

The Effects of Stress on Our Physiological, Perceptual, and Cognitive Performance

By Craig Geis • CraigGeis@CTI-home.com

In Part 2A of this series we looked at the five stages of the stress response. In this article we will discuss in detail the effects of stress on performance and use the Air France Flight 447 accident as a case study to demonstrate the learning points. You should download: How Panic Doomed Air France Flight 447 at www.cti-home.com under articles to refer to. The footnotes referenced in this article refer to the footnotes in the case study. You may not agree with all my personal thoughts in the case but the point is to help you think about and understand the points in this article.

Part 2B

Humans employ three primary systems that aid in survival. Each of these systems will be either enhanced or degraded depending on the perceived stress level.

1. **The Physiological System** is defined by elements of motor performance – simple, complex, and gross motor skills.
2. **The Perceptual System** relates to our ability to process input from our five senses – primarily visual and auditory.
3. **The Cognitive System** deals with the mind and includes the processing of information, judgment, decision making, and memory.

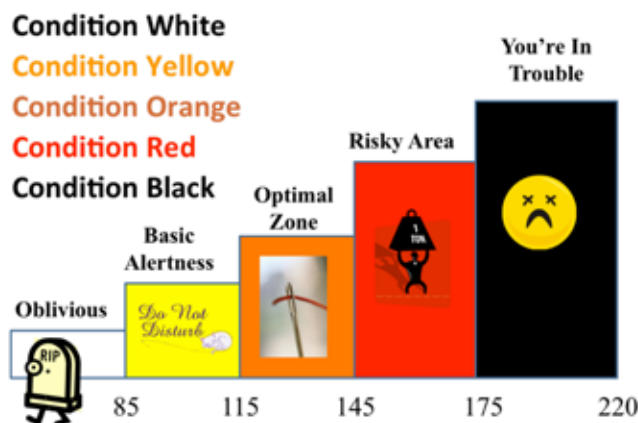


Figure 1: Hormonal Heart Rate & Cooper Color Codes

CONTINUED ON PAGE 2

VOLUME 23 • NUMBER 2 • 2013

HumanAD

AIRWORTHINESS DIRECTIVE FOR HUMANS

WHEN A ROUTINE DAY ENDS IN DISASTER	4
COLD WEATHER PRECAUTIONS FOR ROTORCRAFT	6
BENNIE SHIELDS RECEIVES AWARD ..	7
NIAGARA AEROSPACE MUSEUM	8
BELL 407GX ENHANCES SAFETY	9
MAJOR DISASTER IN NY STATE.....	10
SON RECOGNIZES DAD DURING AWARDS CEREMONY	11
AWARDS & RECOGNITIONS	12

P.O. Box 482 • Fort Worth, Texas 76101

A Textron Company

Bell Helicopter

The color code reference in Figure 1 was originally presented by Lieutenant Colonel John Dean “Jeff” Cooper, United States Marine Corps in his book *Principles of Personal Defense* (1989). According to Cooper, the most important means of surviving a lethal confrontation is neither the weapon nor the martial skills. The primary tool is the mindset of the individual. These codes originally designated the various states of awareness that one must have in preparing to handle a threat. Over time these color codes were also used to describe a person’s level of alertness. I have adapted the color codes to describe levels of alertness, attention, and arousal associated with varying levels of hormonally induced heart rates.

The following is a brief summary of performance associated with the hormonally induced heart rate in each zone. As you read, think about personal examples you have experienced and refer to the footnotes in the Air France Flight 447 case study.

VOLUME 23 • NUMBER 2

Heliprops

Helicopter Professional Pilots Safety Program

The HELIPROPS HUMAN A.D. is published by the Training Academy, Bell Helicopter Textron Incorporated, and is distributed free of charge to helicopter operators, owners, flight department managers, mechanics and pilots. The contents do not necessarily reflect official policy and unless stated, should not be construed as regulations or directives.

The primary objective of the HELIPROPS program and the HUMAN A.D. is to help reduce human error related accidents. This newsletter stresses professionalism, safety and good aeronautical decision-making.

Letters with constructive comments and suggestions are invited. Correspondents should provide name, address and telephone number to:

Bell Helicopter Textron Inc.
John Williams, HELIPROPS Manager
P.O. Box 482, Fort Worth, Texas 76101
817.280.3688, fax 817.278.3688

or the Comment/Feedback link at: www.heliprops.com

RELEASE STATEMENT: For photos or written submissions, please include a brief statement releasing your material to Bell Helicopter for use in the Human AD newsletter.

HumanAD
AIRWORTHINESS DIRECTIVE FOR HUMANS

TEXTRON
Sigma

Below < 85 HBPM — Condition White: Oblivious to Our Surroundings

Physiological – No impairment, we still have total access to all our motor skills.

Perceptual – Even though all our senses are intact, we are not using them effectively because we are not paying close attention to our surroundings. Our attention process lacks a clear focus and we are susceptible to missing important cues.

