Safely Retiring…No Hits, No Errors

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The passage of 38 years of aviation related safety business, including 23,500 hours aloft is the reason I offer these pass the torch observations. This effort should in no way be considered as being endorsed or condoned by MY AIRLINE or by THE ALPA. The opinions and observations are solely of the author.

FIRST: TRUST NO ONE

When it comes to your own flying safety, trust no one. It matters little what the scenario, the distrust is good. On that perfect day, with all factors appearing routine, do not assume you are going flying. Instead make everyone prove to your satisfaction, that everything is O.K. to launch. Even then remember that you do not fly unless you want to…until you are satisfied that all hazards have been reduced to routine proportions.

It matters not whether you are F/O or Captain. If it ain't to your liking don't go. A " ***Hell no I won't go***" attitude will never kill people, it will only make them late. Remember, the dispatcher, the mechanics, the cargo handlers, the paper pushers and the bereaved management will all escort your widow to your funeral. None of them will get hurt falling out of their chairs.

The distrust should not be paranoia. In fact most major airlines have a management that is very supportive of decisions made to enhance or preserve safety. This is good since high level pressures do not exist to make schedule at the cost of safety.

Trusting no one starts with the flight plan delivery during operations check in. Here on the computer a few simple checks are adequate. Click FLIGHT PLAN. Take a look at the weather, the route, the altitudes and winds, and the fuel. Remember fuel means options and options are good. If you want more fuel, demand it. This should not be a request.

I remember a very good friend of mine on his first captains' trip from Dallas to Albuquerque wanted more fuel because of wintertime weather and winds to destination. He was twice refused and told to push back on schedule by the dispatcher. I was taking a 737 to Amarillo, and to my surprise I met my friend Capt. PASCAL in operations. He had short stopped the airplane and diverted. I asked him what the hell he was doing in Amarillo, and his answer was classic. " I told him I wanted more fuel. Next time he will listen."

This same Captain had received a hero of the state award from the AIR FORCE for safely dead sticking an out of fuel fighter. He said he has never been low on fuel since then.

I have heard other captains tell a dispatcher that the delay to put on more fuel would be far less than the delay to find a different captain to continue the trip. More fuel is not a request.

The time to get more fuel is early. It is when you first get the flight plan and weather. Try to avoid participating in a FLAILEX and an unneeded diversion created by low fuel loads and unexpected holding.

At the aircraft, trust no one with the preflight. If you see something or are told of something you do not like, make sure of the ramifications of your decisions. Be positive, "There appeared to be a puddle of something under the center engine. I think it was water" That is a bad answer.

The better answer is, "The puddle under the left engine **is** water, and it **is from** an earlier aircraft." Assumptions are always bad even if they are correct. Operating on assumptions leaves room for MURPHY, and MURPHY'S LAWS will kill you if you let them. Utilize the U.S. Navy Seal team approach to mission planning and assume nothing.

ASSUME NOTHING

Do not assume just because you are at the airplane that you are going to go. Do not assume that the aircraft at the gate is the one assigned on the flight plan. Do not assume the aircraft is fueled correctly. Do not assume the aircraft is ready to fly simply because there is no maintenance placard hung over the throttles. Do not assume the airplane is airworthy, even though it is signed off.

In fact, the contrarian attitude of Harry Truman is appropriate. The goal of course is to go flying safely and on time, but make them prove to you at every step of the process that it is safe to go flying.

Trust and confidence in the crew allows the delegation of duties. It allows each of us to feel confident in the minimal competency required to assume the seat we are in. This commonality of training with line standardized procedures and terminology is the oil that allows a crew to function satisfactorily the very first trip. Confidence in a person, by virtue of that standard training facilitates crew co ordination.

Assuming nothing is very important to the mindset of every operation. I have found a contrarian mindset to be helpful in line operations. I do not assume that I am going flying even when I am in position with all checklists accomplished. My mindset is that I am planning the aborted takeoff not the liftoff. Only when I satisfactorily hit V1 do I shift to the idea that this machine is about to become a bird…The truth is that in 31 years at Delta I have only had two high speed aborts and a couple of low speed T.O. warning horns.

