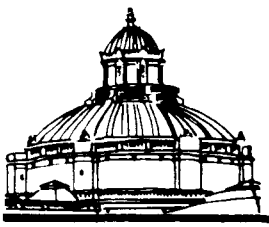
CRS REPORT FOR CONGRESS

AVIATION SAFETY: FAA NEAR MIDAIR COLLISION REPORTS

J. Glen Moore
Specialist in Science and Technology
Science Policy Research Division



CRS

August 13, 1987

CONGRESSIONAL RESEARCH SERVICE
THE LIBRARY OF CONGRESS

The Congressional Research Service works exclusively for the Congress, conducting research, analyzing legislation, and providing information at the request of committees, Members, and their staffs.

The Service makes such research available, without partisan bias, in many forms including studies, reports, compilations, digests, and background briefings. Upon request, CRS assists committees in analyzing legislative proposals and issues, and in assessing the possible effects of these proposals and their alternatives. The Service's senior specialists and subject analysts are also available for personal consultations in their respective fields of expertise.

CONTENTS

AVIATION SAFETY: FAA NEAR MIDAIR COLLISION REPORTS

A near midair collision report is a report filed by a pilot or flight crew member of a commercial (air carrier, air taxi, or commuter), military or general aviation aircraft, stating that a near midair collision has occurred. There is no minimum separation distance which the event must meet in order to by classified as a "near miss." If a pilot of flight crew member subjectively believes that a near miss occurred, the report of that event is accepted by the Federal Aviation Adminstration (FAA) and counted as a near miss in the FAA data base regardless of the actual separation distance.

While no proximity limits are placed on near midair collision reports, the agency does attempt to categorize each reported encounter by degree of hazard represented from an aviation safety perspective. A "critical" near miss is one in which there is less than 100 feet of separation between two aircraft. A "potential" near miss is one in which a collision would probably have resulted if no action had been taken by either pilot. This would usually involve a separation of no less than 500 feet between aircraft. Reports are classified as "no hazard" when direction and altitude would have made a midair collision improbable regardless of evasive action take by a pilot.

1985 CHANGE IN FAA'S REPORTING PROCEDURE

The subjective nature of near midair collision reports makes their value as a measure of system safety somewhat suspect. Nevertheless, following the strike and subsequent firing of three-fourths of the air traffic controller work force in 1981, the FAA frequently cited a declining number of near midair

collision reports as an indication that the air transportation system was as safe or safer than before the strike. Skeptical of the agency's claims, the Aviation Consumer Action Project obtained raw field reports of near midair collisions under the Freedom of Information Act. In a sampling of just three of FAA's nine regions, it found a significant number of near collisions that were simply not put into the data base.[1] The Project proved, and FAA later acknowledged, that the number of near misses, rather than declining, had been rising steadily since the controllers' strike.

Prior to 1985, the FAA near midair collision data base contained only data on near midair collision reports that had been investigated by the agency's flight standards inspectors. Preliminary field reports had to be forwarded to FAA headquarters in Washington, but were not logged into the near collision data base until after they had been investigated. Consequently, there was a built-in lag time for each incident entered into the data base. Following the Aviation Consumer Action Project disclosure, the FAA conducted its own investigation and discovered that not only were some preliminary reports not being investigated--and therefore not getting into the data base--but that some preliminary reports were not getting to FAA headquarters.

Recognizing the importance of a complete data base, FAA administrator Donald Engen initiated a new procedure in January 1985, requiring all preliminary reports of near midair collisions be forwarded as soon as possible to Washington to a central point and logged into the data system upon receipt. Each report is then required to be investigated within 90 days of receipt. The new procedures allow FAA to access real time data on preliminary and completed near midair collision investigation reports as it continues to investigate each

---

[1] Consumer Group Faults Near-miss Figures. Aviation Week and Space Technology, Feb. 11, 1985.

reported near miss. The primary benefits of the change in procedure are that current numbers of near midair collision reports are readily available and that all preliminary reports are contained in one data base, making it less likely for data discrepancies to occur in the future.[2]

COMPARING PRE- AND POST-1985 DATA

Beginning with 1985 data, the FAA near midair collision statistics may include reports of air traffic control operational errors and pilot deviations from air traffic control instructions, when they result in separations of less than 500 feet. In 1985 there were a total of 777 reported near collisions, of which 758 are from pilot or crew member reports, 12 are from air traffic control operational error reports, and 7 are from pilot deviation reports. The number of near misses resulting from operational errors and pilot deviations in 1986 is 12 and 15, respectively; through June 30, 1987, FAA's preliminary count is 12 and 4, respectively. Tables 1 and 2 on page 5 of this report show pilot-reported near midair collisions. Near misses resulting from operational errors or pilot deviations are not included because the FAA does not categorize them. Also, since the FAA changed procedures and gave new emphasis to reporting near midair collisions in 1985, it insists that pre- and post-1985 data are not comparable. Deleting operational errors and pilot deviations from the 1985-1987 statistics improves their comparability with prior years.

