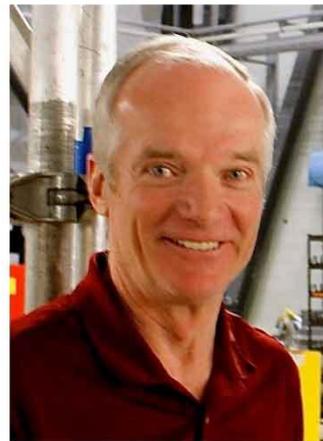


— LATEST BRIEFING —

## Learning from the Cleveland Accident

by Charlie Precourt, CJP Safety Committee Chairman

In this edition of *Right Seat*, I want to first recognize the continuing progress CJP is making to improve our available Citation training. The articles below from David Miller, Chairman of our CJP Safety and Education Foundation, and Neil Singer, CJP Safety Consultant, nicely highlight our focus on enhanced training. But to show the real relevance of this work, I also want to draw your attention to the recently released NTSB report on the CJ4 accident in Cleveland where we lost six of our friends in December of 2016. Reading through the report, I think you'll agree your Safety Committee is definitely on the right track with the initiatives we have in place, including the CJP Gold Standard Safety Award. You can link to the NTSB report [here](#).



At the end of the report, there is a second link to the investigation docket where you can access additional details such as the cockpit voice recorder transcript, interviews with instructors, an operational flight history and all of the data compiled by the committee. That information is not only worth your read, it also provides keen insight to the benefits of simulator training. It can be found at this [link](#).

We'll have a very detailed briefing of this accident in our Safety Stand Down during the CJP Annual Convention in October. Until then, I'd like to highlight a few of the relevant findings here. As with most accidents, there wasn't a single item, but rather a chain of events that led to the loss of control shortly after takeoff. Spatial disorientation, negative transfer of training (familiarity with one aircraft causing improper habits in a new aircraft), the weather and night visibility all conspired together. While any one item might have been manageable, together they became too much to handle.

Training and experience, along with good decision making, are our best tools to manage the challenges we encounter in flight. In this situation, the pilot had done quite a bit to address his lack of experience in the CJ4. His total flight experience was 1,200 hours, of which 380 was in the Mustang. He did engage the support of an instructor pilot and flew 40 hours dual in the three months prior to his in-aircraft CJ4 check-ride. He then completed a 61.58 recurrent at Flight Safety, where he received six hours in the simulator and ground school. In hindsight, however, the conditions he faced that night exceeded what his training and experience prepared him for. One thing we can all do is go fly this departure ourselves in a scenario-based simulator training session next time we do our own 61.58. Thanks to the efforts of our simulator-training providers, scenarios like this are being developed for us.

This particular scenario out of Cleveland involved a night takeoff into a scattered/broken deck right at the initial level off altitude and then turning into a “black hole” over the lake. ATIS called wind from 260° at 22 knots gusting to 31 knots; 9 miles visibility; scattered clouds at 1,500 feet AGL; broken ceiling at 2,300 feet AGL; overcast skies at 3,900 feet AGL; temperature of 1° C; dew point temperature of -2° C; with precipitation occurring on and off in snow shower activity.