Cognitive – Arousal level is low in this zone; therefore the brain is not operating at an efficient level. I call this the FDAH (fat, dumb, and happy mode). This is the zone in which complacency is most likely to occur^{2,3,6}

85-115 HBPM — Condition Yellow: Basic Alertness

Physiological – This zone is good for the use of fine motor skills and the smaller muscle groups. Hand and eye coordination is excellent for any task requiring precision and accuracy.

Perceptual and Cognitive – This is the perfect zone for solving complex mental tasks and doing meticulous planning. Global attention occurs in this zone, so general awareness and discrimination of tasks is very good.

115-145 HBPM — Condition Orange: Optimal Zone

Physiological – At 115 HBPM our fine motor skills start to degrade because blood starts to move away from the fingertips toward the larger muscle groups. The ability to coordinate and execute a series of motor tasks that don’t require a great deal of strength will be excellent.

Perceptual – Hearing and eye sight actually improve in this zone.

Cognitive – The brain is active, but not too active, so we aren’t at the level at which the mind is overloaded by inputs. We are able to easily discriminate between various inputs and to process the information coming in from our senses. In Condition Orange we are able to shift from global attention to selective attention easily when the need arises. When one input presents itself as a possible threat we are easily able to shift to selective attention.

145-175 HBPM — Condition Red: Risky Area - Hypervigilance Zone^{1,7,14}

Physiological – At the 145 HBPM level not only are fine motor skills gone for all practical purposes, but the complex motor skills start to degrade as well. Reaction time slows, hands may get shaky, but gross motor skills increase making us stronger and faster.

Perceptual – Perceptual narrowing/attention blindness is one of the most important issues when you are in the Red Zone. Because of increased selective attention most of our informational processing resources are devoted towards that which we are attending to. However, those things we are not attending to are not processed – we are essentially blind to those things; hence the term *attentional blindness*.¹³ Perceptual narrowing applies to hearing as well and it is called *auditory exclusion*.^{11,12,15} Sounds either disappear or appear muffled. Often times we are unable to hear what others are saying and miss key information about the threat.

Cognitive – In this zone our brain is doing something called sensory gating.⁹ This occurs when the brain concentrates its mental energy on one stimulus at a time, and shuts out or blunts other stimulus. This is an evolutionary mechanism that is present under stress to help prevent the brain from getting over stimulated. In the 145-175 HBPM zone we are also going to see decision making problems, and irrational behavior at the top end of this range.⁸ We may become distracted when presented with multiple stimuli. We will also see processing times slow down, as well as delays in making decisions.²¹ Memory is affected because the stress hormones block access to the long term memory system. Delay begins at 145 HBPM and the brain starts to “lock up” at 175 HBPM. So, at

best we have slower reaction times and decision making. At worst we are approaching confusion and panic.

175-220 HBPM — Condition Black: Serious Trouble — Confusion and Panic

Physiological – Blood flow is moving rapidly to the large muscle groups which give us maximum gross motor skills and strength resulting in extreme rigidity and clumsiness. A person may experience exaggerated actions when attempting to perform a physical task, even one well established by habit pattern.¹⁰ For example, a non-instrument rated pilot is more likely to over control the aircraft in an inadvertent IMC condition because of their stress level. This phenomena is often seen in “loss of control” accidents.

Perceptual – From the point of view of the perceptual processes, we go on “auto pilot.” It is not unusual to see individuals experience childish or irrational thoughts. At the high end of the Black Zone we also have reports of disassociation, or “out of body experiences.”

Cognitive

- The frontal lobe shuts down and the mid-brain takes over. The frontal lobe is responsible for a number of key functions including: short term memory, judgment, impulse control, concentration, inhibition, and rational thought. The frontal lobe is important, so losing access to it makes it impossible to process rational options.¹⁸ The mid-brain is where unconscious processes occur, so in this zone we are only able to employ those things that are either reflexive or those that have been ingrained into our neural pathways because of habit patterns (pre-programmed muscle responses).
- Access to short and long-term memory is greatly affected. The loss of memory precludes any ability to concentrate.¹⁷ Imagine if your computer lost its RAM. Everything you typed into your computer would be lost as soon as you hit the keys on the keyboard. This simulates the challenge the human mind has when the frontal lobe is missing from the equation.
- Overload and confusion: So much data is coming into the brain that it is impossible to process it all. Without a frontal lobe we have no way to discriminate and sort the inputs and we essentially cannot process anything. With no processing power left we get confused and panic sets in. Because we cannot find a solution to deal with the threat we feel like we are running out of time. Finally, a sense of helplessness creeps in,¹⁹ we experience negative thinking,^{20,24} and often employ childish or nonsensical actions. Examples of taking actions in the Black Zone that make no sense include jumping from a skyscraper that is burning, or taking out carry-on baggage after an airplane crash.

