The RVSM proposal contains a major technical safety deficiency because it fails to address a vital midair collision safety requirement--maximizing the mean free path of cruising aircraft. There is nothing in the RVSM proposal that would have prevented the midair collision July 1, 2002, over Uberlingen, Baden-Wurttemberg, Germany. Before and after RVSM, cruising aircraft will still be using a tiny fraction of the total volume of available airspace. Before and after RVSM, the vast majority of airspace volume will still be illegal to fly in. Before and after RVSM, aircraft cruising at near-polar headings (e.g. 190 and 350 degrees) will be accurately maintaining common altitudes with the highest possible closing velocities and the smallest possible probabilities of seeing-and-avoiding near-head-on collisions. In fact, while RVSM does create twice as many legal altitudes (more safety), it paradoxically destroys this safety gain by requiring especially accurate altitude measuring and controlling equipment (less safety through guaranteed collisions with a single human failure). This fault-intolerant system (killing 71 in Germany and 33 west of Namibia) is a systematic technical safety failure, which ignores the physical requirements quantified by the mean free path formula. RVSM does nothing to address the major technical error caused over 30 years ago when FARs 91.159 and 91.179 made the vast majority of airspace illegal to cruise in so that only narrow, artificially high density corridors would legal be for cruising. My paper titled "U.S. Aviation Regulations Increase Probability of Midair Collisions" in the March 1997 Risk Analysis, An International Journal, available at:

http://www.geocities.com/rpatlovany/JournalManuscript.htm

proved using two independent methodologies, that any cruising altitude rule using any artificial concentration of aircraft in any narrow slab model of legal cruising altitudes, IS A MAJOR TECHNICAL ERROR IN SAFETY LOGIC. In fact, I proved that pilots depending on their eyes and 91.159 for safety have greater safety when flying at random altitudes, rather than 91.159 formula altitudes, by a factor of over six! The essential conclusions in my paper were corroborated by NASA programmer Russell Paielli at NASA Ames Research Center, Moffet Field, California, in his paper titled, "A Linear Altitude Rule for Safer and More Efficient Enroute Air Traffic" published in the Fall 2000 issue of Air Traffic Control Quarterly (Vol. 8, No. 3). This paper is available at:

http://RussP.org/publist.html

In fact, Paielli showed that I underestimated the danger of midair collisions with pilots obeying 91.159 and 91.179, because real pilots at high flight levels actually fly more precisely with predominately bigger aircraft than the cases I modeled. Since my original paper was published, I have identified eight midair collisions and 135 fatalities at a cost of almost a half billion dollars (two Tu-154s, one DHL 757, one U.S. Air Force C-141 Starlifter, two large Mexican helicopters, plus others) that could have been avoided at almost no cost in airborne hardware with the simple adoption of the Altimeter-Compass Cruising Altitude Rule (ACCAR modeled as RP-1000 in my Risk Analysis article) described in my article, "Climb and Maintain What?" in the December 1998 issue of Aviation Safety.

To visualize ACCAR, imagine mentally superimposing a compass rose on the altimeter scale (or doing similarly with a mostly transparent compass rose actually adhering to the altimeter glass). The 100-ft hand swings through 360 degrees of superimposed compass heading every 1000 ft of altitude. Imagine that every pilot flies so that the 100-ft hand of the altimeter points to a compass heading that the nose of the aircraft matches with the magnetic compass. This

is ACCAR, and using it, all cruising aircraft at every altitude are all going in the same direction. Only long slow chases up the wake of a slower aircraft are possible for collision scenarios between obedient cruising aircraft. (Those ignoring ACCAR at random are still at least six times safer than those obeying 91.159 as proven by my models and Paielli's corroboration.) This physical reality minimizes closing velocity and maximizes the probability that a cruising collision threat will be detected.

The ACCAR idea is not new. It is not even my idea. It was foolishly ignored over 30 years ago after Leighton Collins published four article condemning the hemispherical cruising altitude rules in Air Facts, while promoting what I call ACCAR, which I modeled as RP-1000 in my Risk Analysis article. The last of the four Air Facts articles was titled, "Automatic Altitude and Heading Separation," and was in the February 1968 Air Facts. At that time Leighton Collins (father of Richard Collins, a current editor of Flying) was promoting a 40-year-old midair collision minimizing idea from an Australian aviator. The RVSM proposal ignores the superiority of a 70-year-old aviation safety technique for maximizing mean free path, while RVSM itself continues a 30-year-legacy of minimizing mean free path as currently required under FARs 91.159 and 91.179.

Safe "free flight" requires a safe way of maximizing mean free path in every possible direction and at every possible altitude. After all, one of NASA's own programmers for air traffic control computers proved this principle independent of me. RVSM still minimizes mean free path and maximizes risk in the rather frequent global occurrence of single human errors. ACCAR allows for the maximum possible flight density using 100 percent of Nature's big sky to minimize midair collisions. RVSM, and any related modifications to hemispherical cruising altitude rules of any kind, are not good safety rules in any way, because risk is still proportional to compliance accuracy.