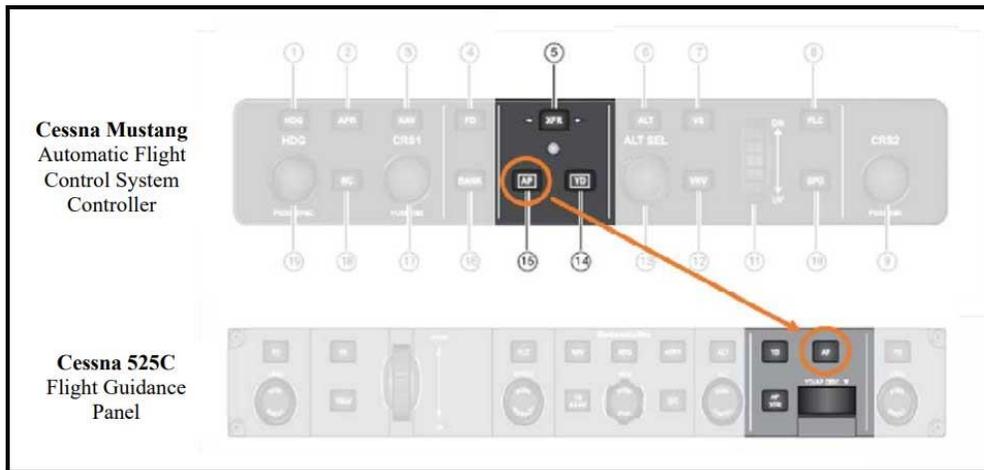
The pilot was instructed to turn right to 330 and level off at 2,000 feet (field elevation 520 feet). Runway 24 for departure with a 90-degree right turn out over the lake (away from city lights) creates a classic setup for spatial disorientation. The high performance of the CJ4 as compared to his previous aircraft (C510), with large power changes required for a level off only 40 seconds after liftoff create vertical and lateral accelerations that can trick our vestibular system and induce spatial disorientation. The NTSB studied the trajectory and revealed the aircraft reached a climb rate of over 6,000 fpm in the initial climb. But the initial clearance was for level off only 1500 AGL, all of 15 seconds at that climb rate! Understanding your aircrafts capabilities and operating techniques based upon its performance is paramount.

Another link in the chain may have been “negative transfer of training.” By that we mean experience in one aircraft that can bring improper habits into a new aircraft. In this case, the autopilot control panel of the CJ4 has mode selector buttons that are in a reverse pattern as compared to the Mustang. Also, the attitude indicator’s bank pointer presentation is opposite. In the Mustang, the bank pointer is fixed while the bank angle scale rotates. In the CJ4, the bank angle scale is fixed and the pointer rotates. What this means is a given bank direction (e.g. right hand turn) looks exactly opposite in the two aircraft if a pilot is only looking at the top of the ADI. Neil Singer shared experience in the simulator observing other pilots transitioning from the Mustang to the ProLine21 having difficulty recovering from unusual attitudes because of this difference - they steepen the bank angle acting on old patterns.

We have all experienced negative transfer of training challenges, and it is a place where the simulator is better than the aircraft to teach new habits. I recall during my first 61.58 in the CJ3 that I repeatedly disconnected the Autopilot when I tried to transmit, because the microphone and Autopilot disconnect switches are in opposite locations on the yoke for the CJ3 as compared to the PA46 JetProp I had been flying so frequently. In the simulator, you can be exposed to these differences more frequently than you can in the aircraft. Where you might only come across them once per flight in the air, multiple resets for repeated maneuvers in the simulator can build the new habit patterns more quickly and safely.

The sequence of events approaching level off supports the idea the autopilot was not properly engaged. The potential that negative transfer of training led to this is also supported when you look at the differences between the CJ4 and Mustang Flight Guidance/AFCS control panels. The below diagram is from the NTSB report and shows the differences - almost mirror image switchology. Pressing the AP transfer button is a plausible error from negative transfer of training. In fact, the instructor pilot noted this had happened twice in training flights without the pilot noticing the error.

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The NTSB's analysis also showed the bank angle reached over 60 degrees, right wing down, supporting the likelihood of spatial disorientation. The bank angle never recovered to level prior to impact.

One pilot from the Cleveland area wrote to the NTSB after reading about the accident to share a similar experience with the Cleveland departure. He wrote, "I was assigned a right turn out over the lake. When I made that turn, it was instantaneous IFR conditions. There was a black hole!! No horizon at all. No stars, no lights anywhere. If I had not transitioned to the gauges...I would have had severe spatial disorientation."

In addition to the improvements we are striving for with our training program partners, as well as establishing the CJP Gold Standard, we are also developing our own CJP Standard Operating Practices (SOPs), which will assist all of our CJP members in achieving a higher level of proficiency. Neil Singer and I have been collaborating on the first edition of the SOPs with help from the full Safety Committee. It will be out for member comment soon. Of particular note is one item we discuss in the SOPs regarding crew rest. Our SOPs are meant to be guidelines, but based on the experience of a broad array of flying organizations our initial SOP recommends a duty day not to exceed 14 hours, where the duty day is considered to begin at the start of the day's activities. In this CJ4 accident, the pilot's duty day was approaching 17 hours at the time of the accident, so fatigue also likely played a factor.