- Negative thinking and acting: The term for this is *perseveration*.^{16,22,23} What happens with perseveration is that when presented with a stimulus one reaches back and brings forward the most familiar solution/ action to deal with the situation. This is called the default option. However, when the default option does not work, they continue to persist in the course of action because they can't come up with any logical alternates. For example, settling with power generally requires 3 key elements to occur, and these conditions should be avoided in combination with one another. These are: A near zero airspeed, up to 100% power applied, and a better than 300 foot per minute rate of descent. Once you have all of these situations in occurrence, the aircraft will settle in its own downwash from the rotor system. The only way to recover is to gain forward airspeed and allow the rotor system to fly into “clean air.” An example of perseveration is when a pilot just continues to attempt to pull additional power to stop the descent. At this level of stress they can't come up with the logical alternative of gaining airspeed and flying into clean air.
- The phenomenon of *capture error* is prevalent in the Black Zone. As you will recall from Section 1, an intended action can slip off its intended path and be captured by a more ingrained habit pattern or motor response.¹⁶
- As we continue higher we move to fixation as the nervous system locks in exclusively on what it thinks is the greatest threat and excludes everything else.
- Our muscles become rigid and stiff and we exceed motor capacity to perform, then we greatly exaggerate the action.
- At 220 HBPM mental shutdown occurs as the pre-frontal cortex (thinking part of the brain) shuts down. Thinking stops and reflexes take over (fight, flee, submit, freeze).

Key Points to Remember:

1. Depending on the level, stress can have both a positive or negative effect on our physiological, perceptual, and cognitive performance.
2. It is the perception of the stressor/situation that drives our hormonally induced heart rate not the actual stressor. Everyone will perceive a stressor differently.
3. The White Zone (<85 HBPM) is just as dangerous as the higher stress zones because we are not paying close attention to our surroundings and have a higher probability of being unprepared and caught by surprise. Surprise causes a hormone dump and drives us to the highest stress levels and lowest performance levels.

Additional references and articles are available at www.CTI-home.com.
Phone us at (707)968-5109 or email CraigGeis@CTI-home.com.

When a Routine Day Ends In Disaster

By Richard Westra

Editor's Note:

Rich is a well respected pilot and owner-operator of a small Colorado based utility helicopter company. His sole purpose in writing this article was to keep someone else from suffering the same crushing loss he experienced. In speaking of this article, Rich said, "If I can only save one life, it will be worth the effort."

My morning started out in Rifle, Colorado located in North Western Colorado approx. 5,533 feet. After a breakfast burrito from a local drive-in restaurant and a short drive to the ramp at the airport, I conducted a preflight of my Bell Jet Ranger noting only a tiny oil leak under the aft freewheeling unit seal. Fuel level was full, within 1/4 inch of the filler cap which gave me three solid hours of survey flight time. Kelly, my wife, was my computer technician, so we were a crew of two working together surveying pipelines for the previous three years.

09:00 AM

The final walk around pre-flight confirmed everything was secure. I climbed into the right pilot seat, my survival gear was buckled in the back seat and my Personal Locator Beacon (PLB) was tucked in the pocket on my cockpit door. Kelly was buckled into the left front seat booting-up her laptop and laser computers. I buckled myself into the four point seat belt and as usual I strapped on my helmet.

"Some tough lessons were learned here. I realized that I was persuaded in lowering my standards because of comfort."

Accident Background November 3rd 2010

My company was on contract to survey for airborne leaks of an entire high pressure natural gas pipeline system for a major natural gas provider in the Rocky Mountain Region. The 3,000 miles of underground pipeline has diameters ranging from two to twenty-four inches and pressures up to 1,000 PSI (pounds per square inch).

The airborne leak detection system is mounted near the belly of the helicopter and uses laser spectroscopy which identifies natural gas below one PPM (part per million). Airborne leak surveys are flown at 50 to 60 MPH (miles per hour) and 75 to 150 feet AGL (above ground level). The system can pinpoint gas leaks as small as a furnace pilot light from 150 feet away. The pilot is directed over the pipeline right of way by a lineman and / or a technician who uses a moving map display on a laptop computer.

I was able to dress casually since we did not have a client on board. My "uniform" consisted of a tee-shirt, jeans and light hiking shoes. My company SOP (standard operation procedure) manual stated that the pilot and crew would wear helmets, nomex attire and leather boots. Kelly had given me an earful the previous two days because her helmet messed with her hair; so she elected to wear only a headset.

Our day's survey was to inspect the Grand Junction to Grand Mesa Valley route with a lunch time and helicopter refueling stop at the Grand Junction Airport (4,858 ft.). The pipeline survey then continued north over Douglass Pass to the town of Rangely; turning east over the flattop mountain range continuing near the small town of Meeker, Colorado (6,421 ft.).

Survival & Tragedy

I had well over an hour worth of fuel when we arrived at Meeker. Kelly and I decided to survey the short Wilson Creek pipeline section before calling it quits for the day and relax at a quiet bed & breakfast where we stayed previously.

Operations were normal; I was in my comfort zone looking forward to getting back to Meeker for a stretch. Kelly was directing me with precision over the pipeline and advising me of any marked hazards she had on her computer screen. Kelly noted we were within one mile of the end of the pipeline and I had a set of power lines paralleling us below and out the left.

2:33 PM

At approximately 125 feet AGL and 50 KTS, I was observing the compressor station building approximately 1/2 mile in front of me knowing that was the end of the pipeline when there was an abrupt impact. I screamed "WIRES!" The aircraft initially pitched up with a violent and immediate pitch down. Several impacts were heard and felt and immediately we were consumed in a violent, uncomfortable yaw rotation. Now upside down, I was looking out my upper right wind screen at the ground spinning and quickly approaching.

