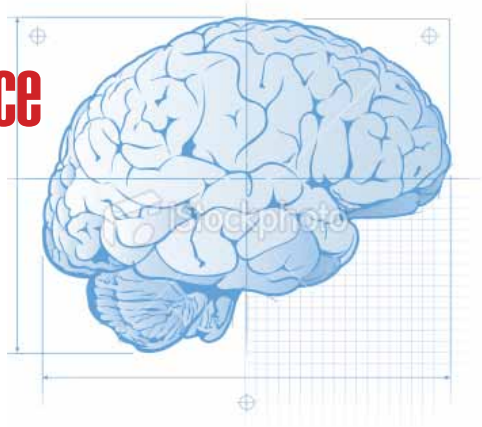
Helliprops
Helicopter Professional Pilots Safety Program
PROMOTING AERONAUTICAL PROFESSIONALISM & SAFETY

Introduction to the Science of Human Factors: Why We Do What We Do



By Craig Geis • CraigGeis@CTI-home.com

Craig Geis is Co-Founder of California Training Institute and formerly Geis-Alvarado Associates. He provides instruction for clients worldwide on the subject of Human Factors Threat & Error Management. Mr. Geis was a U.S. Army career pilot, developed the military's Team Resource Management training program to address human error and is a former instructor for the U.S. Military Academy at West Point, Embry Riddle Aeronautical University, University of Maryland, and University of San Francisco. Craig is a Certified Force Science Analyst, and an instructor for CA Police Officers Standards & Training. He holds an MA in Psychology from Austin Peay State University, a BA in Management from C.W. Post College in New York, and an MBA in Management from Georgia Southern College.

Part One

This is the first of a four part series of articles. Throughout the series I am not going to tell you what to do to prevent accidents. You already know that. What I am going to do is help you better understand the science of human factors which simply stated is the study of the human capabilities and limitations that give rise to human performance errors.

The brain is fundamentally a lazy piece of meat – or a very efficient computer; depends on your perspective. Although the brain is always active to some degree, it doesn't waste energy. This is why there is a striking lack of imagination in most people's visualization of a beautiful sunset. It's an iconic image we are all familiar with, so the brain simply reactivates old memories of this sort of scene. Think of a sunset and you get an instant recall. But if you imagine something that you have never actually seen, like a sunset on the planet Pluto, the possibilities for creative thinking become much greater because the brain can no longer rely on connections shaped by past experience and it must think and imagine. Our brain wiring and our behavior are shaped by past experiences.

It doesn't matter if you fly a plane, drive a car, answer phones, or raise a family; the principles are exactly the same. If you follow this series of articles you will begin to look at human behaviour in a whole new way.

You have all read enough articles on human factors to realize the general approach has been to "tell" people what to do in order to be safe and not succumb

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HumanAD
AIRWORTHINESS DIRECTIVE FOR HUMANS

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Bell Helicopter
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to human error. We are human, we are fallible, and we will make mistakes. What we need to understand is ***why*** we make them and then we can better choose ***what to do*** about it.

I know I shouldn't fly under certain weather conditions; I know not to talk on a cell phone and drive; I know I should use the maintenance manual when I work on an aircraft. I don't need someone to tell me that. Observable fact shows that this approach is not reducing or eliminating accidents and incidents. In fact every organizational safety program in one way or another "tells us what to do and what not to do." The recommendations are all good and come from years of lessons learned the hard way. But ***why*** isn't this working? Here's why:

Decisions come from the processes that go on in our brain, which we'll liken to a house.

In the basement we have the brain stem, which controls basic instincts such as reflexes, instinctive survival, and self-preservation. It controls those instinctive reactions indispensable to the preservation of life. It is also called the primitive or lizard brain. It operates on an unconscious level.

