

VIBRATIONS

"It is amazing how the details of certain experiences stay with you no matter how long ago they might have occurred. This was one. Three of us were flying a 214ST down to Colombia in South America. This leg to Bogota started in Panama City. I was in the left seat. Hank was in the right seat and the crewman in the back on the left front row seat. We departed Panama City in marginal VFR weather conditions. Our direct-line course would have us out over the water of the Gulf of Panama for the first 50 miles or so. We were talking to Panama City Center. Radar showed scattered showers in front of us. Light bumps. We wanted to climb to 8,000 to be able to maintain radio communications.

During the climb, at about 5,000

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WHAM a tremendous explosion jolted us. Hank was wrestling with the controls to keep it upright. I got on the controls with him. We managed to get the collective down and entered an autorotation. Debris was stirred up in the cockpit. Everything that was not tied down was being shaken and tossed about. Had we not been buckled in we would have been tossed about as well. It was a struggle to hold onto the controls. The instruments were mostly unreadable. I got out a Mayday and tried several times to talk to Panama City Center. No joy. Here we were, still offshore an uncertain distance, descending with a violently shaking helicopter, and not being able to tell anyone on the ground of our situation. I kept broadcasting the Mayday, and finally got a response from an

Eastern Airlines crew. All I could give them was an approximate position because I could not read any of the navigation instruments.

This aircraft had no flotation gear. We were wearing our lifejackets as we had put them on before departure. There was a raft in the back and we asked our crewman to get it ready to deploy. Easier for us to say than for him to do. He was being tossed about as violently as were we

"Debris was stirred up in the cockpit. Everything that was not tied down was being shaken and tossed about. Had we not been buckled in we would have been tossed about as well. It was a struggle to hold onto the controls."



Photo by Hank Stewart/Bell Helicopter

up front. Our intention (and hope) was that we could make a controlled ditching in the water. To say that we were scared would be an understatement. This is not one

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VIBRATIONS "con't"

of the emergencies anyone ever practices – violent vibrations, over water, uncertain location, and without satisfactory communications. We not only couldn't now talk to Panama City Center, but we could barely talk to each other in the aircraft. We determined that we still had both engines and brought them back on line to slow our descent. We had been descending for about three to four minutes, all the while having these violent vibrations shaking us and the aircraft with a frightening strength. We, of course, were terribly afraid that this aircraft would start coming apart around us. At about 500 feet we could see that the seas were about three to five feet and choppy. As we increased power preparing to make a powered ditching there were several more "Bangs" and the vibrations lessened. The shoreline was about fifteen miles away. We decided that the vibrations would allow us to try to make it to the beach, but we were ready to put it in the water if we thought it was necessary. An airspeed between 60 and 80 knots seemed to moderate the vibrations. The aircraft was still shaking with strong, mixed medium and high frequency vibrations, but we could generally read the instruments. As we approached the shoreline we could see that there was no wide, flat sandy beach to land on. The trees came right to the water's edge. We might have to land the aircraft in the surf and hope for the best. At least we could expect the water there to be shallow. One of us spotted a cutout in the trees. It was actually a short, rough, grassy landing strip that had been

hacked out of the trees perpendicular to the beach. The strip was plenty big enough for us to land on. We went straight for it and would land over to the side to allow a rescue airplane to land and help us. As we brought on power to hover, the vibrations got bad again – just like they were at first. It was a struggle to hold onto this thing, control it, and put it on the ground.

The basis of the vibration was the failure of the stud on which was mounted the tail rotor dynamic counterweight and bellcrank assembly. After the failure the counterweight and bellcrank assembly was being restrained only by the counterweight link. This link is about 4 inches long. So one of the two counterweight assemblies that weighed about three pounds was four inches further from its normal axis of rotation and flailing and spinning at 1,400 rpm. This tremendous imbalance caused those violent vibrations.

I stayed in the aircraft and continued to try and make radio contact with anyone while Hank and our crewman got out to see what happened.

We think the vibrations eased when the link broke and threw the

counterweight assembly free, and then got worse again as we approached the hover and had to



Photo by Hank Stewart/Bell Helicopter

add power and pitch on the tail rotor blades. The tail rotor gearbox was cracked all around, all of the top case attachment bolts were broken and all of the mounting bolts severely damaged and loosened. The gearbox was completely empty; the oil had gone out the cracks. By the way, when the counterweight assembly was thrown free, it was thrown forward with enough force to strike a main rotor blade then went down and damaged the swashplate assembly and pitch change links. The counterweight assembly was found later down in the hellhole.