---

[2] U.S. Congress. House. Committee on Public Works and Transportation. Subcommittee on Investigations and Oversight. Near Midair Collisions. Hearings, 99th Cong., 1st Sess. June 26, 1985. Statement of Donald D. Engen, Administrator, FAA.

NEAR MIDAIR COLLISION REPORT STATISTICS

Following the adoption of new reporting procedures in January 1985, the agency decided that it had substantially underreported the number of near misses initially reported for 1983 and 1984. The agency subsequently revised the 1983 figures upward to 475 from the 286 earlier reported, and the number of reported near misses in 1984 was raised to 589 from 299. As table 1 shows, the number of near midair collision reports has increased annually in every year since 1982. The table also shows a rising trend between 1982 and 1987 in the number of near midair collision reports involving commercial aircraft.

The National Transportation Safety Board is disturbed by a rising trend in critical near midair collisions involving commercial aircraft (table 2), calling the 33 percent increase in 1986 (48) over 1985 (36) "most significant."[3] Unlike many reported encounters, presumably these aircraft were under the direct control of the air traffic control system which is supposed to protect them from such encounters. Consequently, an increase in these encounters could be an indication of a deteriorating ability in the air traffic control system to provide effective separation. The rise in critical near misses involving commercial aircraft was one of several factors considered in the Board's May 13, 1987, recommendation to the FAA to reduce traffic in the air space system this summer.[4]

---

[3] Safety Recommendation A-87-52 Through -55. National Transportation Safety Board, May 13, 1987.

[4] Ibid.

TABLE 1. **Pilot-Reported Near Midair Collision Reports**

Year	Total	Airliner Involved	Number Critical	Percent Critical
1973	275	93	54	19.6
1974	285	87	40	14.0
1975	269	82	38	14.1
1976	373	117	70	18.8
1977	384	87	93	24.2
1978	504	138	125	24.8
1979	539	145	127	23.6
1980	566	158	117	20.7
1981	394	102	84	21.3
1982	308	96	55	17.9
1983	475	106	97	20.4
1984	589	184	127	21.6
1985	758	203	180	23.8
1986	840	293	162	19.3
1987 (6/30)	503	194	70	13.9

NOTE: Airliner denotes all commercial categories (airliner, air taxi and commuter). Pilot deviation and controller operational error reports have been dropped from 1985-1987 statistics for the purpose of comparability with prior-year statistics.

SOURCE: 1973-1982 FAA from an article, "Air Traffic: the Pain of Regrowth," by Douglas B. Feaver. The Washington Post, May 29, 1983.
1983-1987 FAA, Aviation Safety Division.

TABLE 2. **Pilot-Reported Near Midair Collision Reports Involving Airliners**

Year	Airliner Involved	Number Critical	Percent Critical
1983	106	20	18.9
1984	184	46	25.0
1985	203	36	17.7
1986	293	48	16.4
1987 (6/30)	194	22	11.3

SOURCE: FAA, Aviation Safety Division.

NEAR MIDAIR COLLISION REPORTS AND SYSTEM SAFETY

The steady rise in near midair collision reports has received heightened media attention in recent months as an indication that safety in the U.S. air transportation system is on the decline. However, safety specialists generally agree that near miss statistics are not a particularly good measure of air safety or risk because of their subjective nature and because they usually fail to distinguish between near-catastrophic incidents and those which posed little actual danger. In addition, the rise in near miss reports may not be a direct indication of the performance of the air traffic control system since many encounters involve visual flight rules (VFR) traffic not under the control of an air traffic controller.

The FAA notes that there is no statistical correlation between near midair collision reports and actual collisions. For instance, the 24 midair collisions in 1985, none of which involved air carrier aircraft, was the second lowest total in 20 years. Nevertheless, there does seem to be a correlation between the rise in air traffic and the rise in near miss reports. With commercial air traffic expected to grow at a rate of about five percent per year for the remainder of the 20th century, the number of near miss reports could rise accordingly if this correlation holds.