The main floor of the 'house' is the mid-brain, also known as the limbic system or our center of emotions. The limbic system operates by signaling the release of hormones and neurotransmitters in response to threats, and is also interconnected with the pleasure center which plays a major role in learning and the continuation of successful behavior patterns. The limbic system is tightly connected to the third brain and also operates on an unconscious level. It only takes 80 milliseconds (instantaneous) for the limbic system to detect a threat, perform an assessment, and begin releasing stress hormones.

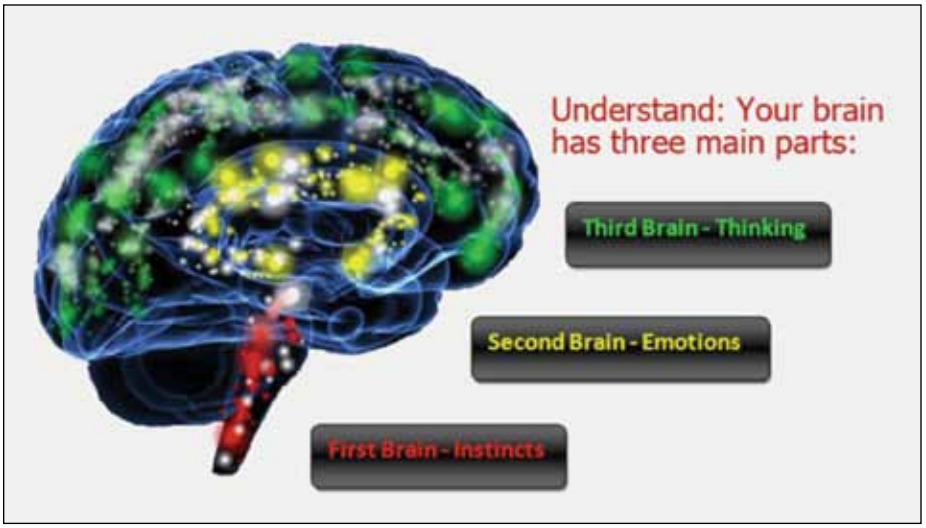
"It rarely matters what we tell an adult to do, it only matters what that person perceives the situation to be at that final moment when they make a decision, their personal assessment of risk, the probability of success, and the consequences of failure."
— Craig E. Geis

The upstairs is our cerebral cortex or thinking brain. It has many functions but the most important function occurs in the front part of the brain called the prefrontal cortex. In terms of human factors this area of the brain is involved in the process of acquiring knowledge by the use of reasoning, intuition, or perception and in the expression of personality and appropriate behavior. The signals that reach the limbic system in 80 milliseconds don't reach the prefrontal cortex for 250 milliseconds. This means the body responds before we are even consciously aware of what the threat is. This is an important concept to remember because in later articles we will look at what happens in an emergency situation when we are caught unprepared.

For example when we are unexpectedly startled by someone, the limbic system immediately reacts by releasing hormones to increase your heart rate, and your muscles react to provide defensive action before you even see who it is. Approximately 170 milliseconds later your prefrontal cortex (thinking brain) gets the signal and makes a determination as to whether the person is an actual threat. If the signals could reach both areas of the brain simultaneously and the individual was not a threat, then you would not be startled. The activity of the prefrontal cortex (thinking brain) is slow and energy intensive. The limbic system is fast and has evolved for immediate action.

We said earlier that our brain wiring and our behavior is shaped by past experiences. Wiring takes place from learning. Connections within the nervous system are made and our actions, behavior, and decisions are unconsciously guided to what has worked for us in the past. We are all actually creatures of habit.

Our behavior is then guided by both conscious and unconscious processes. Unconscious actions are generally the result of well established habit patterns that have been ingrained through repetition. Once these highly practiced procedures become automatic (vs. controlled) it results in an absence of conscious mental effort which is usually the desirable outcome of training. The



advantage is that it allows for the fast, smooth execution of a task. It also frees up attention resources and working memory (thinking brain) so we can focus on more important or situationally critical things.

The disadvantage is that we have no conscious control of accuracy and timing and our behavior is often led or misled by cues.