Well here we were, disabled on a remote strip in an almost uninhabited part of Panama. After a while some fishermen in dugout canoes came over to see what was happening. Our Spanish was just enough for us to communicate our situation. One of the fishermen had a nasty machete wound on his right hand. Hank doctored him up and made a friend for life. I went in one of the canoes to their home island. There

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were no telephones, but they did have a radio and they managed to contact someone in Panama City to pass along our location and situation. We had no confirmation that the message got through and was understood.

By canoe I was taken back to the mainland and our helicopter. I tried our radio again, but couldn't raise anybody. There wasn't much else to do but wait. As it approached dark the fishermen told us that we should not stay there overnight. The field was a drug-runners landing strip. We were planning to return to the island with the fishermen when an airplane arrived and landed. It was help for us. We were flown back to Panama City for the night. Upon return the next day we brought some technicians to survey the damage. In three days the damages were repaired, with the most extensive work being the replacement of the tail rotor gearbox assembly. We flew it out and back to Panama City. Believe it or not that was Thanksgiving day."

Once again we must thank a reader for contributing this story. Let's take a look at what the FAA Rotorcraft Flying Handbook has to say about Abnormal Vibrations.

"With the many rotating parts found in helicopters, some vibration is inherent. You need to understand the cause and effect of helicopter vibrations because abnormal vibrations cause premature component wear and may even result in structural

failure. With experience, you know what vibrations are normal versus those that are abnormal and can decide whether continued flight is safe or not. Helicopter vibrations are categorized into low, medium, or high frequency.

Low Frequency Vibrations

Low frequency vibrations (100-500 cycles per minute) usually originate from the main rotor system. The vibration may be felt through the controls, the airframe, or a combination of both. Furthermore the vibration may have a definite direction of push or thrust. It may be vertical, lateral, horizontal, or even a combination ...

Some possible causes could be that the main rotor blades are out of track or balance, damaged blades, worn bearings, dampers out of adjustment, or worn parts.

Medium/High Frequency Vibrations

Medium frequency vibrations (1,000 - 2,000 cycles per minute) and high frequency vibrations (2,000 cycles per minute and higher) are normally associated with out-of-balance components that rotate at high rpm, such as the tail rotor, engine, cooling fans, and components of the drive train, including transmissions, drive shafts, bearings, pulleys, and belts...

Vibrations in turbine engines are often difficult to detect as these engines operate at a very high rpm."

What can a pilot do about abnormal vibrations?

Several things.

Amongst the first is to **learn what is normal**. If you don't know, ask the guys with experience – both pilots and mechanics. Don't take vibrations lightly. Pay attention to them. Try to determine the type of vibration you are experiencing. Be wary of a new vibration. Be wary of an increasing intensity vibration. Write them up.

Keep a tidy cockpit and cabin. Loose articles could become projectiles in extreme cases, or restrictions to normal control movements.

Keep your seatbelt and shoulder straps adjusted properly.

Violent vibrations can be terrifying. **Don't be hesitant to make a precautionary landing with unusual vibrations; and don't takeoff again until the source of the vibrations is found and fixed.** It may take some genuine detective work to find the source of an unusual vibration. Don't be satisfied flying an aircraft with an unusual vibration just because no one can find the source.

For several more stories of unusual vibrations check out the "Your Answers" section of this issue.

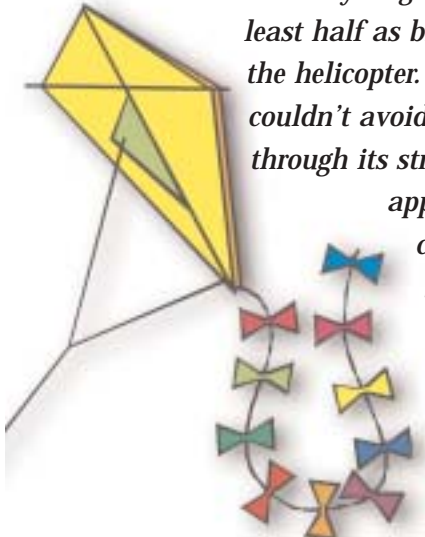


There I Was... Accounts sent to us by readers

206B

"I was crossing a valley and following a road. I was down low – maybe 200 feet above the road. I was flying directly into a bright setting sun that was just above the horizon. Suddenly I saw a kite that was right in front of me. I made a rapid, steep turn and managed to avoid hitting the kite or its string; but I didn't see until it was too late that there were two more kites. The one closest to

me was very large, at least half as big as the helicopter. I couldn't avoid flying through its string. I apparently cut the string and did not hit the



kite. Almost immediately I picked up a vibration. I landed and checked it out. I had kite string wrapped all around the tail rotor blades and pitch change assembly. I removed the string and there was no damage.