This consideration and T.O. planning is tempered by weather conditions and the length of the runway. For instance, In MAUI and some other very short runways, there is a point where you no you are going to fly or swim…Sort of, like on the catapult back aboard the carrier, You damn sure aren't going to stop.

The same contrarian mindset holds true for the landing. Until the wheels are touching down the mindset should be on going around. The tower call "Cleared to Land" and the checklist "1,000 feet - cleared to land" is permission to land…it should not signify a commitment to land.

"If it don't feel correct, It probably isn't"

Remember when Obe Kenobe told Luke Sky Walker. "Trust your Instincts Luke". If you have some inkling something is wrong, if you have some concern that something is incomplete, communicate the concern and act upon that instinct. Take or make the time to satisfy yourself. It may be something as inconsequential as "Did we do the climb check list" all the way to "Why don't we have three greens, and shouldn't we have a horn going off"

It can be a totally stupid thing. For instance, once on a Trans Pacific flight the winds were unexpectedly terrible and getting progressively worse than forecast. There was fuel to continue at the midpoint…but an inkling of concern arose that is not covered in training. If the rate of change of bad winds were to continue or worsen the fuel consumption in the second half will be worse than the first. In carrier flying we learned that keeping airborne for one extra minute over water was a very good thing. They used to say; "One minute of flying equals one day of swimming."

We solved the problem through AIRINC getting appropriate and actual winds from aircraft further down the same track. The winds died and it was safe to continue.

On another occasion I participated in a FLAILEX of diversions due to low fuel in a unexpected wintertime storm at Salt Lake. The date Dec 29th. The ILS at SLC had been hit by lightning and while I was on an ILS to HILL AFB the ice storm hit and the Hill duty officer closed the base. After an ATC, flail of multiple aircraft diverting I coded 7700 just to get the busy controller to talk to me. I told him I was low fuel and needed down quick… We were told go to Idaho Falls and land south on the single runway. My mental calculations showed that when we got to the airport there would not be fuel for even one go around and no place else to go.

We were number two for Idaho Falls behind another airliner. I was so low on fuel I wanted to go first since if he slid off the runway and closed the airport

we would be up the creek with no paddle and no where to go. I asked the engineer to call his engineer and ask if we could go first. The answer was no. He was in the same fuel condition.

After a small CRM discussion with the crew we came up with a plan. We declared and emergency and diverted from overhead Pocatello into Pocatello. Since the runway was very icy I made a slow approach, flaps 40 and bug minus five. This was an unorthodox situation that got Kinetic energy as low as possible for stopping on what looked like a long ice skating rink.

Once on the ground I was receiving a chewing out from dispatcher about diverting to an off line airport with 5,500 lbs. fuel still onboard. I was giving him my reasons about not wanting to be the number two aircraft at IDAHO FALLS. He had to excuse himself and receive another phone call. It was from Idaho Falls. The other airliner had just slid of the side while trying to clear the runway…Idaho Falls airport was closed! Sometimes intuition is all you got. The nagging intuition had been correct. **The truth- you never have too much fuel unless you are on fire!**

JUST CUZ THEY SAY IT IS SO - DON"T MAKE IT CORRECT.

The government in the form of the FAA regulates our industry, and it is tasked to promote safety. For the most part they do a good job. However, they are a massive administration and massive anything's are bulky and slow moving. Just because they say it is safe don't make it safe.

Revisit the Delta 191 crash for a second as well as the earlier Eastern JFK disaster. The FAA at that time said fly bug plus 5 knots was adequate. Subsequent to Eastern JFK wind shear crash a Wind Shear Symposium was sponsored by ALPA and the industry. A BOEING 727 test pilot said about wind shear. Don't get in it, but if you do the best way out is to fly at a speed flaps fifteen +15kts for energy, while at landing configuration. This would amount to about flaps 30 plus a whole lot of margin. He stated his opinion was off the record since both FAA and ALPA as well as your company then had different dangerous plus 5 procedures.