If you drive home the same way from work every day do you think about the turns you make? Are you really aware of all the buildings you pass, other cars, how many lights you stop at? Do you really think about performing routine tasks on a daily basis? No, that's the unconscious brain working for you. Life would be too complex if the brain had to consciously think about everything. With practice even extremely complex skills are turned into unconscious processes. Aerobatic pilots or high performance athletes executing very complex tasks don't think about them. In fact when they do, thinking interferes with the finely established habit patterns.

The unconscious brain doesn't have to look at everything to process it. It works quickly on a need-to-know basis. It scans quickly for key information and fills in what it needs from what is stored in Long Term Memory. It is fast and efficient.

In the articles to follow we will look at different individual human factor principles. Please feel free to send comments or suggestions for future topics.

Key Points to Remember:

1. Human Factors pertain to everyone regardless of our job or duties.
2. Telling people what to do to be safe is not as effective as helping them understand the basic limitations that affect all humans.
3. Past experience, success and failure, wire the connections in the brain and allow us to make most decisions smoothly and unconsciously.
4. The brain can be divided into three basic components: instincts, emotions, and thinking.
5. The unconscious, emotional part of the brain doesn't have to think to process information. It works fast on a need-to-know basis, and scans quickly for key information, then fills in the rest based on past experience. It is highly efficient.
6. The conscious, upper level of the brain is slow and methodical but is an excellent problem solver if time is available. It requires input from the emotional center to make sound decisions.
7. Most of our responses to situations occur before the thinking brain even knows what's going on and has a chance to "weigh in."
8. The key human factor limitation is that we do not monitor unconscious behavior and if a current situation is slightly different from previous times, our behavior may not be appropriate for the situation.

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

Demonstrating their ability to "get a lift" on the Bell Model 30, Ship 3, Bell Helicopter aviation pioneers pose for this well known 1946 photograph at the Bell Plant in Niagara Falls, New York. They are identified as Joe Mashman-pilot, Charlie Seibel-left passenger, Ollie Schriner-right passenger, Arthur Young-right standing forward, Percy Waller-right standing aft, Bill Quinlin-left standing forward and Bob Pascher-left standing aft.

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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.

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TEXTRON Sigma

Working Around Helicopters — Flight Line Safety

By Danny (James) Saucier – Area Manager, Bell Customer Service Engineering • jsaucier@bh.com

It takes teamwork to safely move this helicopter from tight quarters in the hangar to the ramp.

Safety isn't just for aviators. There are enough instances where the maintainer was injured or even worse, killed in a ground accident. If you have been in this business for any length of time there is likely someone you worked with that fits in one of those categories. Keeping one's self safe in the workplace takes a serious, conscious commitment to remain vigilant for threats that are inherent in our line of work.

Consider some of the following precautions I have found to be pertinent. Let's begin with something as routine as moving the aircraft from the hangar to the flight line. Everyone should familiarize themselves with safety protocol and be aware of the potential dangers associated with turning rotors, fueling, maintenance and work stands.

Prior to moving the helicopter outside, complete a thorough inspection of the aircraft in a more controlled environment, like a hangar. Check and account for tools, shop towels and loose hardware that might create a FOD (foreign object damage) situation. Pay particular attention to the air intakes and the flight control areas. Remember that all cowlings, inspection panels and doors must be securely closed. Ensure that the steps, hand holds and walkways are clean and free of oil and grease.

Work As A Team

Prior to moving the helicopter, make sure the ground handling equipment is in good working order. There are certain circumstances where you might be moving out of a small hangar with limited door clearances. If that is the case, utilize additional personnel to assist especially if there is any doubt whether you would make it through safely or not. It is essential to have additional personnel helping you when the main rotor blades need be rotated to clear other obstacles. Don't forget to check the tail rotor clearances as it is also turning.