I now avoid those areas where kites are flown and fly higher. If I had hit that big kite I am sure something more serious could have happened."

47G

"1995 I was flying as an agriculture pilot in Saudia Arabia. The desert offered many problems. High ambient temperatures – 50 degrees C. Extremely reduced visibility in blowing sand, and more.

One day I had more than seven hours of ag flying. It was hot and I was very tired. I decided to land and take a short rest. I wasn't very attentive to the wind and didn't notice that the spot I selected had a slope to the terrain and that there was loose debris in the area. I made my landing approach downwind and downslope. With the tailwind I had to bring up the nose to stop the groundspeed. My tail hit the ground and I heard a loud bang. The aircraft immediately began to turn to the right rapidly. With the aircraft yawing I moved it over to a road that was immediately adjacent to my intended landing spot. I didn't have much time to plan this or think about it. I cut the throttle and managed to set it down on the road. I was lucky that I didn't end up in the rough terrain and ditch to the side of the road. When I got out I saw the tail rotor gearbox off to the left of the cockpit, and the tail rotor blades in front of the helicopter. I think I caught it soon enough before the yaw rate got too high.

The lesson: even if you are tired take the time to select a good landing spot and pay attention to the wind."

206B

"I was flying a Bell Jetranger in Davao, Phillipines at 1,000 feet. I needed to pass through the Davao International Airport control zone on the way to the banana farm ten minutes away from the airport. I was too busy listening to an FM radio that I did not notice that I was already inside the control zone. When I changed to the tower frequency to get clearance to pass through the airport I heard on the tower frequency that an aircraft (a BAC 111) just took off in a direction opposite my direction of flight. At 1,000 feet we almost had a head-on collision. I turned to the right and lowered the collective to enter autorotation while the airplane made a right climbing turn. From that time on I was careful to tune in and listen to the tower frequency whenever I was within 20 miles of an airport."

Hughes 500

"I had the experience to fly a helicopter in the South Pacific on Tuna Boats. I can tell you that I have flown more than once with one or more of the following

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instruments not working: oil pressure gage, oil temperature gage, load meter, fuel gage, air-speed indicator, and altimeter. I can give newcomers several pieces of advice. Always make sure yourself that the tiedowns have been removed before flying. When landing from a hover, wait for the third pitch of the bow to crest and then land during the lull. Don't try to hover too low right over the ship deck because the ship will come up to strike you. Stay calm and don't be in a hurry. Always check the fuel tank sumps yourself. Drain the fuel and check it for water and sediment, don't rely on the mechanic. The time will come that you will be fighting with your mechanic because of the mental torture of staying so long at sea. The show must go on. Keep flying and never mind your problems with the mechanic. Be sure your life vest has the nitrogen bottle full. Always check it."

Bell 47

"I once thoughtlessly tossed a banana peel out of the open door assuming that I was not "littering" because I was over the ocean. After landing I was stunned to see bits of banana peel



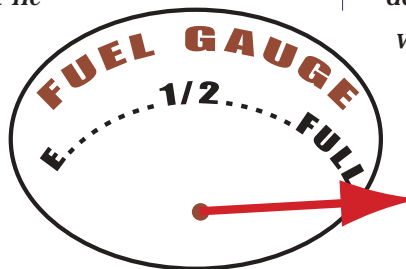
plastered all over the carburetor air intake, and realized I could have caused an over-ocean engine failure – or if I had tossed it out the left door a tail rotor failure. Older and wiser."

206B3

"My wife and a business associate flew to a small airport to pick up a person who was to do an aerial survey for a project my company was to work. We parked, shutdown and went into the airport office building to discuss where we would fly and what we were to look for and at. It would be me, my business associate, and the passenger, who would go on this flight. My wife would remain behind. While I stepped out of the meeting the fueller came in to ask how much fuel we would need. My associate told him to "Fill it up," and then later told me that he

had taken care of the fuel.

