Comments by Vice-President, International Affairs, Air Traffic Control Association

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My views are based on my personal observations and assessments and do not necessarily reflect any position of the Air Traffic Control Association. My views are rather uncomplicated. I try to focus on some basic realisms as pertaining to time, space, human vulnerability, and the habitual demands of our society.

As an introduction to the airline safety topic, I believe that one of the biggest problems facing aviation, the Federal Aviation Administration (FAA), and the airline industry is capacity of the National Airspace System (real or imagined) and capacity of the airports. This problem is generated by the ever increasing demand for more capacity and the near frantic efforts to meet this demand - whether through the application of more computers (automation), a larger work force, or by dramatic emergence of new technology.

There are some very finite parameters of the national airspace system environment which effectively inhibit certain expansion plans for navigable airspace. One example is the reluctant recognition of the 24

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hour day. Society (and thus the airlines, compelled to convenience) insists on an approximate 18 hour day for conducting flight activities; leaving virtually unlimited capacity between mid-night and six o'clock in the morning. I envision no changes here. Obviously, time must be set aside for maintenance, preventative or otherwise, of aircraft and computer systems.

The radio frequency (RF) spectrum, essential to all categories of aviation, has been repeatedly subdivided to gain more channels. However, the limits are being reached. Line-of-sight (LOS) frequency propagation factors also limit communication flexibility. Less understandable is the lack of protection offered to ward off the auctioning of frequencies to other entities. Any frequency reserved for planning purposes appears to be vulnerable to the auction block. Obtaining another channel for the global positioning system (GPS) constellation has become a problematic issue.

Limits of the navigable airspace is yet another dimension that cannot be stretched. Separation standards may possibly be reduced, but this move could conceivably introduce a potential safety issue.

Meanwhile, the operational characteristics of modern aircraft demand more efficiency - or less inhibiting factors such as represented by the structured system of airways.

The artificial hurdles for airspace realignment include approximately 487,000 square miles of special use airspace (SUA) over the contiguous United States (primarily for military training purposes). Similar to the airways, the SUAs represent barriers to the desired direct terminal-to-terminal routes advocated by the commercial airlines. Any adjustments to the SUAs, especially in airspace below flight level 180, are subjected to environmental judgments. In essence, this means no adjustment except elimination.

A significant artificial constraint is aircraft runway occupancy time and a related policy which allows only one aircraft on the active runway at any one time. This situation is further exacerbated by the presence or potential presence of WAKE vortices, thus stretching out the intervals between successive departing or landing aircraft. There has been a lot of discussion and experimentation in this area, but with no solutions.

The foregoing is offered only as a prologue to the real safety issue, STRESS. Although the FAA is frequently referred to as a regulatory agency, the air traffic control (ATC) system does not determine nor strictly regulate the amount of aircraft that the system can safely handle on a continuous basis, notwithstanding the limitations described above. Almost unequivocally, the ATC system reacts to demand. In order to preserve safety, the ATC system does delay aircraft. This practice is usually referred to as 'flow management' and generates a lot of complaints.

Delays are commonly expressed in dollar amounts. The annual multi-million dollar losses attributed to ATC delay places pressure on the FAA to meet indiscriminate airline scheduling demands. There seems to be a reluctance to confront the issue of indiscriminate scheduling. Airline schedules which reflect the "garbage in" syndrome based on traveler's convenience also reflect a total disregard for manageable ATC system capacities. And the airline scheduler's can usually win the argument using national economy issues. Logically, it becomes a situation where the FAA and the ATC system must defy the computer "garbage-in, garbage-out" syndrome and convert the data into a sense of discipline that keeps the flow of traffic in safe order.

For example, when observers note the number of flights scheduled on a week day morning at 8 a.m. from Dallas-Ft. Worth International Airport, they surely must recognize the probability that perhaps one or two flights will actually depart on the posted time because of airport and ATC system limitations. The ATC system must sort out marquee times and substitute realistic system compatible times. Delays are thus inevitable. Observers must also recognize that someone, or many people, will be under a considerable amount of STRESS in sorting the mess out. STRESS is generated in just keeping up, much less staying ahead of the power curve. Today, STRESS is generated in just about every functional sector of aviation. This is attributable to attempting to live up to the billing of on-time operations and trying to do more with less while suffering the demands of undisciplined customers. STRESS is the operative word. The inevitable result in the chain of events is that something, somewhere will fail, possibly with catastrophic consequences. The 'something and somewhere' are unpredictable. That's the frightening part.

There is a common denominator; everyone is in a hurry to make ambitious schedules work. This, in-turn, reflects of competition and the need to produce revenues.

The unfortunate dichotomy is that the whole scenario of 'safety first' is morally mandated and officially gives no slack to other dimensions of aviation. It seems all to often that the economy is the biggest driver. The bottom-line is not necessarily safety at all costs, but "within accepted margins of safety." This is not a new term.

The FAA endeavors to handle more and more traffic, sometimes with fewer controllers. The FAA attempts to define system capacity based on historical data without a basis on which to project human capacity. There are limits for human controller capacity, but their norm is established where the more proficient controller must be throttled back to the pace of the less proficient controller to create a system mean. There are certain unquantified differences in controller proficiencies. Essentially, it could be concluded that human capacity is met or surpassed

when a controller experiences an on-the-job mental or physical breakdown. The topic of human capacity has been subjected to a great deal of theory and speculation, but the topic still eludes quantification. There is a direct correlation of human capacity and STRESS, but not a verifiable numerical value.

In summary, the continuing atmosphere of a near panic pace wherein every part of the equation pertaining to commercial airline operations is operating on the edge, ultimately and repeatedly will result in something breaking somewhere, largely because of the reluctance, inability, or lack of fortitude to call enough, enough! The situation is not beyond control. It will be up to the FAA to ultimately "bite the bullet" and create an "intelligence-in, intelligence-out," situation and to filter out system incompatible demands. The FAA will undoubtedly take some heat from the airline industry if it attempts to discipline the system, or the processes, that would eventually temper the pace to a manageable environment. Currently, it seems a simple case of a government regulator not really regulating.