

High-altitude Oxygen Rule: Compliance Conundrum

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Most professional pilots are diligent about following the rules except, of course, on those relatively rare occasions when they don't agree with them. One of the standouts among ignored rules is 91.211, which governs the use of supplemental oxygen, said Rick Miller, chief pilot for Merck Sharp & Dohme, at the recent Business Aviation Safety Summit. The rule requires that above 41,000 feet, one pilot must use the mask at all times even with another pilot in the cockpit. The pragmatic reason behind 91.211 is to ensure pilots can maintain control of the aircraft in the event of a high-altitude explosive decompression. At 50,000 feet, the time of useful consciousness is a mere six to nine seconds, about the time that passes between pulling the power to idle over the threshold and touching down on the runway.

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Do you flight plan below 41,000 feet to avoid dealing with the mask regulation?



Only 14 of 124 respondents answered yes.

The idea of adding to airspace congestion at lower altitudes was raised, as was the extra fuel burned and the pollution created by operating at lower altitudes to circumvent the oxygen mask issue.

Do you feel wearing an oxygen mask for an extended period of time adds to pilot fatigue?



Of 155 respondents, 136 said yes; 19 said no.

"So to protect against something we consider highly unlikely, we are exposing crews to increased fatigue in an already challenging environment," commented one.

Does an oxygen mask interfere with cockpit resource management?



Of 174 respondents, 156 replied yes, totally agree, 16 said sort of and only two answered not really.

One example highlighted maneuvering around thunderstorms at night above FL430 and the difficulty with ATC communications and crew coordination during what turned out to be nearly eight hours of continual T-storm avoidance. It's also important to note that even in the normal mode, the mask is using valuable oxygen at high altitudes. Pilots say they often run into difficulties at some destinations replenishing their supplies before a return leg.

How would you like to see the Part 91.211 rule altered?



Of the 250 respondents 243 said they'd like to see the FAA adopt the ICAO approach, which makes oxygen a recommendation rather than a requirement.

Would you prefer to modify your aircraft's oxygen system to address this issue better or see the FAA change the rule entirely?



Here, 110 of 122 respondents suggested changing the rule.

Have you ever experienced physiological effects from extended use of an oxygen mask?



Of 165 respondents, 116 replied yes; 49 replied no.

Many pilots cited significant bronchial irritation from prolonged use of oxygen.

Do you worry about getting sick from using an [unclean] mask during flight or during training?



Of 250 respondents, 240 answered yes, and 10 answered no.

Citing cleanliness issues alone, FedEx, United and ALPA not long ago petitioned the FAA to halt mask use up high. The agency denied their requests.

Do you think ignoring 91.211 threatens a positive safety culture?



250 people responded, and 141 said they do not believe ignoring the rule has any effect on their safety culture.

"This regulation as it applies to the use of supplemental oxygen above 41,000 feet is probably one of the clearest in Part 91," he said. However, he maintained, non-compliance seems to be the norm, and incidents of non-compliance are not the result of pilots who don't understand the rules, Miller noted. He cited an NTSB study of 500 Part 91 pilots that asked whether they use their masks above 41,000. Only 18 percent said yes. "It's important as a chief pilot to

maintain a high level of safety and professionalism in my organization and a good safety culture,” he added. “This regulation is one of the biggest challenges I’ve had over the years. But how do you operate a disciplined cockpit environment when people cherry pick the regulations they’ll follow? There must be a better way.”

If so many pilots ignore the rule, should the industry force it on violators, or should the rule be tweaked to align with Europe’s regulations, which *recommend* the use of oxygen above 41,000 feet? “The FAA and NTSB don’t seem concerned about addressing this situation,” Miller said. “I’m frustrated that I’m one of the few [chief pilots] out there forcing my pilots to comply. I don’t know why the FAA and NTSB don’t look at this more closely.” Miller is currently working with Gulfstream and others to better understand why there is so much disregard for the regulation, as well as potential solutions. One insight that emerged early in the session was that the quick-donning masks are normally considered emergency equipment. What company operates an aircraft regularly using a piece of emergency equipment?

Miller said the arguments for or against a change to the regulation must focus on determining the severity of the threat facing flight crews when they avoid wearing the masks at high altitude. “What’s our tolerance for this kind of situation when a rapid decompression could translate into the loss of lives?” Miller wondered, especially in light of the certification standards on many new high-altitude-capable aircraft? “[Manufacturers] had to prove a rapid decompression is a one in a billion chance. This is such a highly unlikely event it is really considered an acceptable risk.”

Changing the FAA’s mind about anything is no small challenge. Miller said some recent SMS risk assessments he conducted uncovered a list of problems *created* by wearing oxygen masks for extended periods at high altitude that he believes might support a change. A series of instant polls conducted at the summit by Francois Lassale of Vortex FSM added fuel to the fire for a pragmatic change to the 91.211 problems (see box).

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