When we got to the aircraft I learned that the tank was full and that we were way heavier than I wanted to be. I knew we were heavy but I determined that I could do it. There was a strong crosswind across the one runway and I had to takeoff into the wind and



between some buildings and over some trees. We were right at the limits on takeoff. Another episode of being placed into an undesirable position by a well meaning but uninformed passenger."

UH-1H

"Takeoff from a 3,500 foot msl airport at 11:00 a.m. Climb to 16,500 feet in a UH-1H at 8,800 pounds gross weight. Run out of power at 16,500 feet trying to climb a 16,600 foot saddle. Touchdown at 16,300 feet on a wet rock next to a 4,000 foot drop off. Touchdown at 4,400 rpm and decreasing. Slid 100 feet on the wet rock to about 20 feet from the edge of the precipice! Burned 800 pounds of fuel and took off at 6:00 p.m. Descended to 16,000 feet to complete the mission. Temp on first takeoff was 28 degrees C. Temp at 16,300 feet was 24 degrees C."



If you have had experiences that you feel our reader's would benefit from, please submit them to:

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Fort Worth, Texas 76101

Q & Your Answers...

In the last issue we asked,

“What were the worst vibrations you have ever experienced in a helicopter?”

Human A.D.

A “Back in 1993 I was flying a AS315 Lama with a spray rig. This was in Oregon on the east side of the Cascade Mountains. I had flown this particular aircraft a number of times without any problems. The spray heads were mounted on the tips of the arms, about fifteen feet outboard of the skids. The spray heads would induce their own vibration into the airframe. This kind of spraying had me climbing and descending to stay just a few feet above the tops of the trees.

Without any special maneuver or control input I suddenly felt a vibration start and build up to a very strong ‘Air Resonance.’ This thing was shaking and shuddering so badly that I had to work at holding onto the controls. The instrument panel was a blur – totally unreadable. I immediately lowered the power a bit and decelerated. The vibrations damped out and

everything went back to normal. But that was enough for me. I went back to the base and landed. The mechanics looked it over closely. They couldn’t find a thing wrong. As I was sitting there watching the mechanics do their thing. I happened to notice the Lama parked next to this one. Somehow they seemed different. It took a while to notice that the spray arms on this aircraft were mounted on the skids just a few inches further forward than on the other Lama. The mechanics checked, and sure enough, they found that the spray arms were improperly mounted. That, with just the right combination of weight and airspeed was enough to set up this air resonance.”

.....

A “This event happened September, 1989 in a Marine Corp UH-1N. We had evacuated to Dayton, Ohio due to hurricane Hugo hitting the east coast. On our return flight from Ohio to MCAS New River we had been instructed by air traffic control to climb to 9,800 feet agl due to the remnants of the storm, high winds, and poor visibility. After stabilizing at 9,800 feet we started to encounter a small vertical vibration. After about two or

three minutes the vibration had gotten so bad that the pilot had one hand on the cyclic, one on the collective, and the copilot had both hands on the collective just trying to maintain altitude. The vibration was so intense that the two of us in the back of the aircraft couldn’t visually make out the pilots or any of the gauges in the cockpit.

We declared an emergency and successfully landed the aircraft without incident at a small outlying field. After landing we inspected the Main Rotor Head and transmission area. No visible damage was noted, except if the rotor head was spun around there would be a loud banging noise emanating from the transmission.

Once we had received the tools to really inspect the head, it was discovered that the mast had 180-thousandths vertical play and 90-thousandths horizontal play.

What had happened was the lower mast roller bearing in the transmission had come apart, followed by the lower mast bearing guide getting eaten up. It was told to us that if we had been in the air much longer the Rotor Head and Mast would probably have departed the aircraft.

On a lighter note that was the

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first and last time I have ever been to Ohio.”

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A “This was back in the late 60’s. The AH-1 Cobras were pretty new. One of the production test points was to accelerate to 190 knots in a dive. I hadn’t done all that many of these tests. On this particular one as I accelerated through 150 knots I suddenly got a tremendous vibration that shook the entire aircraft. These were mixed vibrations with terrific strength and intensity. It sure got my attention. I was terrified that it would shake apart. The natural thing to do is to back off from what you are doing, and as I decelerated back below 150 the vibrations damped out. I returned the aircraft to the line and reported my experience. Another pilot took it out and literally got all shook up. Yet a third pilot did the same thing before we investigated and discovered an incorrect set of bolts that were used in the assembly of the tail rotor.”

