

# CALLBACK

From NASA's Aviation Safety Reporting System



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## Wake Vortex Hazard at Cruise Altitudes

Wake turbulence is commonly associated with Terminal Area arrival and departure operations. However, ASRS has received several recent reports that describe wake vortex incidents at cruise altitudes, with 10 miles or more in-trail separation between the involved aircraft. All the incidents appeared to occur in smooth air with little, or no, wind. More from the flight crew of a Fokker-100:

■ *Just prior to leveling off at FL330 – at about FL32.7 we encountered moderate to severe rapid and instantaneous roll reversals and turbulence. We were in perfectly smooth air with no [FMS] wind and not anywhere near the jet stream as forecasted. We were about 17 NM in trail with a Heavy B-767 that had previously overflowed us in his faster climbout and speed capability. We immediately requested and received clearance to FL290. All systems and controls were normal. We strongly...suspect that in the calm air, this heavy aircraft's vortices do not descend very fast – if at all – and at 17 miles in trail are only about one and on-half minutes behind.*

*I recommend that all Operator's Manuals be updated to reflect this wake vortex behavior at altitude in smooth air, which is very similar to their behavior in smooth air at low altitude with anticipated separation...*

A similar report was filed by a First Officer of a North Atlantic flight, whose descending aircraft may have caused a wake vortex problem for a climbing B-767:

■ *...While in [North Atlantic] airspace, [our] MD-11 aircraft was cleared from FL350 to FL340. The position was...10 miles ahead of [a] B-767 flight. [We] received a radio message from the 767 flight. It reported that it "almost rolled over" from the wake turbulence encountered at FL340. The 767 reported a slow roll to the right (15°) followed by a snap roll to the left until the pilot disconnected the autopilot and applied opposite control forces. The maximum bank angle was 30°.*

*The 767 aircraft was climbing from FL330 to FL350 and became destabilized at FL340. Aircraft separation was 10 miles in trail. Both aircraft were in radar contact. The 767 was flying at Mach .80... The MD-11 airplane flew at FL340, Mach .82.*

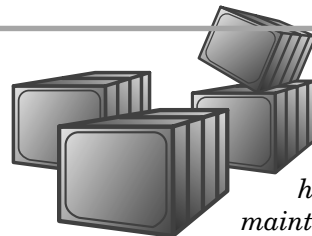
The North Atlantic Minimum Navigation Performance Specifications (MNPS) implemented in March 1997 provide 1,000 foot vertical separation for aircraft between FL340 and FL390. If a revised ATC clearance is not possible for wake vortex avoidance, the pilot may establish contact with the other aircraft on 131.8 MHz, and one or both aircraft may initiate lateral offsets not to exceed 2 NM from the assigned route(s) or track(s). Offsetting aircraft are expected to notify ATC of their actions as soon as possible. ATC will not issue clearances for lateral offsets on its own initiative. Pacific Region vertical separation minima are specified in FAA Notice 7110.218, effective February 2000. ▲

## The Case of the Phantom Load

ASRS recently received several flight crew reports of interest describing a widebody jet that thought it was airborne – while still on the ground. More details from the First Officer's report:

■ *We were scheduled to fly a charter flight... We eventually arrived at the aircraft [in early morning hours]. I performed the external aircraft preflight. When we approached the aircraft, the freight was in the process of being off-loaded from the main cargo deck. It was noted that there was no nosewheel strap or weight to hold the nose down. The Captain asked the load-master about this and was told there were none available and [he] assured us there would be no problem. We were expecting no freight in the upper cargo deck and very little in the forward belly.*

*The preflight was normal. All doors were closed except for the main cargo door and left main cabin door (L1). We began the cockpit setup. All was normal until the main cargo door was closed. As it closed, numerous alerts came on. Neither of us had seen anything like this before. We called our maintenance personnel onboard. After removing power and resetting the aircraft, they restored everything to normal operation. I went back to close the L1 door. When I got back*



*to the cockpit, all the alerts had reappeared. We had maintenance come back onboard.*

*They tried removing power again, but when it was reapplied, the stick-shakers activated.*

*It was then that someone said it appeared the aircraft thought it was airborne. This did account for the alerts. Then one of the support people helping with the launch said that the nose strut was extended too far. He had experience with Air Force KC-10's and said they couldn't launch one with that much strut exposed. I went down and confirmed this. We realized that the Center of Gravity was too far aft. It was discovered that there were containers in A7 and A6, the most aft belly positions. The weight and balance showed an empty aircraft except for containers in F1 and F2, the most forward belly positions, weighing approximately 6300 pounds.*

*At this point the...Captain directed [the load master] to reweigh the containers and load them in the proper positions. A new weight and balance form was brought to the aircraft and we then departed uneventfully. ▲*

### ASRS Recently Issued Alerts On...

CL-65 inflight windshield failure
A-300 uncommanded rudder movement at FL350
Mechanics' misinterpretation of Piper gear kit instructions
A runway signage problem at a major East Coast airport
RB211 engine spinner fairing cracks found on two B-757s

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### September 2000 Report Intake

Air Carrier / Air Taxi Pilots	2236
General Aviation Pilots	623
Controllers	106
Cabin/Mechanics/Military/Other	183
<b>TOTAL</b>	<b>3148</b>

# All in the Family

Couples who share flying experiences face special challenges in learning to work and communicate as a team. This is especially true of IFR flight into weather conditions. Several reports from ASRS files describe the various things that can go wrong – and right, too – when a flying duo is “in the clouds.”

