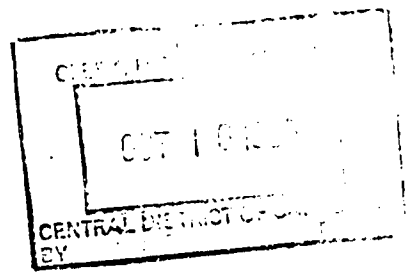


1 Karen H. Baker
2 Assistant General Counsel
3 Equal Employment Opportunity Commission
4 1801 L Street, N.W.
5 Washington, D.C. 20506



7 IN THE UNITED STATES DISTRICT COURT
8 FOR THE
9 CENTRAL DISTRICT OF CALIFORNIA

10 EQUAL EMPLOYMENT OPPORTUNITY)
11 COMMISSION,)
12 Plaintiff,) C.A. No. 90-5253 TJH (Gx)
13 v.)
14 LOCKHEED CORPORATION,) DECLARATION OF
15 Defendant.) DAVID A. DRACHMAN, M.D.
16 For hearing:
17 October 22, 1990, 3 p.m.

16 1. I am David A. Drachman, M.D. Since 1977 I have been
17 Professor and Chairman of the Department of Neurology at the
18 University of Massachusetts Medical School. My business address
19 is Department of Neurology, University of Massachusetts Medical
20 Center, 55 Lake Avenue North, Worcester, MA 01655. My telephone
21 number is (508) 856-3081.

22 2. My curriculum vita is Attachment 1 (pp. 8-34) to this
23 declaration. As it demonstrates, I have been a medical doctor for
24 34 years, and am licensed as a physician in the states of
25 Massachusetts, Illinois and California. I am a diplomate of the
26 American Board of Neurology and Psychiatry, certified in neurology.
27 I serve on the editorial board of five scientific publications,
28 among them, "The Neurobiology of Aging," "The Archives of

1
2 Neurology" and "Neurology," the official journal of the American
3 Academy of Neurology. For five other scientific publications,
4 including "Science," "The Journal of the American Medical
5 Association," and "The Annals of Neurology", I serve as a reviewer
6 of research articles submitted for publication. My own research
7 focuses on issues of memory and aging.

8 3. As part of my medical training I have taken courses on
9 statistics and bio-statistics, including specifically a course in
10 medical statistics from Professor Donald Mainland at New York
11 University College of Medicine. I have continued to use and
12 develop my knowledge of statistics both in my own research, which
13 involves over 100 scientific papers that make use of statistical
14 analyses, and in my capacity as a reviewer.

15 4. I submit this declaration in support of the Equal
16 Employment Opportunity Commission's petition for a preliminary
17 injunction that would bar the Lockheed Corporation from removing
18 Kenneth W. Weir from flight status on October 20, 1990, his
19 sixtieth birthday.

20 5. I have reviewed the 1983 study undertaken by Richard
21 Golaszewski for the Department of Transportation ("The Flight Time
22 Study"). I have reviewed the analyses on pilot accident rates by
23 Dr. Charles Billings that are cited in the Office of Technology
24 Assessment report. Those analyses were produced by Dr. Billings
25 as defendant's expert in Equal Employment Opportunity Commission
26 v. The Boeing Company, C.A. No. C84-187R (W.D. Wa.). In his March
27 1990 deposition in that case, Dr. Billings discussed three charts
28 that he created, which were offered as exhibits by defendant

1
2 Boeing. Those charts appear in the OTA report. Relevant pages of
3 his testimony and copies of those three charts are Attachment 2 to
4 this Declaration (pp.36-50).

5 6. The Flight Time Study and the Billings/OTA analyses
6 contain a fundamental statistical flaw. Because of that flaw, they
7 do not support a claim that accident rates increase in the seventh
8 decade (the 60's) regardless of whether total or recent pilot
9 experience is examined.