.....

A “Flying a 230, I had just passed translational lift and was accelerating in the climb when I witnessed a horrible, strong vibration. This was one of those ‘Get it back on the ground vibrations.’ I made an immediate 180 and landed

back on my departure spot. We found that one of the four transmission support arms was cracked completely through!”

.....

A “We were at Vandenberg AFB in California. Scheduled to depart in our UH-1 in the morning. Weather was IMC. Low clouds and low visibility. Temperature on the surface was in the 50’s F. Checked the weather. The brief said it was just fine for IFR to destination. Took off and were climbing, expecting to get on top above 5,000 feet. We began to experience some moderate lateral vibrations and then got a jolt and some considerably stronger vibrations that lasted for a few seconds. At first we didn’t know what it was. Then a similar buildup of vibrations and another jolt and vibrations strong enough to shake us up and make the instrument panel dance. Again the vibrations damped out and built up again with another jolt. We were taking on ice and shedding it. With the weather brief we received we had no idea we could get an ice buildup. We poofed up out of the clouds and could see some ice on the windscreen. The vibrations never got severe, but they did get our attention.”

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A “Night mission in an OH-6. Over the Los Angeles urban

sprawl. About 500 feet agl. No problems at first, but then vibrations started and built up to an intense level. We were shaking, the instrument panel was shaking, - there was a whole lot of shaking going on. These vibrations could only be described as scary. Scary enough to tell us that it was time to out this machine on the ground. The only problem was that there were no immediate good landing spots in the neighborhood we were flying over. We flew to the nearest airfield about five miles away. This may not be a clear technical explanation, but in my words, one of the transmission mounts was loose.”

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Here are a few other responses to a question in a previous issue that asked for inputs about passengers or crew movements in or around a helicopter.

A “I was the Officer- in-Charge of a Navy SH-60B helicopter detachment aboard a destroyer in the Adriatic Sea in 1996, conducting embargo operations in support of United Nations sanctions against the former Republic of Yugoslavia. While conducting the post-landing checklist after landing ashore in Italy on a logistics run, the auxiliary power unit of our Seahawk helicopter disengaged

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Q & YOUR ANSWERS "con't"

prematurely and caused the main generators to kick off-line. As a result, the automatic flight control system (AFCS) also kicked off-line (a natural occurrence, that's the way the systems were designed to work), along with the cyclic trim system that holds the tip-path-plane in position. Both pilots then became distracted with a traffic call and failed to re-engage the AFCS. When the aircraft rolled to a stop on the line, the only thing holding the tip-path-plane level was the pilot's hand on the cyclic. A further distraction by the aircrewman in the cabin caused the pilot to relax his grip on the cyclic, at which point the tip-path fell to about six feet above the ground at the 12 o'clock position. Just then, one of our other detachment's pilots, who had been ashore, entered the rotor arc – without permission – near the 12 o'clock position (normal entry into the arc for the Seahawk is from the 3 or 9 o'clock positions). He instinctively, and fortunately, bent slightly at the waist, as many of us are inclined to do. As he walked under the rotor arc, the blades narrowly missed his helmet by mere inches. The pilot at the controls reacted, and brought the tip-path up while calling for re-engagement of the AFCS system. The aircrew, as well as the pilot approaching the aircraft (who was about 6 feet 1

inches tall) made numerous mistakes in this near tragedy. Our detachment, which had previously considered itself extremely safe and professional, had a significant 'wakeup' call that day."

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A "R22. Central America. International flight. After takeoff realized transponder code was written on a piece of paper that was tucked under the copilot seat. Without prompting, the copilot stood up (bent over, of course) turned around (posterior now facing forward flight) lifted seat, and retrieved the code sheet. This is definitely not recommended."