Now the have gotten around to saying reference speed plus ½ the gust speed plus all the wind up to 20 kts. I say add what is needed for safety and if you don't like it get the heck out of Dodge.

Years earlier, when Chief Pilots were proficient line pilot professionals, Glenn Sage said to a group of Houston pilots complaining about the FAA bug plus 5 ruling. " I can defend you for running off the end at 25 kts. I can bury you if you hit ¼ mile short in winds shear."

The answer is simple and easy to understand. If you know about it in advance get the hell out of there. If you get into wind shear assume it will get worse and therefore initiate wind shear go around early. If you really get into it follow the printed wind shear procedures, it is the best chance for survival. Kinetic energy preservation is life.

Just because the guy in front of you made it do not assume you will. A Thunderstorm is so dynamic and changing, especially the kind with microbursts' that all bets are off in such instability. Here again, if you had a lot of fuel you would have more options.

Everything your company has told you about creating time for decision-making is fuel dependent. If you have fuel you are in no hurry. So what if you safely request holding away from the storm? Who's to worry about that?
Making schedule is manifestly unimportant when weighed against safety issues. Besides you and the rest of the crew get paid by the minute!

All of the pages about wind shear flying, unstable air, takeoffs in reported unstable air and the like are, in my opinion, perfectly correct. Follow them religiously and do not go just because the minimum safe criteria are met. Assure yourself that you are fully comfortable within the entire crew as to what to do. While on the ground awaiting takeoff, listen to departure control and see what kind of ride the pathfinder is getting. If sky king is talking in falsetto, wait a few more minutes.

PERFECTING SKILLS

The airline policy concerning flying suggests/demands usage of the autopilot and auto land systems in almost all low visibility approaches. This rule should not foster a pilot's reliance on those systems during good weather. There is no argument on my part that monitoring a working auto land system is far easier and far safer than hand flying the same approach. The autopilot system is capable of flying the aircraft more precisely than most pilots could on their best day.

I have noticed a entire young generation of pilots who are satisfied to allow the auto pilot to do all the work, while their own instrument flying has deteriorated ,or has never been honed to perfection.

Remember, I agree that the auto land system can out perform any pilot on his best day. That is a given. But guess what folks? Just like humans, autopilots have bad days too. Sometimes the damn things don't even work. Sometimes they are only insidiously malfunctioning, and sometimes they head for the woods at just the wrong time. Murphy's second law suggests that failures always occur at precisely the worst time.

If Murphy is correct, that means that the one time your autopilot fails will be precisely in Cat II or worse weather and at low fuel state. A divert would be accomplished to an airfield with better weather conditions if fuel permitted.

I simply suggest that pilots should hone their hand flying skills for the one time the autopilot does not work and the weather is an unexpected fog storm.

Following a glide slope approach on every good weather day, utilizing the flight director, and stabilizing the cross hairs and speeds to near perfection during VMC makes it a walk in the park during IMC.

I am not always successful, but my own VFR limits are minus zero kts. Plus 5 kts, On the donut, a flight director deviation of zero, a raw data deviation of ½ dot high to zero low. I fly the centerline of the rising runway instead of the ILS, and I try to keep it always centered.

When I fly the flight director of mechanical ADI, I try to see a small portion of the round aircraft head on each quadrant of the centered needles. I try to always have the airplane nose under the crossed needles.

On the glass ADI the flight director has a very small square for aircraft. I try hard to keep the cross hairs within the square so that I see minute spaces at each corner of the square. If you force the aircraft attitude to the appropriate cross hair, you can fly to the centerline and touchdown zone every time. Remember, the auto land system is getting its data from the identical flight director that you are.

Captain Hardy Rawls said it succinctly - “Do not be satisfied with anything less than perfection. Make the airplane go where you want it to go, and be satisfied with nothing less. Sloppy is not professional.

JUST BECAUSE THE PILOT IS GOOD, DO NOT GO TO SLEEP

The desert is full of smoking holes created by TOPGUNS. It is very easy to become complacent in your duties, that are often the error that results in a certificate action or a fatal accident.

