



## Order in the Cockpit

*The author presents a few scenarios for the two-communication rule, a procedure intended to keep all the flightcrew alert to what is going on in the cockpit. He suggests that the procedure must be handled carefully by the crew, or it may create problems, rather than prevent them.*

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by

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Here are a couple of scenarios to consider.

The captain, who is flying the airplane, has a reputation for being the strong, silent type and doesn't go for a lot of chatter in the cockpit. He's a good pilot and rather meticulous about headings, altitudes, airspeeds, localizer and glide slope offsets and whatever else requires a touch of precise flying.

Now, the airplane is on final approach with low ceilings and visibility. Instead of centered readings on the ILS gauge, first one, then two dots are visible on the localizer. The aircraft is consistently below the glide slope from one to two dots. The pilot not flying notices the deviations, looks at the pilot flying and sees someone who looks perfectly normal, intent on the gauges. However, the pilot flying is not making any movements to bring the plane back on course and glide slope.

If this aircrew has had training in detecting and dealing with subtle incapacitation (defined as partial in nature, lasting from seconds to minutes, where the affected person looks okay, but is functioning with reduced brainpower), the pilot not flying will speak up and then act, if necessary.

Most aircrews have adopted the United Airlines "two-communication" rule which states:

"Flight crew members should have a high index of suspicion of a subtle incapacitation any time a crew member does not

respond appropriately to two verbal communications or any time he does not respond to any verbal communications associated with a significant deviation from a standard operating procedure or standard flight profile."

Most flight managers add a sentence which reads: "If the safety of the flight is about to be compromised, the pilot not flying will assume command and control of the aircraft."

In our example, the pilot not flying dutifully asks the pilot flying about the deviations twice but fails to receive a response. He then gets on the controls, shouts, "I've got it," and assumes control of the aircraft. The quiet captain casually releases his grip, relaxes his legs, leans back and observes the absolutely beautiful landing made from the right seat.

"Great job!" says the captain as the landing gear lays a soft kiss on the runway.

Happy ending? Possibly. But let's give this scenario another turn of the screw. The pilot not flying communicates twice without response and then gets on the controls. However, the captain does not release his grip and suddenly returns to the real world. His last recall of events may very well be the exact readings on his ILS gauge where everything was aligned perfectly. He probably has no recollection of the two communications directed at him and there's a good chance that he doesn't know that anything at all has gone wrong.

Do both pilots wrestle for control? Who lets go?

If, in their simulator or flight training, instances of subtle incapacitation were introduced and if both understood the necessity for and purpose of the two-communication rule, one or the other of the pilots would be expected to back away from a cockpit confrontation. That may not be as simple as it sounds and the outcome will depend on the amount of training absorbed by both pilots.

Our second scenario has a kinship to subtle incapacitation and, therefore, the cockpit circumstances may be difficult to define or categorize.

Once again, the strong, silent captain is doing the flying. The aircraft has climbed through clouds to the assigned altitude which puts the flight just at the top of a ragged, but solid cloud bank. The cruise checklist has been completed but, after ten minutes or so of precise flight, the pilot flying begins a gentle bank to the left and rolls out 20 degrees off course. Then, he pulls back on the control column, climbs 700 feet and levels off, sort of, letting his altitude wander plus or minus 100 feet.

The captain does not say anything to the pilot not flying who is a rather junior employee anxious to make a good impression by his exemplary cockpit behavior. The pilot not flying decides it might be a good idea to check for subtle incapacitation, but very diplomatically indeed. After all, there are deviations from a prescribed flight path to be reckoned with and understood.

“Are you all right, sir?” is the question put to the pilot flying.

The verbal response, “Of course!” is accompanied by a nasty sneer that carries more significant meaning than the uttered words.

With that, the pilot not flying dismisses subtle incapacitation as a possible problem. The airplane goes into another shallow bank. What should be done now?

Regardless of the captain’s personality, there has to be an order to managing cockpit resources and high on the list of priorities should be a mandatory requirement for open communications between all aircrew members. In the above scenario, the captain did not declare his flight intentions, leaving the pilot not flying in the dark as to what the captain has in mind. Monitoring the progress of the flight isn’t necessary because, at this point, he does not know where it is going.

Would the two-communications-rule work here?

Continue the scenario and start the rule going.

“Captain, do you know you are off course and assigned altitude?” asks the pilot not flying.

Assuming subtle incapacitation has been ruled out, that ques-

tion should evoke some sort of response from the captain unless he is a borderline dunce. At this point, it makes no difference if the response is profane, shouted or delivered appropriately as long as the response explains what the pilot flying is intending to do by making the deviations provided, of course, that he has a specific purpose in mind. Another alternative could be acknowledgment and a return to the proper heading and altitude.

