mixture of fiberglass and polypropylene fibers. The composite material has proven to perform well during slide tests on snow in toboggan fashion and is “abrasion resistant.” Incorporating a metal frame for increased strength the final product weighs 29 lbs. (13 kg) and collapses into three sections for transport and storage.

The stretcher has an optional “rudder” to be utilized during helicopter rescue hoisting by an attendant. The rudder extends out from the foot end of the stretcher and prevents rotational spinning during a hoisting operation. The use of the rudder eliminates the need for a tagline being tended to the ground, which is normally employed to prevent litter spinning.



Kong Rescue Bag and Backboard-

A rescue bag that incorporates a plastic backboard was on display.



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FIELD DEMONSTRATIONS

The Corpo Nazionale Soccorso Alpino E Speleologico did an impressive demonstration of alpine rescue skills in the Cinque Torri area. Demonstrations included winching operations with an EC135, longline operations with an Agusta 109 Power, high angle rescue operations, and cave rescue techniques.



2006 Air Rescue Proposed Agenda

- Day 1—Introduction/Accidents
- Day 2—Extreme Terrain/Long-Line Considerations
- Day 3—Crew Resource Management