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A "I worked in Africa for about 20 years on a contract with a major oil company. We conducted regular meetings in regards to helicopter safety and for the most part were quite safety conscious. One day I was taking some workers in a 206L3 to one of the offshore platforms and there was a strong breeze blowing. Upon landing, I faced the helicopter into the wind and away from the steps leading down to the lower quarters. Before they disembarked, I cautioned them about the wind. No sooner had one of the workers stepped outside than his hard hat flew out of his hands, and you guessed it,

headed directly for the tail rotor. I don't know why people's brains turn to mush when something out of the ordinary happens, but all that guy could think of was to chase his hat. My heart literally stopped as I yelled but watched helplessly as he headed to the back. The only thing that saved him was the fact that the tail rotor was hanging over the edge of the platform. Needless to say, he and I had a discussion about his actions."

.....

A "This was in May of 1984, Guatemala. I was flying a Guatemala Air Force 206LIII from Playa Grande to Coban (45 miles or so). As we occasionally did back then, I landed in a small village to pick up a passenger. An Army officer on the ground came over to me as I sat in the cockpit with the engine running and rotor turning to inform me that my passenger would not be going with me. But, could I give a short flight to a person who had never been in a helicopter before. I said 'Yes.' The officer waved at the passenger to come to the helicopter. The passenger began to walk directly toward the turning tail rotor. The officer had to run and push the passenger away for the tail rotor. After an apology and an explanation the passenger understood why. I really appreciated the help from the officer."

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A “R44. At a very rural Appalachian Mountain community fair, our six-minute helicopter ride was quite a hit over the garden tractor pulls and golf cart rides. Takeoff from the churchyard between the hillsides, on a hot summer afternoon, could be a challenge. Two experienced loaders briefed passengers and seated them according to proper weight and balance. This draws first time fliers from the immediate area who want to see their home or friends from the air. I expect a few waves from passengers to folks on the ground during takeoff, but one required immediate action. As I went through translational lift, an adult passenger seated behind me began waving with both hands out the open door, soon followed by his head and shoulders. To move in such a manner I thought he might have released his seat belt. At 40 feet and 40 knots I had no place for an abort and landing straight ahead. I chose a left 180 degree turn to keep him on the high side and set it back down at the takeoff spot.”

.....

A “This is a now infamous story from the Navy flight school about a student naval aviator’s close look at the tail rotor of a TH-57 Sea Ranger helicopter. The instructor pilot and student had just “hot seated” the TH-57 from another crew, and did a

hasty visual, external preflight before strapping in. Realizing then that the flight would take them well past sunset, the instructor asked the student to unstrap, get out, and visually check the proper operation of all the external lights. The landing and searchlights in the forward, lower part of the aircraft received a ‘thumbs up’ from the student pilot, as did the port and starboard position lights and the anti-collision light. Remembering that one remaining light needed to be checked, the student pilot proceeded aft to check the tail, white position light located on the very tip of the tail boom. The instructor naturally lost sight of the student pilot, and after a brief pause, felt and heard a sudden ‘thump’ in the flight controls. He next saw his student pilot weaving forward, helmet-less, under the rotor arc and away from the helicopter. The student pilot zig-zagged for about 100 feet, then fell prone onto the grass, all the while bleeding profusely from his head. The student pilot had inspected the taillight too closely, and leaned his helmet into the arc of the rapidly spinning tail rotor. The student survived, got his wings, and bore a tremendous scar that prompted him to recall the story many times in his fleet ready rooms... ‘Remember the story they told you in flight school of the guy who tried to preflight the taillight and found the tail rotor instead?’”

What is your Answer?

“Have you ever experienced Dynamic Rollover, or something close to it?”

Tell us about it.”



Email your answer to:

jszymanski@bellhelicopter.textron.com

*You can also fax your answer to
817-278-2428*

or Mail them to:

Bell Helicopter Textron, Inc.
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The Aviation Medical Examiner's Definition of Hypertension.