## ‘Gee’ Whiz

■ *While cruising on altitude and navigation autopilot at 9000 feet IFR in mostly IMC conditions, I had to leave my seat for physiological relief. The passenger in the co-pilot seat, my wife, has accompanied me on approximately 100 hours of cross-country flight in various single- and multi-engine aircraft. I asked her if she would answer the radio if Center called with a frequency change. She said no, since she is nervous about making radio calls. I informed Center that I would need to be off frequency for two minutes and I’d report back on. That was approved.*

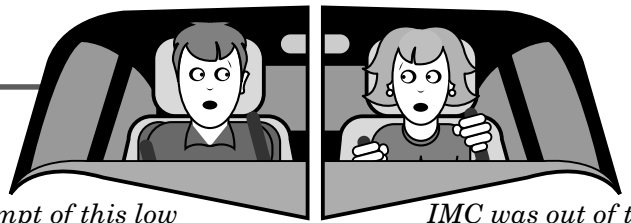
*While I was in the back of the airplane...Center called to see if I was back on frequency yet. [My wife] thought she would answer the radio call and tell them I wasn’t back yet. She reached across and pushed what she thought was the push-to-talk switch on my yoke. She had actually pushed the autopilot disconnect switch on my yoke. At that time a passenger in the back of the airplane asked my wife a question. My wife turned around and spoke with the other passenger for a moment. When my wife turned forward she saw that the aircraft was in a descending turn. I was on my way back up to the cockpit when she pulled back on the yoke and leveled the wings. I was forced to the floor when her pullback resulted in approximately two G’s. In a couple of seconds she eased the back pressure and I was able to return to the cockpit and correct the altitude and heading deviations.*

A pre-flight briefing for the spouse on how to use a handheld microphone might have prevented inadvertent activation of aircraft controls and this excess ‘G’ situation. Training in wing-leveling techniques, on the other hand, is best left to the watchful eye of a certified instructor.

## The Thrill is Gone, Baby

A pilot on her first IFR flight after passing the instrument check believed she had planned for every contingency. When it became necessary to divert to an alternate airport after reaching cruising altitude, she and her pilot spouse in the right seat handled the diversion well...except for one small detail.

■ *It was my first IFR flight, since receiving my instrument rating. Conditions at departure and arrival airports were VMC (current and forecasted), but I was determined to file IFR to gain experience... Upon reaching enroute altitude, I tuned in the ATIS for the destination. I was shocked to hear “300 feet overcast, 1 mile in fog.” My personal minimums were written down in advance and an*



*attempt of this low*

*IMC was out of the question – particularly since a missed approach would require holding over the ocean in a single-engine aircraft.*

*My spouse suggested that we try our alternate. ATIS there reported 800 feet broken and 2 miles. I asked my spouse to get out the alternate approach plates. Spouse is a private pilot...and instrument student, and in flight [was] asking a lot of questions. [It was the] spouse’s first time in IMC. I informed ATC that I wanted to go to the alternate, which was immediately granted... Approach gave us vectors for the VOR approach...[and] instructed me to maintain 2500 feet until established, cleared for the approach, report FAF inbound.*

*The clouds started at 2,000 feet MSL. I intercepted the approach course and started the descent. We entered the clouds and held the MDA (640 feet). We reported the FAF. I worried as time passed that we would not see the airport... Nav indication ‘To’ and GPS indicated airport still ahead. We broke out of the...clouds to find 800 foot broken [conditions] around the airport. Saw the airport and landed safely. Spouse was thrilled and really impressed. I, too, was elated.*

*It wasn’t until hours later, as we continued our trip in a rental car and reviewed the flight, that I realized I had descended to MDA before the FAF... This occurrence was caused by inexperience, but I could have (and will in the future) do better cockpit coordination, review all possible plates for myself beforehand, and walk my spouse through my plans on the ground, to avoid (minimize) questions at critical times.*

## Checklist for Flying Companions (Wisdom from ASRS Reporters)

### For Left Seat Occupants

- ✓ Conduct pre-flight briefings for right seat non-pilot companions that identify **DO NOT TOUCH** controls and devices, as well as the proper use of handheld mikes and other emergency communication devices.
- ✓ Conduct verbal “walk-throughs” of important flight details on the ground – not during critical maneuvers such as missed approaches.

### For Right Seat Occupants

- ✓ Be an attentive and supportive partner in cockpit management, not a source of distraction, criticism, or confusion for the flying pilot.
- ✓ If acting as Pilot in Command, mentally perform the flying tasks and checklists as if flying from the left seat. ▲