As an engineer and a co pilot, I often made the mistake of overestimating the capability of the good pilots. The substandard pilots were no problem – you stayed very alert to all their propensities. The great ones lulled you into the belief they were infallible. In fact, the only NASA reporting forms I have ever sent in is because I did not do my duty protecting the captain against his errors or for my mistakes as captain. These came in the form of failed to level off at altitude and failed to turn at a VOR. Great pilots simply do not make these

mistakes…Wrong camel breath, they make those mistakes regularly just less frequently.

Good Guys F--- Up too. Once I slammed on brakes in a L1011 when a very respected Line Check Airmen Captain on a regular trip turned left toward an active runway at LAX instead of right toward the gates. As a result a JAL went on to Nippon unmolested by mating aluminum coffins.

The captain said, “Thanks, I had a brain fart.”

Another LCA/flight training captain had saved a Convair 880 with an unsafe main mount by doing a 15 degree side slipped touch and go on the unsafe gear. That action jarred the main mount into the down and locked condition. He was a hero.

On a subsequent flight he climbed directly through his assigned altitude because I had not warned 1,000 below. Luckily, no traffic and no violation. Hey, it wasn’t my fault because I knew Sky King couldn’t make a mistake that mundane.

I do not know what others have thought of my flying, but I was a good pilot because my judgment is usually good and especially because I know my limitations. Overconfidence kills.

ASK for HELP

Do not be ashamed to ask for advice or help. Ego is a trap that can kill as sure as overconfidence. If you are reticent or unsure of what you are doing, do not be hesitant to ask. Humbling oneself in the name of self-preservation is never wrong.

I can only tell you that having an F-16 pilot from Hill AFB as co pilot on the divert to Pocatello was a Godsend. He was totally familiar with Pocatello since the F-16 was always a divert ready to happen. Without a map he said Pocatello is virtually under us and it’s got 8,000-ft of good runway.

I had one co pilot from the civilian ranks who was self conscious about his non jet background. Rather than ask for advice, he would fumble for a solution. He felt he would be looked down upon for asking… Hey wait a minute, the cockpit is a team and we all get violated or dead for making the wrong decisions. Time fumbling for a solution, is time lost, and time lost is sometimes important.

Look at the Cali accident where a captain was fumbling with being lost. When he turned the aircraft over to the co pilot within only seconds the co pilot

found ROZO and started the aircraft toward the airport. By then they were too low. Communicate… Lost time and ego are deadly.

On one approach into Pittsburgh, I watched a co pilot become fixated with trying to re establish an autopilot for an auto land capability…inside the marker. After drifting off course sufficient to make the point I said. “Why don’t you just fly it, after all it’s just a damn airplane?”

When I assume a new Captains role, I am sure to ask the co pilot to fly the airplane specifically like the book, and stabilize the approach in final configuration by the marker. I explain this conservative request in terms of helping me.

“ Look , I am new to this machine, and I am not yet totally comfortable with it. There will come a time as a regular line holder that I will wear this airplane like it was an extension of my will. That time is not here yet so do me a favor and fly within the training envelope so I can be involved with helping you. If you are out where I haven’t gone before I can’t judge the safety of it. And damn sure do not trust me, because if I am going somewhere you are uncomfortable with, sound off - it may be a mistake and a save”

FLY THE AIRPLANE

Flying the airplane is a very important aspect of our job. The most important part of that aspect is to not crash and burn. Marsh mellows are not good cooked in an oil fire.

Today you go for recurrent training and a large part of the session is about looking and sounding good for the flight recorder and for Line Checks and other inane audits.
During the most recent initial that I took a “Instructor pilot” spent ungodly amounts of time warning us about the way the FAA wanted a checklist read and repeated. It was pure verbal perfection…and nobody said that such a thing was patent administrative bullshit. Nobody said teach me something real, for the simulator boys dream that they are real, when in fact they are virtual reality like DREAMWORKS. Instructors who live the Training Command life too long are no more adept at teaching what is happening than a celibate religious man is at domestic relations counseling. They and the FAA are too far removed from the real thing.