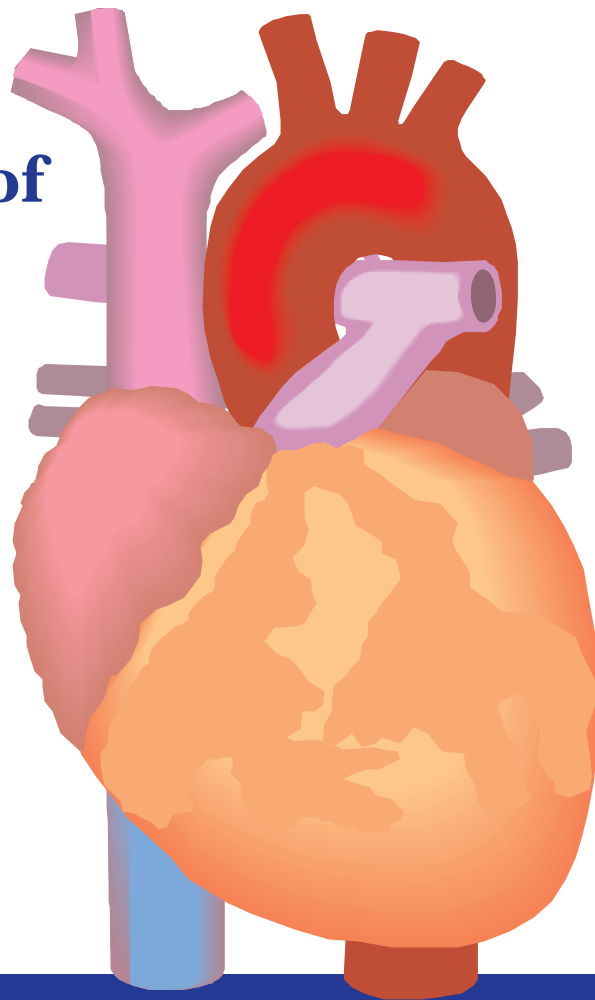
By Donato J. Borrilli, MD, JD

There is a saying among aviators – *“Being legal does not mean you’re safe and proficient.”* The same axiom holds true regarding high blood pressure, since recent changes in this disease’s definition seemingly conflict with FAA regulations. Aviation medical examiners (AMEs) understand the measurement of blood pressure as an essential part of the FAA certification examination. A pilot is disqualified for all classes if she, or he, has a sitting systolic blood pressure above 155 mm mercury or a diastolic pressure above 95 mm mercury at the time of the exam.

However, on May 14, 2003, the National Heart, Lung, and Blood Institute (NHLBI), a division of the Department of Health and Human Services and National Institutes of Health issued new blood pressure standards.

As defined by the NHLBI, a blood pressure of 120/80 mm Hg (or higher) is now

considered **prehypertension**, a precursor condition to hypertension, which serves as a warning signal that risk is increased for high blood pressure. The new report also changes the former blood pressure definitions (See Table above). The new guides also recommend a change in medication use. An aviator could, therefore, have untreated stage 1 hypertension (and possibly stage 2 hypertension) and still be



New NHLBI Hypertension Standards

Condition	Systolic (mm Hg)	Diastolic (mm Hg)
Normal	<120	<80
Prehypertension	120-139	80-89
Stage 1 hypertension	140-159	90-99
Stage 2 hypertension	>160	>100

within the medical standards – legal – to fly. (See axiom above).

We know that pilots with a diagnosis of hypertension or those on medication to control blood pressure must provide a detailed cardiovascular evaluation for FAA consideration. So, what’s an AME to do? And does this “new definition” imply an increased risk for sudden incapacitation (the underlying factor for

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medical disqualification)?

The simple answer is, no. The AME should identify the elevated, but legal, blood pressure, inform the airman applicant of its health impact, and make recommendations for life style changes and medical follow-up. The AME should refer the patient back to his or her primary care physician and issue the certificate. If the AME happens to be the primary care provider for the aviator, a work-up for essential hypertension should be conducted.

If a diagnosis of high blood pressure is subsequently made, or anti-hypertension medication is initiated, these actions effectively suspend the medical certificate, since this would be considered a significant change in medical condition or history. Pilots with a diagnosis of hypertension or those on medication to control blood pressure must provide a detailed cardiovascular evaluation for FAA consideration.

The consequences of high blood pressure, if left untreated, should be stressed to the aviator, since damage to major organs, including the heart, brain, and kidney may result. It is a major risk in heart failure, heart attack stroke, kidney failure, and certain kinds of blindness. High blood pressure is a risk factor or a cause of more than 210,000 deaths in the U.S. each year, and is often called the silent killer.

Although it is legal to fly with a prehypertensive condition, it may not be healthy in the long run.



Dr. Borrillo is the Medical Director of Occupational and Hyperbaric Medicine, The Toledo Hospital ProMedica Health System. He is also a senior aviation medical examiner, an attorney, and a pilot with a Commercial rating.

Federal Air Surgeon's Medical Bulletin, Volume 41, Number 2. Summer 2003.



Photo taken by LTJG Scott Bell USN



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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:

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 Jim Szymanski
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