Intense Stress

Many things were going thru my mind; why the WSPS did not work? Did I actually hit a wire or did the aircraft have a catastrophic failure because I never saw a wire? I genuinely thought that the intense RPM should produce enough lift to soften the impact. However, with what I was seeing develop, I concluded I was going to die with my cockpit side down but that might cushion the impact and possibly spare Kelly's life.

Nearing an impact with the quickly approaching ground, I felt a pulling force either on my seat or from the top of my head. My body was now out of the helicopter sailing horizontally like a soccer ball. I hit the ground on my left shoulder and chest collapsing both lungs, breaking nine ribs and damaging my spleen.

As I laid there in the dirt, I could not breathe and thinking this is really an awful situation because I can only hold my breath for 30 seconds under water and why is an "elephant" sitting on me? As I looked around I saw white smoke coming from near the engine area and heard the turbine spooling down. I identified small pieces of what was once a normal helicopter. I recognized my helmet about 20 feet away and wondered if my head was still in it. Then I tried swallowing which did allow me to catch shallow breaths of air.

I pulled my cell phone from my front pocket; no service! Anxiety and reality began to set in and then I began to panic. I knew I needed to calm down to survive and called out, "Kelly!"

I tried to stand up but sometime during the last few seconds I had broken bones in both of my feet and hyper-extended my right ankle; so my face was back in the dirt. I crawled back to the shattered aircraft. Kelly was also thrown out of the helicopter and lying peacefully

on her stomach. I shook her in order to wake her with no response. In my mind I was satisfied just being near her and thought she would be okay. So my attention was refocused on survival and being found.

My PLB, my link back to normal! I know it was located in my cabin door pocket but I need to activate it so rescuers would know where we were and in my confused state I thought someone could bring me another helicopter. That way Kelly and I could finish the leak survey. To my horror, the pilot's door was not in its normal location. Nothing was in its normal location! Then I thought, "Luck was with me." I located my door nearby but nothing was in the door pocket. Confusion and panic set in!

"As I looked around I saw white smoke coming from near the engine area and heard the turbine spooling down. I identified small pieces of what was once a normal helicopter."

My attention was now focused to shaking Kelly and calling her name when a voice above me said: "You need to settle down." The voice was Ruth, a first responder who was working nearby and heard the crash. She calmed me down, made me comfortable and kept me talking then stayed by my side until paramedic crews arrived. While waiting for the ambulance and paramedics, I wanted to locate my PLB. Actually, several other responders located the device

over 50 feet away and brought it to me.

I deployed the antenna and activated the rescue signal. At about the same time a telephone call was made from someone in a nearby office to 911 and then to my office to report the crash. My son, who was on the PLB calling list, was contacted by the NOAA (National Oceanic and Atmospheric Administration) with my exact location. He immediately called my office inquiring what was going on.

The small copper wires I hit were unmarked and abandon several years earlier, their poles veiled by trees over 100 feet above the ground. After the initial impact of the helicopter into the wires, a rotor blade contacted the fuselage at the anti torque pedals below my feet. The blade traveled through the radio compartment stack and exited the left greenhouse window behind the left front door, severing the entire nose of the Jet Ranger.

Epilogue

Throughout my career I have always put safety first with proper equipment and procedures. Some tough lessons were learned here. I realized that I was persuaded in lowering my standards because of comfort. I have no idea why Kelly was taken and why I was spared in this un-survivable crash. My helmet was smashed obviously saving my head from being crushed; then ripped from my neck during the tragic chain-of-events. Wearing leather boots may have prevented my feet from having multiple broken bones. Then having the survival equipment in a secure location like in a vest may have kept essential life-saving gear from being scattered.

November 3rd is my re-life day... maybe my story can save a life by attentive preparation, though in retrospect November 3rd will allow me to cherish my lost love.

Icing — Baby, It's Cold Outside!

Cold Weather Precautions for Rotorcraft

By Matt Rigsby (IHST Team Member)

After an unusually cold and snowy December night in north Texas, the day pilot reported to the medical crew that the snow and ice would have to melt from the main rotor blades and tail before they could respond to emergency calls. Though the snowy weather had cleared, the frigid temperatures remained. Around noon, a flight request came into the hospital. The pilot, and shortly thereafter, the medical crew, performed walk-around checks before they boarded and started the engines. Snow and ice were reportedly no longer on the blades or the aircraft's tail.

The aircraft had climbed about 50 feet above the helipad when two warning horns sounded. The nose yawed to the left. The pilot lowered the collective and attempted to return to the helipad as safely as possible. The aircraft still hit the pad hard enough to spread the skids and bounce. The pilot and medical crew survived the accident, but sustained significant lower back injuries.

Ice Build-Up

Flying can be dangerous when ice and snow accumulate in or near the airframe engine inlet, whether the rotorcraft is on the ground or in the air. By taking some simple precautions, pilots can reduce the risk of an in-flight engine shutdown.