To that extent, the two-communication rule has served its purpose by telling the pilot flying that he’s missed a basic cockpit management principle that needs to be addressed—keeping all the aircrew members informed as to what is going on in the cockpit.

If there’s no response to the first communication, what’s next?

Suppose the question is asked again and the pilot flying graces the pilot not flying with a wordless obscene gesture. The aircraft continues its most peculiar way. Here is where that added sentence to the two-communication rule may create monstrous cockpit problems. The sentence reads, “If the safety of the flight is about to be compromised, the pilot not flying will assume command and control of the flight.” Being off course and altitude may not be an immediate problem but is characteristic of an incipient problem.

If the pilot flying is hale and hearty and the pilot not flying is determined to save his own hide regardless of the odds, verbal debate may turn to instant physical conflict. If that happens, disaster is bound to follow.

Hairsplitting is necessary to separate the procedure used for deviations influenced by subtle incapacitation and those deviations not the result of a physical disability. Therefore, flight managers differentiate between subtle incapacitation and unannounced deviations by softening that last sentence to read,

“...the pilot not flying shall be prepared to assume command of the flight.”

That does not make assumption of command imperative, which may allow the pilot not flying to exercise a few modest options. He can ask more questions or he may go through the motions of taking control without actually doing so.

From an idealistic point of view, and cockpit personalities notwithstanding, the two-communication rule should never, but never, give rise to two separate and distinct communications. If aircrews are trained to understand that the purpose of the rule is to excite a response and restore cockpit communications immediately after the first communication, crew coordination and harmony may be restored in the cockpit.

When conflicts do arise, and are addressed and resolved rapidly to take care of the instant problem, aircrew discussion on what went on in the cockpit is a must after the aircraft lands safely.

Involving flight managers, not necessarily as arbitrators, will allow the managers to understand the nature of the problem and the personalities involved. The strong, silent, authoritarian pilot is not on the right program track and, sooner or later, that unique management style has to receive special attention.

In 1981, the U.S. National Aeronautics and Space Administration (NASA) published Technical Paper 1875, "Information Transfer Problems in the Aviation System: Problems in Intra-cockpit Communications." In studying Aviation Safety Reporting System (ASRS) reports, the most common difficulty noted was the failure of the information transfer process.

Recognition of the problem has not eliminated the problem and a review of aircraft accidents since 1981 will prove that point.

What NASA said then was:

"Communications patterns among cockpit crewmembers play a more significant role today than ever before. There is a growing consensus among human factors specialists, airline training departments, and social and personality psychologists that communications patterns exert significant influences on performance-related factors.

"At the very least, communications patterns are crucial determinants of information transfer but research has shown that they are also related to such factors as group cohesion (important from a crew coordination standpoint); attitudes toward work; and complacency. An argument in the crew room prior to departure can affect interactional patterns of the flightcrew for the rest of the day. Overbearing captains severely inhibit information transfer from subordinate crewmembers, even in potentially dangerous situations."

NASA's study emphasizes the relationship between communications and performance.

"Overall, there was a tendency for crews who did not perform as well to communicate less, suggesting that as expected, poor crew coordination tends to result in more marginal performance.

"A negative correlation between crewmember observations and systems operational errors was obtained. This relationship appears quite logical. When more information regarding flight status was transferred, there were fewer errors related to system operation (e.g. mishandling of engines, hydraulic and fuel systems, misreading and missetting of instruments, and failure to use ice protection). The relationship should serve as important evidence in support of the concept of cross-checking

and redundancy among the cockpit crew."

The next NASA finding suggests that expanding the use of the two-communication rule to check on deviations and to obtain a response or acknowledgment from the pilot flying is a move in the right direction.

"Similarly, there was a strong negative relationship between systems operational errors and acknowledgments. When crews frequently acknowledged commands, inquiries and observations, these kinds of errors were less apparent. It would appear that acknowledgments serve an important function of validating that a certain piece of information has been transferred. These kinds of communications also serve as reinforcements to the input of other crewmembers.

"Frequent acknowledgments were also associated with a lower incidence of tactical decision errors (e.g. amount of fuel dumped, flap settings and braking). Most significant, however, is the fact that acknowledgments were strongly negatively associated with total errors."

Interpersonal conflict in the cockpit continues to show up in the ASRS and, perhaps, it's a disease that won't go completely away no matter how many solutions are prescribed. If the two-communication rule adds another way of creating a cockpit environment that induces open communication and better crew coordination, it might be just one more way of attacking the basic problem. ♦

### ***About the Author***

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