Priorities suggest doing the checklist is much more important than reading it correctly. Remember the Dallas Accident where the flight recorder had a checklist that said “Flaps…. response 15, 15, Green light”

Now of course some say the flaps were not really ever down, others question why there was no take off warning horn if the flaps were not down.

The Eastern L-1011 accident known as the Swamp Buggy certainly points out the fact that somebody should always be minding the store, and prioritizing the important from the secondary.

Compare the difference between the Eastern Accident in the swamp and the United DC-10 in Sioux City. In The swamp no one was flying and everyone was doing some sort of checklist problem. In the United accident four people were flying the aircraft and putting their minds into solving an unsolvable problem.

Let us prioritize, as a system safety analyst would do. Anything that has a potential of killing you or the airplane should be the first order of business. After that is handled anything that cuts the mission capability and forces a diversion or change of plans is next. Thirdly, loss of a system that does not effect the flight is next and finally anything that can be improved at a later routine time is the last consideration.

You should not be reading a checklist while flying into a mountain.

Know where you are and what is going on.

Situational Awareness is two words and one concept. When you are flying at 600 kts over the ground you are transiting the ground at the rate of 1,000 feet a second. If you come to a sudden stop in a granite mountain it will take about $1/16^{th}$ of a second for the radar to pass behind where you used to sit,
Our office moves very quickly even at landing speeds. We start flap extensions at speeds greater than Indianapolis racers ever see. We touchdown at speeds faster than stock car drivers average. We transit three dimensions with time as the fourth dimension. Our sky is crowded with other machinery. Our world is crowded with other people and concerns.

The focus must remain on keeping our machine flying safely, and co ordination with others to avoid mating aircraft with a resultant aluminum snowstorm that only benefits trial lawyers.

ATC and what is being said to you and others is a big help in situational awareness. The Fish-finder is a help in finding and locating other traffic.
The map mode of the glass magic is spectacularly helpful in geographical awareness when appropriate symbols are displayed on the correct scale.

Of course altimeters, flight instruments and warning systems such as GPWS and Traffic Alerts are helpful. In high-density traffic areas the Mark One eyeball is important as well. We are provided all this data. It is the practiced integration and assimilation of this data that creates the awareness of the dynamic situation around us.

Often a “what if game” is helpful as changing situations develop. If you see on your map mode and weather radar that the destination area and other portions of the flight path are clobbered with thunderstorms, and if you hear ATC issuing holding in front of you, you are alerted to begin thinking about alternative, safe solutions.

Just listening to the radios can make a big difference. I was holding in New York Center area when two other airline airplanes had entered and held in the same holding pattern at the same altitude. It was my captain that pointed out to New York that two airplanes were circling in the same pattern.

WHEN THEY SAY “HURRY UP”, IT IS TIME TO SLOW DOWN.

When we talk about highway driving, we say speed kills. When we talk aviation preparation-speed kills. Do not be in a hurry. So what if the passengers are a little late. If running on time were a criterion, the airplane would have been ready to go at its scheduled time. Hurrying to get back on schedule is only O.K if there is still enough time to do all safety related issues correctly.

One very cold and icy night in the military I witnessed a preflight being done too quickly. The airplane got airborne with the pitot static covers still on resulting in zero airspeed. The airplane was recovered safely, but the touchdown was way- way too fast, and the mission was scrubbed.

In LAX at a tow in gate, one aircraft had been pushed back with that gates tow tug. A helpful ground person started another tug and raced out to pull my aircraft in. (The gate was open and the other aircraft that had pushed was well clear). Unbeknownst to the well meaning ground handler the tug he chose was down for maintenance (NO BRAKES). He slammed into the nose gear at about mach 2. Precisely at the time he wanted to hurry – he should have slowed down instead.

In the U.S. Navy more than one aircraft has been catapulted with folded wings. Stupidity and being in a hurry was a gotchya!