10 7. As R. Golaszewski, the author of The Flight Time Study
11 stated, "The principal focus of th[is] . . . study is on pilots
12 with Class III medical certificates (generally Private Pilots or
13 Student Pilots)". For that reason the interpretations that are put
14 forward apply primarily to Class III pilots and their application
15 to Class I and II pilots requires re-analysis.

16 8. Analysis of accident data for pilots over age 60 compared
17 to equivalent younger pilots requires analysis of accident rates
18 for equivalent conditions. Four factors that may influence
19 accident rates, including medical certificate class, recent flight
20 time, total flight time, and age, are explicitly examined in The
21 Flight Time Study and the Billings analyses. A fifth factor, the
22 type of flying experience (for instance, private single engine
23 light planes versus multi-engine, multi-crew air carrier flights)
24 is not. As Dr. Billings himself recognized (Attachment 2, at
25 pp.40-50) air carrier operations involve substantially different
26 conditions, on average, than experienced in all other aviation.
27 Air carrier operations are performed in cabin-pressurized multi-
28 engine jet or turboprops, which are designed with overlapping

1
2 safety systems and have the ability to fly above threatening
3 weather, have multi-person crews, highly-regulated aircraft
4 maintenance standards, assistance from the air traffic control
5 system, generally fly into larger well-lit airports and require
6 crew compliance with the most stringent FAA certifications of both
7 performance and health. Other aviation operations run the gamut
8 of conditions. The difference in average operating conditions
9 ensures that accident rates for air carrier operations are lower
10 than those that occur in general aviation.

11 9. Reliable analyses on accident rates, controlling for type
12 of flying experience, can be obtained by re-analysis, with
13 reasonable assumptions, of the Flight Time Study and Billings data.

14 10. Pilots over age 60 do not fly as pilot or co-pilot in air
15 carrier operations, because of FAA regulation 14 C.F.R 121.383(c).
16 Approximately 95.8 million hours of air carrier aviation, which by
17 definition includes only pilots under age 60, are included in the
18 total hours in the Flight Time Study/Billings data. Therefore, the
19 air carrier flight hours should be excluded from the analysis for
20 pilots under age 60, so that only non-air carrier hours for younger
21 pilots are compared to flying hours for pilots over 60.

22 11. These 95.8 million hours (about 1/3 of the total hours)
23 should be excluded from the total of under-60 pilots with Class I
24 and II medical certificates, who fly 401 and more hours per year,
25 as these are the pilots most likely to be air carrier pilots.

26 12. To do these calculations,

27 a. data on the age distribution of airline pilots was taken
28 from the FAA's Aeromedical Certification Handbook for the years

1
2 1976-1980 (the years analyzed in the Flight Time Study/Billings
3 data) (Attachment 3, pp.51-55). The total number of such pilots in
4 each age decile for the period was computed, and the proportion
5 that each age decile represented of the total number was computed.

6 b. Then, those proportions were used to apportion among each
7 decile the 95.8 million hours of air carrier flying to be removed
8 from the Flight Time Study/Billings data.

9 c. The appropriate number of hours were removed from the
10 total flight time for each age decile of pilots with Class I and
11 II medical certificates, and 401 and more hours of flight time per
12 year.

13 d. Accident rates were then recomputed for all Class I and
14 II pilots who were under the age of 60, while not flying air
15 carrier operations.

16 e. Once the data are corrected, as described above, the
17 accident rate, after increasing for pilots age 30-39, steadily
18 decrease through the seventh age decile (ages 60-69).

19 f. This recalculation may not correct The Flight Time
20 Study's flaw with absolute precision for each decile. Flight hours
21 used in the Flight Time Study were self-reported. Perhaps some
22 younger air line pilots were not able to steadily work 401 hours
23 per year during the years 1976-1980. However, it is reasonably
24 accurate, and since it is my understanding that Mr. Golaszewski
25 lost the data underlying his study, it is probably the best
26 available method of determining accident rates for equivalent
27 pilots across all ages deciles. However, if accident rates are
28 computed in this manner for all pilots under age 60 combined, which

1
2 eliminates the problem of apportioning hours by decile, the result
3 is the same. Pilots flying over 400 hours per year who are younger
4 than 60 have an average accident rate of 4.99 per 100,000 hours;
5 their over-60 cohorts have an accident rate of 2.4/100,000.

