

Governing Energy

Flaps & Slats

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Airline piloting 101 surely teaches that the wing flaps and forward slats must be in the extended position prior to takeoff. On August 16, 1987, Northwest Airlines flight 255 crashed shortly after taking off claiming 156 lives. *The National Transportation Safety Board (NTSB) determined that the probable cause of the accident was the flight crew's failure to use the taxi checklist to ensure that the flaps and slats were extended for takeoff.*ⁱ

The Federal Aviation Administration (FAA) qualified and experienced cabin crew certainly knew about this item on the taxi checklist. So why would both the captain and first officer both overlook this basic and often repeated work process?

The NTS report goes on to state that prior to take off, the runway was changed to a shorter runway and that the captain subsequently missed the turn off taxiway initially. During takeoff, there were difficulties engaging the auto throttle system amid poor weather conditions including a potential wind shear situation. Moreover, there were issues with power to the aircraft's take off warning system.ⁱⁱ In other words, a number of non-routine events were taking place either simultaneously or at least within a relatively short period.

In 1987, the pre-takeoff check list was manual and according to one source poorly designed. Text fonts and paragraph spacing made it difficult to be assured that if interrupted, pilots could resume exactly where they left off. Today, commercial aviation checklists are computerized, dramatically reducing errors.ⁱⁱⁱ

Our daily repetitive chores are ubiquitous. So much so, we often do not remember what we did or did not do. How many times have we driven home in the peak hour and not remembered the details of our trip? How many times have we wondered whether the garage door was down and returned home shortly after leaving to check and find it closed? Sometimes our routine is such an ingrained process that we don't remember whether or not we have acted on every item on our mental checklist.

Today, many industrial checklists are manual, mental, or a function of an individual's personal experience—circa commercial aviation 1987. As much as the expertise of decision makers (the captain of flight 255 had been flying for 31 years) is very critical, events can overwhelm even the best of us.

No matter how routine a task is, in today's complex environment, even the most skilled and experienced personnel can overlook or incorrectly perform something they have done hundreds and even thousands of times. When the routine is impacted by exogenous events outside of our control, particularly when more than one occurrence are happening simultaneously, our entire mental checklist can breakdown.

Many “field” jobs can be defined as, “long periods of boredom, punctuated by moments of sheer terror.”^{iv} Boredom (and experience) can beget complacency. Our hubris is often interrupted at the most inopportune time. An automated checklist can help mitigate mistakes made at critical moments.

What are the critical (success factors) flaps and slats in your organization and how does your firm assure they are in the right position each and every time?

About the Author

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End Notes

ⁱ <http://libraryonline.erau.edu/online-full-text/ntsb/aircraft-accident-reports/AAR88-05.pdf>

ⁱⁱ Ibid.

ⁱⁱⁱ <http://www.smithsonianchannel.com/site/sn/show.do?episode=140661>

^{iv} <http://answers.yahoo.com/question/index?qid=20120309231834AAITBrP>