Never hurry faster than safety allows. Remember, that you get paid by the minute. Remember, if you die your widow spends your money. Pushing up daisies is forever. Remember, that if you hurt an airplane or passengers you may lose this wonderful job.

Slow is good in aviation, just as slow is good in cooking. You do not make good Italian meat sauce quickly, nor do you create Blintzes or Greek lamb
In a microwave. The penalty for fast food is simply indigestion and S--- to eat. The penalty for fast in aviation safety is far worse.

CORPORATE MEMORY IS SHORT

The company, the Military and the FAA often forget hard-learned lessons. Do not disregard previous knowledge simply because some factors have changed with time.

As an example in 1963 the United States navy told me as a student. “If a circuit breaker pops, it popped for a reason. Since 90 percent of the reasons a circuit breaker pops are bad… be damn sure you need the system before you reset it. This was especially stressed about fuel, about explosive ordinance and night photo-flare armaments. The military had learned this the hard way

The Air Force also knew to never run submersible fuel pumps dry. This was learned from a 1970 B-52 accident in Loring Maine. As a result they covered all submersibles fuel pumps with 1,200 lbs. fuel. In 1989 the Air Force changed the burn rules for B-52s and 6 days later they blew the tail off of one doing touch and goes at K.I. Sawyer. Immediately the Air Force went back to 2,000 lbs. to insure the pumps always ran wet. Only within the last few years have airline done the same in center fuel tanks.

It had long been known that a pilot co pilot relationship in dual piloted aircraft was made safer by identical displays before each pilot. In the Cali accident American required a pilot to be constantly on map mode and the other on raw data. This was to supposedly correct for map shift. While correcting for map shifts, the method deprived the pilots of similar situational awareness. The Delta method of going to raw data and then returning to map mode is far safer and far superior. The misunderstanding of map shift is exacerbated because in South America some VORs were actually miss surveyed. Thus even the navigational maps are incorrect in raw data.

With GPS and with hand held devices, and with thirty years flying in South America why can’t somebody find the correct positions of these lost VORs?

ALUMINUM SNOWSTORMS

The mating of airplanes in flight is a very serious thing and almost nobody celebrates such an occurrence. I have found too many pilots are very ready to tell ATC that they see the pointed out traffic or the airport. That brings up a very sticky legal point called “see and avoid.” Shifting the burden makes your company and you liable for what you believe you may or may not see.

As an accident investigation consultant I worked on the Charlie Pride aircraft mid air, and on the PSA San Diego disaster. In each case the wrong aircraft was acknowledged by the pilot. In several instances within cockpits I have been in, we have acknowledged incorrect traffic. The point is being damn sure you are spotting the correct aircraft. It could kill you, and simply because a fish finder

and ATC have given you traffic, there is always the possibility of a lost Cessna with no transponder.

On certain approaches such as Atlanta and San Francisco, do not become enamored by the aircraft you see on the parallel approach. Chances are the airplane that you don't see is the one that will blindside you from the opposite side. Explain to me the advantage of telling the controller you see a guy, and then weigh that with the downside of calling the wrong traffic. You pass your eye test every six months in your flight surgeons office.

Certainly another hazard is even more likely. That of runway accidents. From Tenerife to LAX they just keep on happening. There is no foolproof way to prevent them from occurring, but a very good old Delta Captain always used to as he was taking the duty run way scan the skies and saying Cleared to posit and hold…then to me and "No Lost Navy pilots shooting a flame out approach" I noticed this Captain was always having his head on a swivel crossing all runways. Not a bad habit.

The Demise of Safety

Safety is a word that gets lip service, and it means very different things to different people. It no longer means no defects, no failures and no accidents. That is the philosophy of the old safety gurus. Safety met its demise when system safety was introduced. Now safety is planned to complete the mission with acceptable failures rates and failure modes.

General Smokey Caldera would roll over in his grave if he understood that today failure rates of equipment is predicted and deemed acceptable. What may be acceptable risk to some aircraft designer may not meet my definition of acceptable. Naturally the safety expert of today tries to predict and control the event so that no catastrophic events occur with loss of life and with loss of equipment.