6 g. Attachment 4 (p.56) is a graph that depicts these
7 corrected accident rates by age decile, and for all pilots with
8 more than 400 hours per year recent experience, and Class I and II
9 licenses It compares those corrected rates to the ones presented
10 in the Flight Time Study.

11 13. The appropriateness of these corrections is supported by
12 an analysis in The Flight Time Study that is not affected by its
13 failure to control for type of flying, specifically, accident rates
14 among high recency (401 and more hours per year) pilots with Class
15 III licenses (which do not permit air carrier piloting). In this
16 group, the accident rates are as follows:

Age	Accident Rate
20-29	9.0
30-39	7.6
40-49	6.7
50-59	3.3
60-69	3.1

17
18
19
20
21 14. These two analyses show the same trend -- when pilots of
22 like experience, flying under equivalent conditions, are compared,
23 pilots age 60-69 have lower group accident rates than their younger
24 cohorts.

25 15. Examination of the Flight Time Study/Billings data on
26 pilots with more than 5,000 hours of total experience is not useful
27 for two reasons: first, a 60 year old pilot with 5,000 hours total
28 flying time has flown many fewer hours annually than a 30 year old

1 with the same total hours, or a 40 or 50 year old. Second, only
2 19% of pilots over age 60 with more than 5,000 hours total time fly
3 more than 400 hours per year; while 90% of Class I and II pilots
4 under age 60 with 5,000 total hours fly more than 400 hours per
5 year. For these reasons, data on pilots with over 5,000 hours of
6 total time cannot be compared with data on younger pilots flying
7 many more hours annually. The study of pilots with 1,000 hours of
8 total flight time and 50 hours of recent flight time is also
9 inappropriate for age comparisons. The Flight Time Study/Billings
10 analyses performed on this group of pilots allow data on very
11 inexperienced 60 year old pilots to dominate the analysis, while
12 representing progressively more recently experienced pilots as
13 younger age deciles are examined.

14 16. Clearly, any useful analysis must compare pilots, whether
15 older or younger, who equally maintain their skills through
16 frequent flying. Any useful analysis must compare pilots flying
17 under similar conditions. I have performed these analyses, and
18 they do not support a conclusion that pilots age 60 to 69
19 experience a higher accident rate than their younger cohorts, but
20 support the reverse conclusion instead.