Once the helicopter is moved outdoors onto the ramp, orient the helicopter so the nose is pointed into the wind. Once the ship is in position on the run-up pad, check the surrounding area for debris which could produce Foreign Object Damage. Remove any remaining flagging materials from the main rotor, tail rotor blades and other areas that are in near proximity to the helicopter. Keep a safe distance away from high traffic areas, other parked aircraft, vehicles, opened hangar doors and buildings.

Helicopter fueling procedures must be strictly adhered to whether it's a onetime fill up that day or a fuel calibration check which might require the helicopter to be defueled first. Make sure fuel-spill equipment and fire extinguishers are readily available. Lastly, be alert for unexpected weather

changes. All fueling procedures should cease in the event of a thunderstorm. The fueling procedure should be covered in your company's Standard Operating Procedures (SOP).

Communications are paramount!

Ensure the pilot and engineers are aware of the maintenance checks that will be taking place during the ground run. Be aware of any trip hazards such as balance equipment cables, tie downs, etc. Remember to secure the power cart.

Utilize the proper sized work-stands and ladders which will provide a safe distance from the main rotor. This is an essential element to consider for the maintenance being performed. Remember to make sure the pilot is aware of your movements around the helicopter during the ground-run.

When possible, connect your headset to an intercom cord allowing you to maintain positive communication with the flight crew. Some ground crews even use a pre-determined signal by slapping on the side of the fuselage with their hand, should the pilot need to perform an immediate shutdown.

Use a Checklist

Personal Protective Equipment (PPE) is there for a reason. The high frequencies generated by the turbine engines and transmissions can damage your ears, especially over time. So wear your hearing protection devices. Make it a habit to put them on before the helicopter starts.

Take the time to wear your eye protection goggles or safety glasses. There is a great deal of mechanical and wind activity occurring near the helicopter. Remove all of your jewelry before it becomes damaged or actually causes you injury. This can save your rings or watches from excessive scratching and might just save a finger or hand from injury.

Avoid wearing loose fitting clothing and remove all objects from shirt pockets. Baseball caps should be removed around ground run activities and anytime the rotor is turning. Besides the baseball cap blowing off your head, the cap's bill can restrict a person's vision to the point of not seeing the main or tail rotor. Fatal injuries have occurred because of this poor practice.

It is imperative to stay away from the tail rotor! If for some reason it becomes necessary to approach the rear of the helicopter, make sure the pilot and ground crew are aware of your intentions. Intercom communications with the pilot and crew are essential.

Keep doors and cowlings secured as much as possible. Unexpected wind gusts can cause severe airframe damage. Make sure your shop towels are kept well secured in your pocket or tool box. One shop towel can cause extensive damage to an engine or flight control.

When approaching a running aircraft, make eye contact with the pilot before proceeding and be aware of the rotor plane. Approach the helicopter between the 9 and 3 o'clock areas. As you can see, there are a lot of things to consider when working around a helicopter. Safety is always paramount. When in doubt, stop what you're doing and investigate.

Everything I have mentioned should trigger the maintainer to utilize their best-practices training. Remember, when working around a running helicopter, you can't afford to be complacent for even a second.

Keep safety as your number one priority. Exercising good judgment on the job sets you apart as a true aviation professional. Your targeted goal must be to maintain your company's incident and accident rate to that of "**ZERO**." Most coworkers and family members would agree.

The Bell-Atlanta B-29 Superfortress?

Most people were not aware that the Bell Aircraft Company built approximately 663 Boeing-designed B-29 Superfortresses, designated the B-29 BA (BA for Bell Atlanta) during World War 2. A total of 3,970 Superfortresses were manufactured between the Bell, Boeing and Martin Aerospace Companies. The aircraft built by Bell were manufactured at the "Bell Bomber Plant" in Marietta, Georgia located 20 miles NW of Atlanta. www.georgiaencyclopedia.org/nge/Article.jsp?id=h-1014