For instance, who ever dreamt up the idea of three separate and insidiously different FMS computers for 757-767 aircraft? A single old computer makes far more sense than three different models. Gee whiz, remember when airlines tried to make cockpit displays identical in the entire fleet. What a novel concept! Now they race to purchase technology differences that only confuse and lead to error. Do not believe for an instance that management on mahogany row will ever admit to supervisory error.

Remember when the airline removed the take off warning horn from the pilots 727 taxi check list? That to save a few worn out switches or to change the 727 MEL list that might allow an aircraft to be flown to a maintenance station with a bad warning switch. That wasn't talked about very much by safety.

Remember the Boston accident and how very quietly minimums were raised on the former Northeast DC-9s until it could be determined if the Sperry flight director was interfered with by the engine high voltage ignition of the North East aircraft. Did no one think of this when the Northeast Collins equipped DC-9s were replaced by the Sperry Flight director? Safety and kit proofing takes time and money.

I suggest to you that you must be pro active when it comes to safety. Think ahead, have a crystal ball. Looking at other incidents and accidents is beneficial for the lessons learned so long as you are not one of the lessons. A CRM program was very beneficial, but it was the result of a previous failure.

Every FAA program I have seen in recurrent has been as a result of an accident.

Microburst training after Eastern at JFK. Wind shear energy preservation after Delta 191 at Dallas. Mountain Flying "escape training" after American CALI accident. CRM after NWA 255 and Delta 1141. That resulted in a different Check list ,but no fixes to old and defective warning systems.

No recurrent program has ever been to prevent the first such occurrence. Thankfully and surely, some second accidents have been avoided. That of course is success, and the dead shall not have died in vain if something was learned from their disaster.

I just gave a speech to a Society of Engineering Professors, and I admonished them that as an accident investigator I am armed with twenty - twenty hindsight, while they as designers must have a twenty -twenty crystal ball. They must predict what misuse their product will see.

You as pilots should use your crystal ball, your collective experience and your active situational awareness to avoid impending situations of doom.
If we are using hindsight hopefully it will be another's accident revisited. If we use hindsight with respect to you, then we are asking what could have been done different to avoid this outcome. Learning from mistakes is good, but avoiding mistakes is better.

Political Correctness

When speaking out for Safety political correctness is far less important than communicating precisely what needs to be said. In one classic case a bio medical man took a bloody portion of a human body he retrieved during autopsy back to his commanding general and laid it out on his desk. He said "Now will you believe me general, this damn ejection seat is breaking necks?"

That very unorthodox and politically incorrect way of communicating for safety got a parachute ballistic spreader gun removed the next day, and an order was

issued to hurry up on the follow on high tech replacement ejection seat. When speaking out for Safety use whatever noise is needed to get results. The life you save may be your own.

AVOIDING THE GREEN WEENIE

On one occasion I was on final at CVG when I was to move from 15 to landing flaps. All hell broke lose and the aircraft rolled shuddered and the noise in the cockpit from the vibration was such that talk was impossible. I placed the flaps back at 15 - held what I had - and luckily landed.

As the passengers got off one old man said," Sonny you got a problem, you got a head light going like this". He waved his arm from up 15 to down about 30 degrees. As you know the light he was speaking of is mounted to the flap.

Another passenger said, "I am with NASA and you got a serious flap problem."

As soon as the last passenger got off a flight attendant asked "Just how close did we come to eating the Green Weenie?" A mechanic who had been summoned from outside held up his thumb and forefinger. They were held a quarter inch apart. The flap had completely broken loose at one side and was only hanging by a track that was about ½ broken through.