Snow and ice can build up in the engine intakes and plenums when the rotorcraft is on the ground, and when the engine or engines are off or operating at low power. When a pilot increases engine power, such as during takeoff, the accumulated snow and ice can separate from the airframe inlet surface. The engine can ingest this icy debris, resulting in decreased power or engine failure. Some of the older turbo shaft engines with axial inlets are particularly susceptible to loss of power from ice and snow ingestion.

Remember that most helicopters are not approved for flight-into-known-icing (FIKI) conditions. Pilots can expect icing when flying in visible moisture, such as fog, rain, or clouds, when the temperature falls below 5°C [41°F]. Pilots encountering such conditions should immediately seek warmer locations or altitudes. Note that warmer altitudes may not always be lower altitudes.

Winter Precautions

To further reduce risk, the FAA urges pilots to take the following steps when snow and ice conditions exist:

- Review the Aircraft Flight Manual carefully, with special attention to Limitations and Operations guidance for snow and ice.
- Use basic airmanship. Preflight by evaluating current and predicted weather obtained from Flight Service and supplemented by self-

briefings. Recommended web sites include: Icing tool: <http://weather.aero/icing>, and the Helicopter Emergency Medical Services (HEMS) flight tool: <http://weather.aero/hems>.

Install inlet and exhaust covers when the aircraft is on the ground and engines are shut down.

- Before starting engines, remove the inlet/exhaust covers and perform a complete inlet/exhaust inspection, using a flashlight. The inspection should include surfaces inside the inlet, the cowl area forward, around the inlet, and the area behind the particle separator or screen, if installed. Remove all accumulated snow or ice.
- Do not remove ice or snow by chipping or scraping! Use heated air or deicing fluid as appropriate, in accordance with the manufacturer's procedures. In freezing temperatures, pay particular attention to sheet ice on the bottom and forward of the inlet. This ice can also form behind particle separators. Engine preheating may be required.
- Review the article "The Icing Factor" in the Helicopter Operations section of Transport Canada's Aviation Safety Letter (Issue 4/2007) available at: <http://www.tc.gc.ca/civilaviation/publications/tp185/4-07/winter-operations>.
- General information on helicopter safety, including risk management, training, and maintenance, can be found on the International Helicopter Safety Team (IHST) web site at www.IHST.org. The site includes safety tool guidebooks, accident analysis, safety recommendations, and

other information that supports safe helicopter operations. The IHST was formed in 2005 to lead a government and industry cooperative effort to address factors that were affecting an unacceptable helicopter accident rate. The group's multi-year mission is to reduce the international civil helicopter accident rate by 80 percent.

Hidden Dangers

Back to the north Texas accident: video surveillance footage for the 24 hours before the flight showed that the helicopter had been parked outside for about five hours in blowing snow. No plugs or covers were installed over engine inlets or the exhaust. The plugs and covers were later installed, but the helicopter remained outside in temperatures ranging from 16° F to 34° F for the next 19 hours. The video also revealed that at no time did anybody look at the exhaust stack or the right side engine intake, or open any access panels before operating the helicopter.

The National Transportation Safety Board determined the probable cause of this accident was the pilot's inadequate preflight inspection and the momentary loss of engine power due to snow or ice ingestion. If you need to keep the rotorcraft on the ground for extended periods, such as waiting for clear weather, shut down the engine or engines and install covers. No matter how cold or wet the weather, nothing beats a careful and detailed pre-flight inspection, paying special attention to engine inlet areas and aerodynamic surfaces. You'll be glad you did, and so will your passengers.

Matt Rigsby is a Transportation Industry Officer and Accident Investigator in the FAA Rotorcraft Directorate. He is an A&P, as well as a fixed and rotary wing pilot, who has worked in the helicopter community for 20 years. He has participated in more than 90 helicopter field accident investigations, both domestically and internationally.

Bennie Shields Receives the Wright Brothers Master Pilot Award



FAA Safety Team Program Manager Steve Norred (L) presents retired Bell Test Pilot and Flight Instructor Bennie Shields (R) with the Wright Brothers Master Pilot Award in Ceremonies at the Bell Training Academy located at Alliance Airport, Texas (KAFW). Standing in the center with Bennie is his wife, Judy, who was recognized for her many years of support.

Bennie followed in his father's footsteps who was a flight instructor for the US Army during World War II. Bennie became a Southern Airways flight instructor to train US Army helicopter pilots destined for Vietnam. Bennie explains, "I produced 83 young Army Aviators and one full colonel aviator before the Vietnam War began to end."

Some of Bennie's lifetime accomplishments and contributions were flying offshore in the Gulf of Mexico, Chief Pilot of a major gas pipeline company, Bell production test pilot for the US Army OH-58D helicopter, experimental test pilot and project pilot on a number of new medium Bell helicopter variants, notably the AB-139 IFR certification program and the search and rescue Bell model 412.