This unfortunate accident is one we can truly learn so much from. It is our objective is to ensure no pilot will ever have this experience in flight. So, please take a few moments and study the report. It's always easier to learn from other's mistakes. That's what's behind our CJP Gold Standard Safety Award initiative.

My thanks to both David and Neil for contributing the articles that follow!

Fly Safe!

~ *Charlie*

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# CJP Safety and Education Foundation Chairman's Update

By David Miller

We are off to a brisk start this year with our Safety and Education Foundation. Our 501(c) (3) status was recently approved by the Internal Revenue Service and we have already completed a successful training event with Flight Research in Mojave, California. In addition, dates are set for more events with Garmin, Rockwell Collins and Embry-Riddle later this year. These training opportunities are qualifying enrichment events for our CJP Gold Standard Safety Award and are quickly reserved to capacity. I urge you to reserve your spot as soon as they are announced.



As discussed in the last issue of *Right Seat*, we have worked with TRU Simulation + Training, and FlightSafety International to introduce “Enhanced Training” modules for CJP members. These two-hour simulator sessions dive deep into operational areas of Citation ownership. I flew one of the first sessions at FlightSafety in Wichita recently. It included an “eye opening” landing on a contaminated runway and a closer look at performance calculations. I highly recommend these sessions. Kirk Samuelson, Tom Abood and others have attended similar sessions at TRU and have also given the experience high marks.



Our CJP Safety Consultant, Neil Singer, has spent many hours with Safety Committee Chairman, Charlie Precourt developing Citation specific single pilot operating practices (SOP's). Their amazing work, along with our Safety Committee, will be presented at our convention. Expect to be impressed!

We also just returned from Tampa where we shot the first in our series of training videos, “What Good Looks Like.” Our goal with these videos is to put you in the cockpit to experience “real world” scenarios and have Neil Singer show you how the professionals accomplish important tasks. Another first for CJP.

The application for the CJP Gold Standard Safety Award is still available on the CJP website and must be submitted before the end of August. The physical award is a beautiful challenge coin and will be presented to qualifying members during our convention. This inaugural class of awarded pilots will be special.



All in all, a very productive and positive first half of the year for the CJP Safety and Education Foundation.

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## Best Practices for Recurrent Training

By Neil Singer, CJP Safety Consultant

### Step I: Get a Progressive Check

One of the biggest single factors that can make the difference between a positive, efficient recurrent training experience, versus one that merely “checks the boxes” at a cost of high stress and minimal learning, is if the required pilot in command proficiency check (PPC) is done as a progressive check (good), or as a standalone check on the last day of training (not so good).

Here’s what FAA says about progressive checks. On December 19, 2016, they published notice N8900.396, “Progressive Checking for Pilot in Command Proficiency Checks Under 61.58.” It states:

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*Progressive checking is the practice whereby an applicant is trained on a task or a set of tasks, and then after having been trained is subsequently checked on those tasks. After this checking phase, further training is conducted on additional task(s) and then those task(s) are checked. This process continues until all tasks have been trained and subsequently checked.*

In other words, the PPC does not need to be completed all at once, in one session, but can be spread out among several simulator sessions, and woven in with training (practice). This is ideal for two reasons: time isn't wasted revisiting items that were performed fine during an early session, and the stress of a single session with air work, four instrument approaches and one visual pattern is avoided. Anyone who has done a standalone PPC will attest that it is a fatiguing, fast-paced session as there are numerous required tasks to accomplish in only two hours.

There are some important limitations to be aware of with regard to progressive checking. First, let's look at what is said regarding an unsuccessful maneuver during a "checking" attempt:

*Training to proficiency may be accomplished when an applicant fails to perform to the required standards during the checking event. In such a case, the check may be suspended while the applicant is retrained, after which the proficiency check may be resumed and the task can then be reevaluated.*

*Checking may only be halted twice to provide additional training during the entire training program. An individual task which is failed can only be retrained one time. After either of these thresholds has been reached, the check is considered unsatisfactory and the applicant must complete all training and complete a new, standalone proficiency check.*

Simply meaning you can retry any unsuccessful task *once* after practicing it a bit more. If that task isn't done satisfactorily the second time, or if any three tasks are failed, a standalone PPC will be required on the last day.