On another occurrence in the North Atlantic I had gotten myself into a low fuel state while the ship had gotten itself into a fog bank. With all other planes diverting to Norway, I was left with a choice, bailout, ditch or attempt a zero and 1/16 th mile approach GCA radio talk down. I chose the latter since the water temperature was 30degrees F. I made it in without ever seeing the ship. Later the skipper called me down to the wardroom and gave me a handful of Russian chaff. A Russian was overflying the ship and they didn't tell me he was dropping chaff to destroy my radar approach, not to say ruin my day. I still have the chaff in my attic scrapbook. I supposed then that God was saving me for something big like Cancer or something.

On both of these occurrences there might have been something I could have done to avoid the situation. I didn't have to run my aircraft so low on fuel playing war games, and maybe a better preflight might have spotted the fatigue tear beginning on the flap track. The log book had previous vibration with flaps down write ups.

The point is that avoiding the green weenie is mostly the application of known safety principles and only a little bit of "Fate is the Hunter". The object is to sidestep the grim reaper for as long as possible.

IN CONCLUSION

Be a skeptic. Know your limitations. Study to be correct most of the time. Be willing to be shown that you are wrong. Only go places that you are comfortable with. The cockpit seat that your skills have earned you is a unique way to earn a good living. In return for the contract you have with the company, you owe it to yourself; your family, your passengers and your employer to do the very best and safest job you know how to do.

It does not mean being an asshole, a stickler or a CRM nightmare. It means understanding the single a most important aspect of your job is bringing passengers to their destination safely. Beyond that everything is secondary.

Enjoy the sunsets, the sunrises, and the thunderstorms from afar. Love the Northern Lights and the opportunity to have seen Hale Bop up close. Take a hard look at the night-lights of the Naked City and marvel at the humanity your job has allowed you to see. If you have earned the big bucks you have deserved it. Looking back over 38 years there has been 23,000 hours, ten billion seat miles and, thank God, nobody hurt or killed. Take it a day at a time and keep safety close.

SAYINGS THAT MAKE AVIATION SAFETY SENSE

- Just cuz the government tells you so, don't make it true.
- Take offs are optional - Landings are mandatory.
- "I'd rather die than look bad"… will kill you.
- The obvious is usually wrong.
- Doing it correct is better than having to explain it later.
- If you don't know get help.
- When you ask a question, listen to the answer.
- They can be wrong, but so can you.
- The place for a fight is on the ground.
- Look at the whole herd before you chose a horse to ride.
- It is better to learn from the mistakes of others.
- Aluminum Snowstorms are bad.
- From my vantage point in the cockpit, what seems acceptable risk to others appears very unacceptable to me.
- Remember… the lowest bidder built this airplane.
- Studying Electro static discharge is far better in a lab than in a thunderstorm.
- Take my word for it, go around thunderstorms.
- Let somebody else be the pathfinder.
- I can hardly remember the last time I was paid to be a test pilot.

- In the Northern Hemisphere why do navy pilots say it is better to always fly west of thunderstorms in the morning and east of them in the afternoon? It keeps the sun out of your eyes.
- Your jet airplane will only make a very small dent in the back of the ship. Never be low
- Gravity never loses.
- When they say hurry up, it is the time to slow down.
- The FAA is the dog… you are the fire hydrant.
- Keep the blue on top.
- Fly over mountains not through them.
- Keep take offs and landings in one to one ratio.
- Never get low
- Never get slow
- High is a bolter…low is scrap metal

About the Author:

Mike Papadakis was a first tour Navy carrier pilot and a second tour R and D test pilot. He became employed as an airline pilot January 1970. He is type rated in 737, 727, 757, 767, L1011 and 767 -400. He has flown 23,500 hours. . He is a Trial Lawyer and former chair of the A.T.L.A. and State Bar of Texas Aviation Sections. He did ALPA safety work for twenty years. (1972-1992). He has authored two books. " Aircrash Accident Reconstruction and Litigation", McCormick and Papadakis, Land J, 1996,1998. and " Civil Trial Practice, Winning Trial Techniques, Papadakis, Land J, 2000" He has investigated, evaluated or litigated over 450 aircraft accidents. He is a Fellow of the International Society of Air Safety Investigators.. In 2013 he was recipient of ISASI's JEROME Lederer Aviation Safety Award.