As a recognized expert in his field, Bennie served as Bell's representative to the ICAO (International Civil Aviation Organization) for helicopter operational rule making at conferences in Canada and Europe. Bennie retired from flying in late 2006 and remained with Bell until his full retirement in 2008. He holds an Airline Transport Pilot rating for "Airplane Multi-Engine Land, Rotorcraft-Helicopter" with type ratings in the AS-355, BH-214ST, BH-22 and the Cessna Citation CE-500 business jet. He holds commercial privileges in "Airplane Single Engine-Land; Flight Instructor-Helicopter and Instrument Helicopter Flight Instructor."

The Wright Brothers Master Pilot Award recognizes US Certificated pilots who have flown at least 50 years. More information on this top FAA award may be found at the following FAA web link: <https://www.faa.gov/content/MasterPilot/default.aspx>



Niagara Aerospace Museum

By Paul Faltyn, Curator
niagaerospacemu@verizon.net

Pictured above: Bell Test Pilot, Owen Niehaus, with an avionics engineer, conducts flight tests on a Bell Model 47D at the Niagara Falls Airport, New York in 1947. The helicopter was used as an instrument training development platform for the US Army and Navy. It was modified with a full gyro panel and navigational equipment. (Photo courtesy of the Niagara Aerospace Museum.)

The Niagara Aerospace Museum gets a new home at the Niagara Falls International Airport (KLAG). The museum entered into an agreement with the Niagara Frontier Transportation Authority to occupy the old Niagara Airport Terminal Building.

A grand reopening is scheduled for mid-May 2013 once renovations are completed to this historic terminal building located approximately 500 yards from the former Bell Aircraft Plant. Many of America's aviation and aerospace first-flights took place there.

On October 14, 2012 (on the 65th. anniversary of the Bell XS-1 supersonic flight) the original Bell facility and airport were designated by the American Institute of Aeronautics and Astronautics (AIAA) as an Aviation & Aerospace Historic Site. Bell Aircraft contributions include the development of the P-39 and P-63 fighters, the Bell X-1, X-2, X-5, X-14, X-22A super-sonic research aircraft, the P-59A (America's first jet aircraft) and the famous Bell 47 helicopter (first FAA Certified helicopter).

The display will include a restored 1917 Curtiss JN-4 "Jenny" single-engine biplane, 1926 Curtiss Hawk, the Bell X-22A, the Bell Rocket Belt and an extensive space-artifacts collection.

The new museum's collection includes one of the oldest Bell helicopters still known to exist, NC-3H, serial number 005. The helicopter was Larry Bell's personal aircraft; a very rare Bell 47H-1 helicopter. Also, acquired by the museum are the personal artifacts and flight records of pioneer- Bell test pilot, Floyd Carlson.

The museum offers exhibits from local companies that continue to contribute to aerospace engineering. They include Calspan, Lockheed-Martin, Moog and other companies once associated with Bell Aircraft such as Consolidated and the Curtiss-Wright Company.

Contact the museum to donate historic Bell Aircraft artifacts. Niagara Aerospace Museum, Niagara Falls International Airport, 2221 Niagara Falls Blvd., Suite 7, Niagara Falls, NY 14304, 716-297-1324 (Museum Office).

Niagara Falls International Airport • 2035 Niagara Falls Boulevard • Niagara Falls, New York 14304

Bell 407GX (Glass Cockpit) Enhances Safety



The new Bell 407GX, its Garmin G1000H™ flight deck provides critical flight information at a glance for greater situational awareness and safety. It's just one more way the Bell 407GX offers enhanced performance for every mission.



Here's a "bird's-eye" view of the integrated Garmin G1000H™ flight deck with twin 10.4" high-res LCD screens. The screens contain the primary flight display (PFD) and multi-function display (MFD) information in an easy to scan layout. Additionally, critical flight data is stored and easily retrievable on an SD card allowing for measurement and analysis of certain flight parameters. The pilot is provided with an enhanced situational awareness provided by Thermal Image Sensing, HTAWS, a moving map, highway-in-the-sky displays, and Garmin's HSVT (Helicopter Synthetic Vision Technology™).

I Chose To Look The Other Way

I could have saved a life that day,
But I chose to look the other way.

It wasn't that I didn't care;
I had the time, and I was there.

But I didn't want to seem a fool,
Or argue over a safety rule.

I knew he'd done the job before;
If I spoke up he might get sore.

The chances didn't seem that bad;
I'd done the same, he knew I had.
So I shook my head and walked by;
He knew the risks as well as I.

He took the chance, I closed an eye;
And with that act, I let him die.
I could have saved a life that day,
But I chose to look the other way.

Now every time I see his wife,
I know I should have saved his life.
That guilt is something I must bear;
But isn't' something you need to share.

If you see a risk that others take
That puts their health or life at stake,
The question asked or thing you say;
Could help them live another day.

If you see a risk and walk away,
Then hope you never have to say,
"I could have saved a life that day,
But I chose to look the other way."

by Don Merrill

Permission Granted by:
American Training Resources, Inc.
Mark Trentacosta
www.atr.inc.com

Hurricane Irene and Tropical Storm Lee Major Disaster in New York State

Within days of each other, Hurricane Irene and Tropical Storm Lee made landfall in the continental United States, wreaking havoc with torrential rainstorms and wind damage that caused major damage and disruptions.