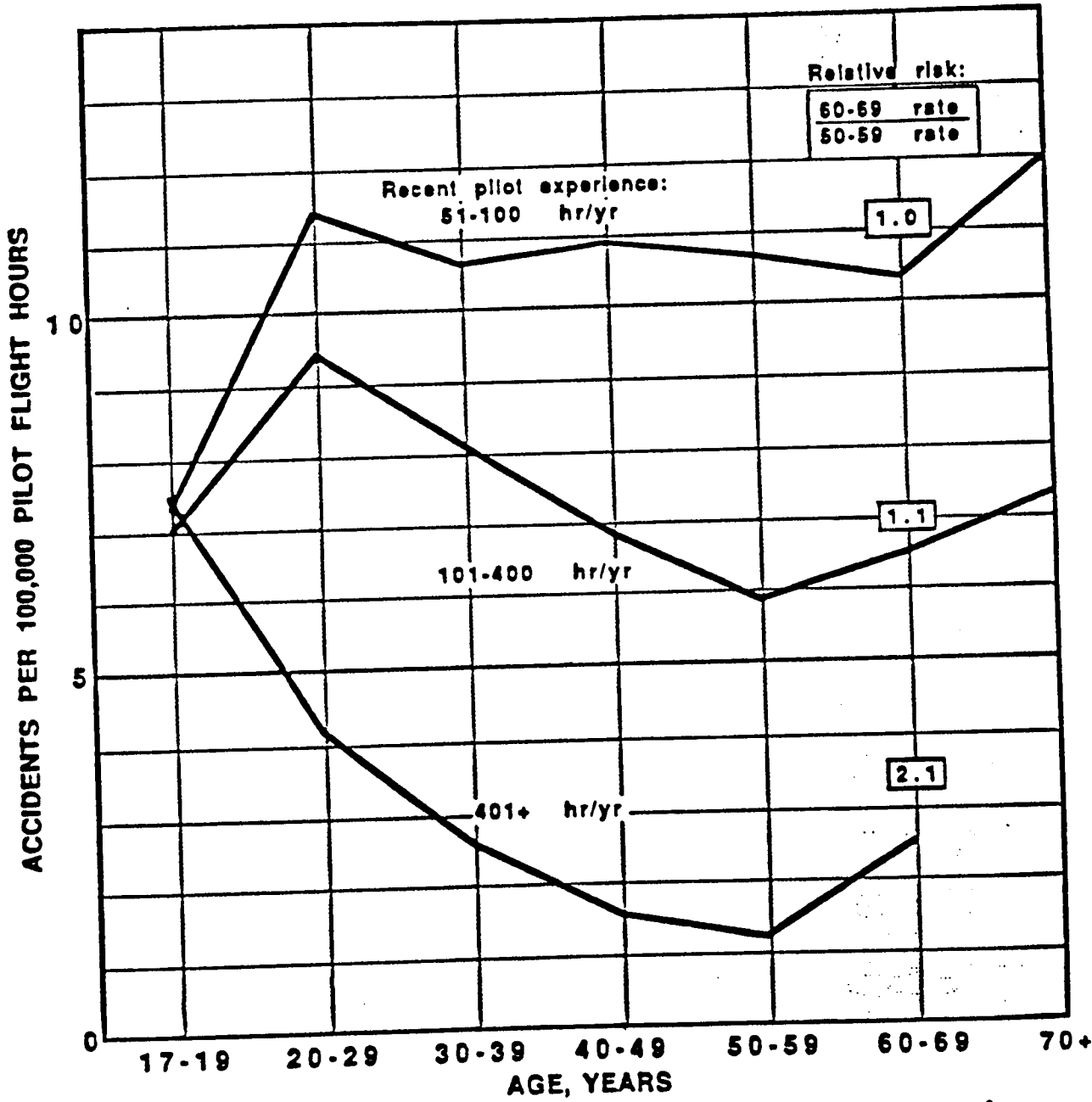
21 I declare under penalty of perjury that the foregoing is true
22 and correct. Executed this 13th day of October 1990.

23
24
25 
26 DAVID A. DRACHMAN, M.D.
27
28

ACCIDENT RATES OF CLASS I & II PILOTS VS AGE AND REGENCY

(Data from Golaszewski, 1983, and NTSB, 1990)