The Bell Bomber Plant broke ground at their new facility in March 1942 and by March 1943, aircraft construction had begun. The plant was closed immediately after the end of World War 2 but reopened in 1951 as Lockheed-Georgia, later named Lockheed-Martin. The Bell Bomber Plant reached a peak employment of 28,158 workers in 1945, many found subsequent employment with Lockheed when it reopened. Photo provided through the courtesy of the Niagara Aerospace Museum, in Buffalo, New York. www.wnyaerospace.org/

Helicopter Underwater Egress Training (HUET) Offshore Survival Training

By Jamie Kammerzell • eandpsessions@gmail.com

Why We Prepare

Most personnel working or traveling on or over the Gulf of Mexico are required to take helicopter survival training in case of an emergency controlled helicopter ditching. In many cases these folks are traveling to offshore oil and gas platforms. Regardless of position on the platform, from cooks to installation managers, they often work in shifts of two weeks on and two weeks off, which creates a constant flow of helicopter traffic over the Gulf of Mexico. With the Gulf of Mexico weather so unpredictable, helicopter safety training ought to be mandatory. For those lucky enough to work for operators, who require the training, read on to learn what to expect.

Several companies throughout the United States provide Helicopter Underwater Egress Training (HUET). HUET is not federally regulated; thus the training programs are often based on the U.S. Coast Guard's recommended practice for water survival and the aviation industry's' best practices for exiting an aircraft as well as the Offshore Petroleum Industry Training Organization (OPITO), which has been required to work in the North Sea for many years and from other international standards affiliated with the International Association of Safety and Survival Training group.

The programs include a mix of classroom instruction and water simulations. Strong swimming skills are not required to take the course as students are trained to put on life vests. But those who cannot swim tend to have a difficult time overcoming their fears of the water.

Marine Survival Training Center (MSTC)

The Marine Survival Training Center in Lafayette, Louisiana, follows the Gulf of Mexico Water Survival Training Guideline based on a course the company developed in 1997 with help from the OPITO standard. The students learn about helicopter travel and how to safely board and embark the aircraft. They also learn about various on-board emergencies, emergency equipment onboard, escape routes, how to follow aircrew instructions, exit points and their operation and survival techniques following evacuation.

The instructors teach helicopter safety and escape and run through scenarios, including evacuation to dry land, evacuation through a window that is underwater but the helicopter

is only partially submerged, escape through a submerged window from a submerged upright and capsized aircraft, assisting others, inflating an aviation lifejacket and boarding a heliraft from the water.

Sea survival is also taught in class, including individual and group survival techniques. Students learn in-water self-preservation survival, including how to retain body heat. They also learn to "survival float" for five minutes as well as use personal protective equipment, what first aid to use on the life raft, and actions to take during a rescue.

The Marine Survival Training Center (MSTC) uses a "Modular Egress Training Simulator (METS) with interchangeable door panels and bolt in seating," explained L. J. "Jim" Gunter, Certified Safety Professional (CSP), director, MSTC. "This allows for the simulator to be setup to replicate various types of aircraft. MSTC currently has pilot exits for the S 92, S76, Bell 206 and Bell 412. We also have a variety of passenger exits."

Gunter also noted that the METS cockpit area has pilot seats, fixed foot controls, a cyclic and a collective to simulate flight operation during ditching.

"MSTC also provides Emergency Breathing Systems training utilizing Helicopter Emergency Egress Device (HEEDS), Helicopter Aircrew Breathing Device (HABD) and the Air pocket re-breather (passenger)," Gunter explained.

Like most HUET programs, pilots are typically trained along with passengers to allow the pilots to interact with the passengers. However, MSTC does conduct stand-alone courses if requested such as courses for USCG and other military personnel.

Survival Training USA

Likewise, Connecticut-based Survival Training USA provides HUET, which it calls METS. The training program prepares its students for on-board emergencies, aircraft ditching emergencies and to care for themselves in a sea survival situation.

Maria Hanna, Survival Training USA president explained the company's rotary wing program is a two day program that is evenly split between academics and simulations. "Our training is focused on the safety triangle. It is our foundation of learning," Hanna explained. "The triangle is comprised of hazards, equipment and procedures."