Hurricane Irene first made landfall on Aug. 22, 2011, as a Category One hurricane in Puerto Rico where severe flooding resulted in significant property damage and loss of lives. Five days later, Hurricane Irene made a second landfall over the outer banks of North Carolina on Aug. 27 with sustaining winds remaining at Category One level.

On Sept. 1, 2011, Tropical Storm Lee made landfall in Louisiana. Although it was only a tropical storm, the huge size of the disturbance also affected Mississippi, Alabama and Florida. The slow-moving storm caused major flood damage and spawned 30 tornadoes during its trek toward the northeast. Remnants of Lee reached as far north as Pennsylvania and New York.

As a response to the back-to-back disasters, New York State Police Aviation Units, with headquarters in Albany, provided non-stop rescue and aid services to multiple, affected communities across the state.

In recognition of their heroic efforts Bell Helicopter presented each pilot and rescuer with a certificate of recognition and plaque for the units involved. The NYSP helicopters involved were the Bell Huey II, Bell 407 and Bell 430 helicopter models. Making the presentations on behalf of Bell CEO John Garrison were Jeanette Eaton, Regional Manager for the North Atlantic and Jeff Angelos, Director of North American Sales.



In ceremonies at the NYSP Headquarters in Albany, New York, Bell's Jeff Angelos stands with Mr. Ray Giganti (holding certificate) and T/Sgt. Jim Torhan, who were recognized for their flight rescues during the storms.



Jeanette Eaton, Bell North East Coast Regional Sales Manager and Jeff Angelos, Director of North American Sales present Mr. Robert Hanrahan with a recognition for his flight rescue efforts during Hurricane Irene and Tropical Storm Lee.

Bell Helicopter Recognizes the New York State Police (NYSP) for Rescue Efforts During Hurricane Irene and Tropical Storm Lee

RESCUE CREW MEMBERS

NYSP – Batavia, NY

407 (N11SP)

Pilot	Trooper Jamie Schweiger
Hoist operator	Investigator Richard Qualey
Rescuer	Trooper Brian Brass

NYSP – Newburgh, NY

430 (N430SP)

Pilots	Call sign: Grayrider 21 T/Sgt. John Cuneo and T/Sgt. Lee Walker
Hoist operator	Trooper Art Kakis
Rescuer	Trooper Brian Brass
Rescuer	Trooper Chris Kyle
Huey II (N129SP)	Call sign: Grayrider 10
Pilots	Mr. Ray Giganti and T/Sgt Jim Torhan
Hoist Operator	Trooper Joe Schmidt
Rescuer	Trooper Atiba Celestine
Rescuer	Trooper Chris Kyle
Rescuer	Trooper James Leeder
Rescuer	Trooper Mark Ennis

NYSP – Albany, NY

Huey II (N19SP)

Pilots	Call sign: Grayrider 10 Mr. Robert Hanrahan and Sgt. Donald Dorn
--------	------------------------------------------------------------------------

Hoist operator	Mr. Vic Welch
Rescuer	Trooper Robert Grace
Rescuer	Trooper Jason Fitzpatrick

Huey II (N19SP)

Pilots	Mr. Robert Hanrahan and T/Sgt Kathy Humphries
Hoist Operator	Trooper John Casey
Rescuer	Trooper Josh Galvin
SORT Team (SWAT) hoist operators, medics and rescue swimmers	
	Sgt. Gerald Wienckowski (Team Chief)
	Trooper Atiba Clestine
	Trooper Mark Ennis
	Trooper Arthur Kakis
	Trooper Christopher Kyle
	Trooper Joseph Schmidt
	Trooper Peter Verdesi

Son Recognizes Dad During Awards Ceremony



Retired US Army Aviator, CW5 Vance Barton (L) received special flight time recognition from Bell Helicopter which was given to him by his son, Neil Barton (R), the Manager of Business Development at the Bell Training Academy (BTA) located at Alliance Airport, Texas (KAFW), on 8 October 2012. The flight time certificate along with a wings lapel pin were presented in a ceremony at the BTA recognizing Mr. Barton's years of flying Bell Helicopters in Combat and flight test conditions. The certificate reads, "to CW5 (Ret) Vance L. Barton in recognition of his heroism during combat operations in Vietnam as a command pilot and US Army test pilot in Bell Helicopters, 7500 Hours." Mr. Barton was rated in the Bell UH-1 "Huey," AH-1 Cobra series gunships and the OH-58 A, C and D models. He flew the UH-1 "Huey" in Vietnam.



Early U.S. Mail pickup from a Buffalo, New York building rooftop, in 1947. Bell Test Pilot Floyd Carlson flies a Bell 47B model. (Photo courtesy of the Niagara Aerospace Museum.)

Awards & Recognitions



BELL HELICOPTER AWARD PROGRAMS

Many Bell pilots and operators have requested information on what type of Bell Helicopter wings and safety awards are available to them. There are two ways to obtain recognition for pilots who fly Bell helicopters. The first recognition is a Pilot Safety Award issued on the basis of safe flying hours in Bells. The second is a wings award based on the pilot's flight hours in Bell helicopters. It is possible for a pilot to obtain both awards.