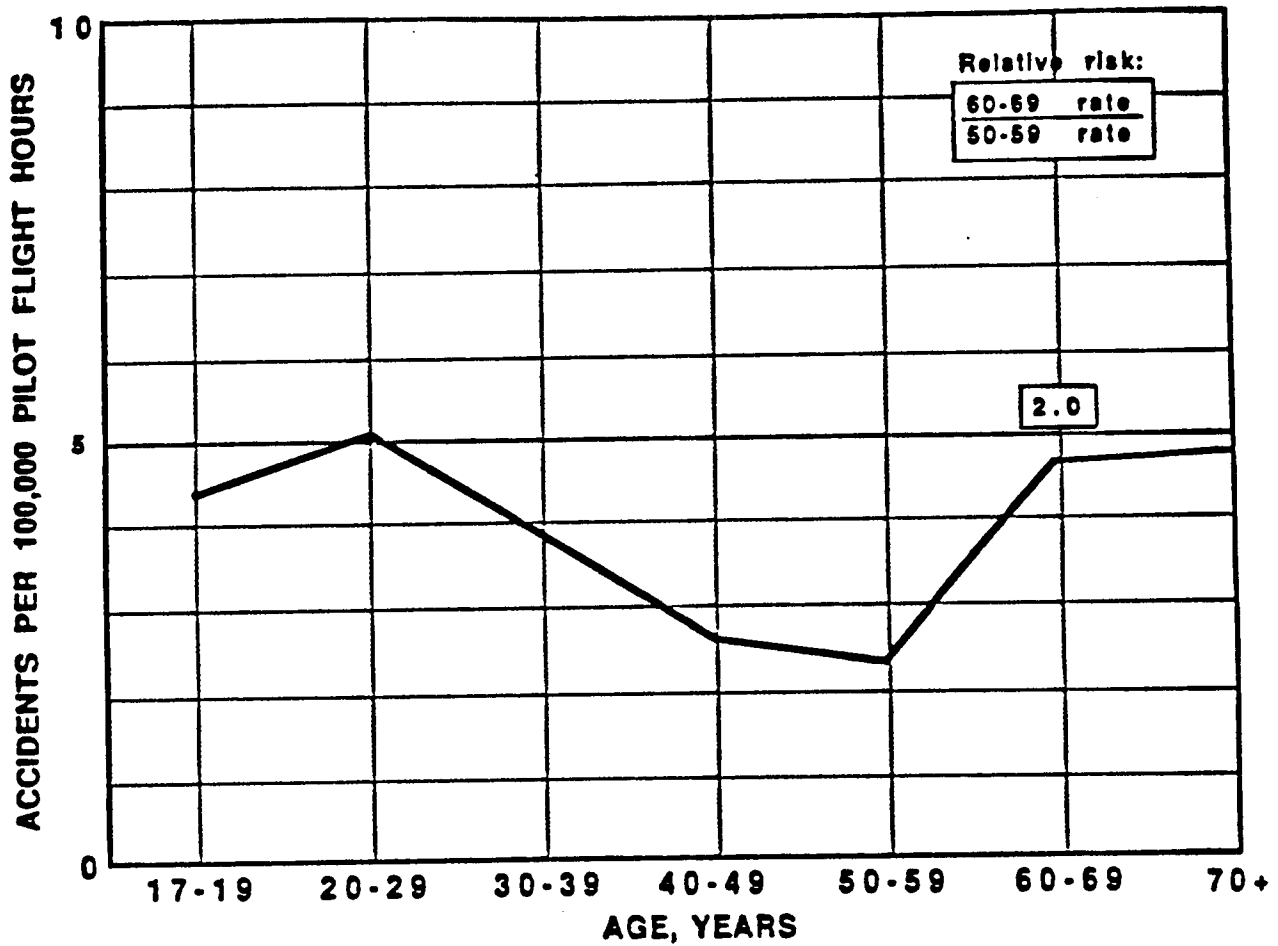
The beneficial effect of recent flying experience exists at all levels, but there is no interaction with age in pilots flying less than 100 hr/yr. In pilots who fly more than 100 hr/yr, increasing age (and probably total experience) and increased recent flying time both have beneficial effects. After the age of 60, accident rates increase even if pilots continue to fly over 400 hours per year.