According to the Survival Training USA web site, www.survivalsystemsinc.com, passengers and pilots learn about:

- Hazards and emergencies associated with aircraft in over-water situations
- Safety and survival equipment utilization and deployment
- Introduction to hypothermia mitigation and sea survival
- Coping with physiological and psychological stress
- Personal rescue techniques and use of life rafts and signaling devices
- Characteristics of personal floatation devices and aviation jackets
- Introduction to search and rescue resources and equipment
- Introduction of rescue devices and simulated rescues
- Preparation for emergency landing and ditching situations

Survival Training then takes its students through "full-environmental simulations, including wind, waves, darkness and sound effects," Hanna explained. "The simulator can be configured with doors, windows, seating and harnesses all according to the aircraft our students will be flying. We also teach them how to use the firefighting equipment onboard as well as how to enter a life raft."

According to the web site, the program also includes:

Dry/wet evacuation through an emergency exit from a ditched aircraft on water

- Preparation for emergency landing and ditching situations on breath hold utilizing the Shallow Water Egress Trainer (SWET)
- Preparation for emergency landing and ditching situations with an EBD utilizing the Shallow Water Egress Trainer (SWET)
- Evacuation and escape training utilizing the Modular Egress Training Simulator (METS™) with and without utilizing an EBD

Lafayette-based Safety Management Systems (SMS) provides a one-day, 8 hour HUET course. The first four hours are devoted to classroom training when students learn survival skills, get acquainted with equipment onboard, learn how to prepare for a water landing and how to exit the aircraft.

The last four hours of SMS's HUET training course starts with survival swimming techniques, a life raft lesson and the equipment onboard the raft. The instructor then acquaints the students to the simulator and runs through several scenarios.

"Depending on which company SMS is training that day, the instructor may run through as few as three simulations or as many as seven simulations," Randall Thomassiee, SMS operations supervisor, explained.

The three basic simulations include underwater submersion, inverted submersion, and cross cabin inversion.

Prior to submersion the SMS instructors will walk through the procedure with the students. "The instructor tells the students to take their last breath and they go underwater. The students then need to find an exit, find the handle or lever, push on it and keep that one hand outside of the helicopter as a point of reference to safety. With the other hand, they reach down to unbuckle and then pull themselves out," Thomassiee explains. The same basic procedure applies to each scenario.

Regardless of which HUET course you chose, refresher training is advised, but not required. Most instructors suggest you take a refresher course every five years. However, the decision is ultimately up to the operator.

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 th 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

Pilots with Accident Free Filght Time

Pilot's Name	Bell Flight Hours
Mr. Brian O'Connell	1,000
U.S. ARMY NATIONAL GUARD AVIATION, BISMARCK, NORTH DAKOTA	
Lt. Colonel David Hall	2,000
CW5 Mitch Torgeson	1,500
CW5 Monte Myers	2,000
CW5 Jay Hager	1,000
CW4 Scott Hauge	5,000
CW4 Greg Morford	2,500
CW3 Zach Putz	2,000
CW2 Jon Sigl	1,000
U.S. AIR FORCE – 23D FLYING TRAINING SQUADRON (AETC), FT. RUCKER, ALABAMA	
Lt. Colonel Joseph Decaro	1328
Lt. Colonel Bill Denehan	2,284
Major Christopher McIntyre	1,207
Major Chris Skow	1,763
Major Melissa Sprague	1,377
Major Micha West	1,563
Captain Drew Ackles	1,720
Captain Daniel Ramirez	1,475
Captain Josh Halford	1,303
Captain Nate Jones	1,468
Captain Joe Lasura	1,334
Captain Doug Lincoln	1,833
Captain Jeremy McPherson	1,334
Captain Nic Morris	1,840
Captain Chris O'Connor	1,244
Captain James Outland	1,467
Captain John Parrish	2,057
Captain Daniel Ramirez	1,475
Captain Katy Tenpenny	1,344
Mr. George Howland	3,029