How Recognitions May Be Obtained

For pilots attending classes at the Bell Training Academy's (BTA) Fort Worth Alliance Airport Facility (KAFW), the award is made available to them either in the classroom or at the Monday afternoon customer reception. Pilots who fly Bell Helicopters (not attending the BTA Classes) are also eligible. Wings and certificate recognitions are based on the pilot's flight hours in Bell helicopters only. All military pilots worldwide are invited to participate.

The Bell Training Academy issues the Wings Lapel Pin and a Certificate of Achievement beginning in increments of 1,000 hours up to 25,000 flight hours in Bell Helicopters. The hour level (in thousands) is mounted on top of the Wing's crest.

Example: If a person had 2,500 hours in Bells they would receive a Wings Pin with 2,000 hours fixed on its crest and the certificate would read 2,500 hours. That person's next opportunity for an increased hour pin would be at the 3,000 hour level.

For the hour level recognition to be awarded, the pilot, military unit or company must provide the following: Name of pilot as they would like it printed on the certificate, verified flight time documentation as proof of the pilot's time in Bells, by the Chief Pilot or a Company / Unit administrative official. An email request on the organization's letterhead is acceptable.

In the case of an individual pilot making the request, a signed copy of the page in the pilot's log book that verifies the hour level in Bell Helicopters is required. Include your email (in case of fax or mail request), shipping address, telephone number and a Point of Contact name. Mail, fax or email the information (including copy of documentation) to John Williams at: JWilliams2@bh.com. Facsimile number: 817-278-3688. Mailing Address: Bell Helicopter Textron Inc., P.O. Box 482, Attn: John Williams, Dept. 9S - Bldg. 61, Fort Worth, TX 76101 - USA.

Pilot Safety Award

Recognizing an individual pilot for flying safely is far too rare. Most pilots only hear of mistakes made by another pilot in an accident. Bell provides a Pilot Safety Award certificate for hours flown without an accident in a Bell helicopter. This can be achieved in either military or commercial aircraft. The award is given in thousand hour increments to recognize those pilots with a proven commitment and history of safe flying. To apply for this recognition certificate, please send a request letter from the chief pilot, CEO, military commander, or other individual who can confirm how many accident-free flight hours you have flown in Bell helicopters. If you are an individual pilot/owner, you can write the statement yourself. Let us know how you would like the name to appear on the certificate. If you want to include a military rank, you need to indicate that.

The award is maintained through the Bell's Flight Safety Department within Bell Engineering; Bill Sarles is the Bell point of contact. His mailing address is: Bell Helicopter Textron Inc., Attn: Bill Sarles, P.O. Box 482 M.S. 1405, Fort Worth, TX 76101 USA

The pilot's name and safe flight hours are posted on Bell's Flight Safety web page www.heliprops.com. Follow the link to the Heliprops Pilot Safety Award Program.

Flight Time Wings and Certificate Recognitions

NASHVILLE, TENNESSEE POLICE DEPARTMENT

Pilot's Name	Bell Flight Hours
Officer Johnny Hansel	4,500
Officer Wayne Helm	1,800
Sergeant Terry H. Wills	1,500

LIFETEAM EMS, NEWTON, KANSAS

Pilot's Name	Bell Flight Hours
Ken Arnold	22,300
Tom Wheatley	4,200
Bill Johnson	2,200
Ed Lambert	1,000

Maintainer	Years
Howard Werner	10

INDIVIDUAL RECOGNITIONS

Pilot's Name	Bell Flight Hours
Colonel James E. Stone (Retired, US Army)	3,000
Darren G. Almskog	10,484
Lawrence E. Pluhar	6,080
James S. MacKay, II	2,806
Manuel Simeon Bello	1,325

62nd AVIATION COMPANY, "ROYAL COACHMEN," REPUBLIC OF VIETNAM 1964-1973 US ARMY BELL UH-1 "HUEY" SPECIAL CREWMEMBER RECOGNITIONS

Major Harry E. Trumbull (Retired US Army)	Command Pilot
CW4 Thomas E. Harn	Command Pilot
John L. Keller	Command Pilot
Donald Petrazzini	Command Pilot
Doug Peck	Crew Chief
Lawrence E. Payne	Crew Chief
Michael D. Kilfoile	Crew Chief
Gary S. Duarte	Crew Member
John R. Bartell	Crew Member
David Kilfoile	Combat Support Operations
Rollie Hubbard	Combat Support Operations
Dirk V. Wright	Combat Support Operations

Subscription Form

I would like to request a free subscription of the HELIPROPS HUMAN A.D.

I would like to renew my free subscription of the HELIPROPS HUMAN A.D.

NAME _____

TITLE _____ E-MAIL _____

COMPANY _____

ADDRESS _____

CITY/STATE/ZIP/COUNTRY _____

MAIL, FAX, OR E-MAIL TO: Bell Helicopter Textron Inc., John Williams, HELIPROPS Manager, P.O. Box 482, Fort Worth, Texas 76101 • Fax 817-278-3688 • e-mail: HELIPROPS@bh.com

Subscribe online at
www.heliprops.com