Ballinger
 3-30-90

ACCIDENT RATES OF CLASS I & II PILOTS WITH >1000 HR AND >50 HR RECENT FLIGHT EXPERIENCE

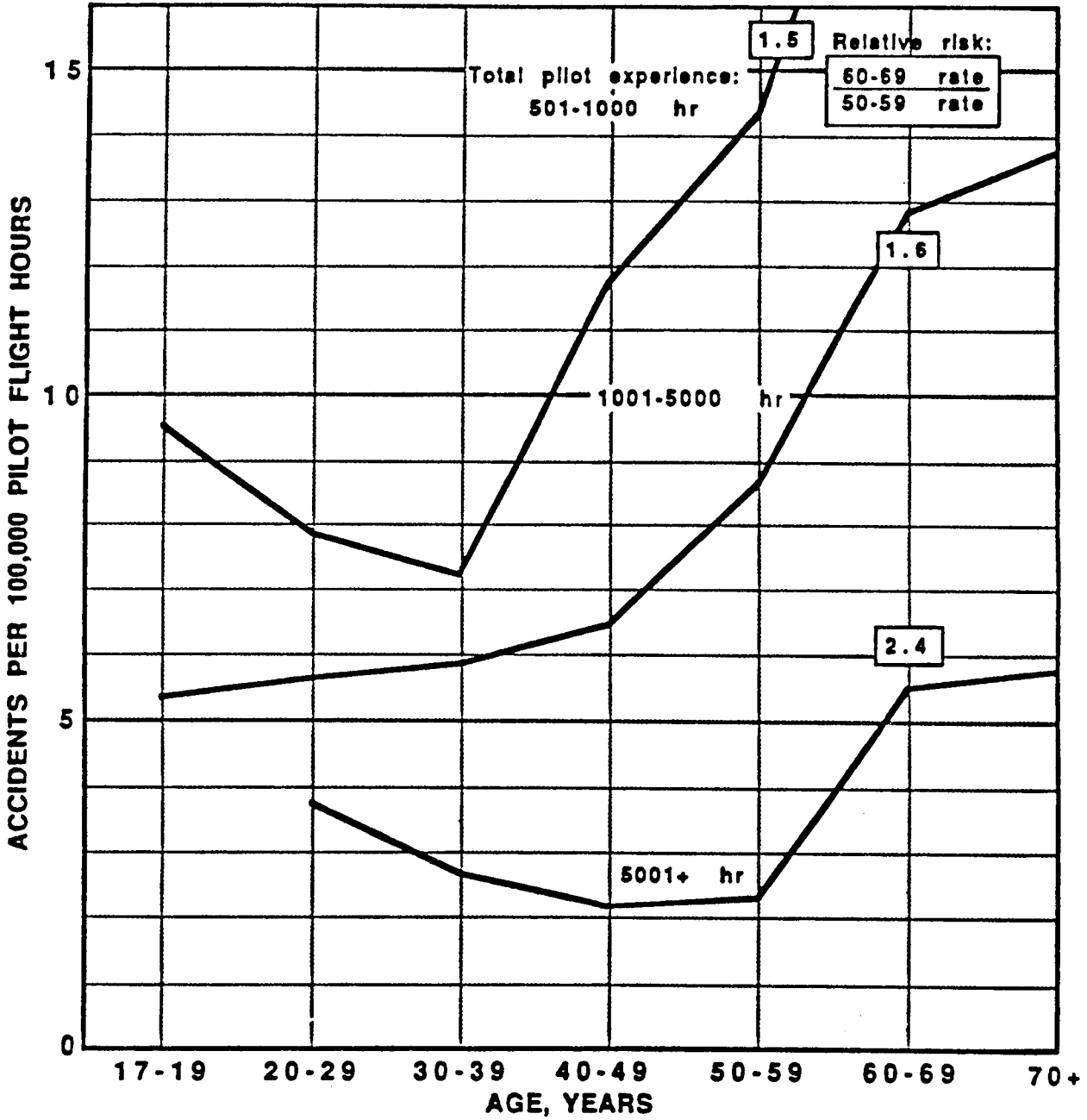
(Data from Golaszewski, 1983, and NTSB, 1990)



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 John H. Stoffer CSR #7223

ACCIDENT RATES OF CLASS I & II PILOTS vs AGE AND TOTAL TIME

(Data from Golaszewski, 1983, and NTSB, 1990)



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