An even more important caveat exists:

*All checking must be conducted by a Training Center Evaluators (TCE). Checking is not authorized to be conducted by instructors.*

TCEs are the simulator equivalent of a designated pilot examiner (DPE); they have been specially trained and tested to hold the authority to issue certificates (e.g. ATP), type ratings, and certify PPCs as complete. Since only a TCE can conduct any portion of checking, and we want to conduct a small amount of checking during each session, it is critical we *request a TCE for every session*. This can take some time to coordinate, and perhaps some arm twisting, but it should be possible with a bit of lead time.

### Step II: Get Good Instruction

Having a TCE conduct a progressive PPC across three days won't make for a good experience if the TCE is a terrible instructor. It's an unavoidable truth that the best sim center is only as good as the instructor with whom you are interfacing. At every one of the 142 schools, you will find a range of instructor quality, both in terms of depth of knowledge and in instructional talent/personality.

CJP is working to develop a list of "starred" instructors - those with whom members have reported having an above average experience. If you have had a positive experience with an instructor, request them again. Yes, there is something to be said for learning from multiple teachers, but more can be learned from one excellent instructor than from a dozen mediocre ones, so if you find a jewel in the rough, don't be afraid to stick with them.

Also, understand that some sim instructors, sometimes even the good ones, don't naturally "think outside of the box." If attending your first sim-based recurrent training, or the first one after several years of in-aircraft recurrent checks, consider having an experienced instructor accompany you through the training. Some schools will offer your instructor a discounted, or even free, recurrent course if they attend with you, and paying to have an experienced (and good) instructor sit in the right seat with you during your sim sessions can be invaluable.

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An experienced in-aircraft instructor often will be quicker to diagnose what you could do to improve a task, rather than simply “repeat it until it’s passable,” often the sim instructor’s go-to. They can also spend extended time after the session in a debrief with you, perhaps practicing chair flying of a rough maneuver, or reviewing an avionics or instrument procedure finer point you are having trouble grasping.

### Step III: Advocate for Yourself

This really is step zero. Getting a progressive check, a TCE, a good instructor will all require advocating for yourself, and not passively allowing the training to fall as it will. The advocating doesn’t stop with the start of training, though. For a top-notch recurrent experience, you must be prepared to keep up the advocating each and every day of training.

A key way to do this is to come prepared to use every minute of sim time you’ve paid for. It costs more to rent most Citation sims than it does to fly the airplane for the same amount of time, so don’t let any of that expensive box time go to waste. If you finish all the required tasks 15 minutes early, don’t just take a long coffee break, but ask to use the time to work on something.

What to work on? That’s another job you have before you show up for day one. Prepare a list of things you’d like to do in the sim such as difficult approaches, challenging weather conditions, landings, etc. Have a list ahead of time, maybe even have the approach plates printed or bookmarked, and it will be easy to extract the most value from the sim time you’ve bought.

Understand the difference between flying that can “count” for the purposes of required training and checking and that which can’t, but don’t be afraid of asking for the latter. For example, the FAA has only certified a small handful of airports as having the visual characteristics needed to perform a circling approach. Any circling approach that will be conducted as part of an approved syllabus or the PPC must be performed at one of these airports. However, if you perform a certain circling approach regularly, there’s no reason it can’t be done during any extra time left over once the required items are completed.

Finally, if despite careful up front planning and strong advocating during your course, you’re still not getting what you need out of the training, don’t give up. Meet with both the program manager (in charge of the type you’re training in) and the facility manager (in charge of the entire training center) and lay out the issues you’re having, and what you need to get better training. If necessary, get CJP involved to help resolve the issues, and even if resolved successfully, please do relay to CJP what issues you encountered, and the steps that resolved them. If you have a problem, there’s a good chance another member will have the same issue; we’d like to know what issues members are facing.

### Checklist for an Optimal Sim Recurrent

- Advocate, advocate, advocate
  - Request a progressive PPC
  - Request a TCE for every session
  - Request a TCE identified as above average
  - Consider bringing an experienced instructor to training
  - Use the full sim time allotted
  - Come to training with a list of extra things to do with free sim time
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