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Age 60 Rule Research, Part I: Bibliographic Database

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Hilton Systems, Inc.

Civil Aeromedical Institute
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This document is one of four products completed as a part of the Age 60 Rule research contract monitored by Pam Della Rocco, Civil Aeromedical Institute, Contracting Officer's Technical Representative. This work was performed under Task AM-A-94-HRR-138.

16. Abstract

As part of their research contract with the FAA to study issues related to the "Age 60 Rule" for pilot mandatory retirement, Hilton Systems, Inc. in collaboration with Lehigh University faculty and research facilities, compiled this extensive bibliography. Topics included pilot aging, performance, health and physiological factors, as well as other aviation and pilot related topics. Citations were included from a variety of sources including international and military studies. The bibliography was organized in three sections. The first section presents a bibliographic listing on the above topics. The second section provides a listing of publications by authors active in related fields. Finally, the third section provides citations from the driving literature.

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PREFACE

This technical report is one in a collection of four major documents resulting from a two year contract to scientifically examine issues related to the Federal Aviation Administration's (FAA's) mandatory retirement regulations for pilots. The Federal Aviation Regulations (FARs), Part 121, prohibit individuals from serving as captain or copilot (1st officer) of an aircraft in air carrier operations if those persons have reached their 60th birthday. Commonly referred to as the "Age 60 Rule", the regulation was developed in response to concerns about the safety of aging pilots as the airline industry transitioned into the jet age. Although the rule has withstood legal and legislative challenges, little scientific evidence has been available to either support the rule or to guide the FAA to an appropriate alternative.

In 1990, the FAA's Associate Administrator for Certification and Regulation (AVR-1), Mr. Anthony Broderick, requested and sponsored a two year research contract to examine the relationship between age, experience, and accident rates. The Civil Aeromedical Institute (CAMI) was assigned the task of developing and monitoring the contract. In September 1990, the contract was awarded to Hilton Systems Inc., of Cherry Hill, New Jersey. Hilton Systems collaborated with Lehigh University faculty to supplement technical expertise. The FAA requested that the contractor engage in a fresh, innovative approach to issues involved in the Age 60 Rule. No direction was given by the FAA to the contractor on whether the Agency desired to maintain a position either for or against the rule.

This report, entitled "Age 60 Rule Research, Part I: Bibliographic Database," was the first document in the series of products from the Age 60 Rule research contract with Hilton Systems. It represents a documentation of the literature searches conducted in conjunction with the literature review. This bibliography was presented in three sections. The first section, entitled Bibliographic Database, provides a compilation of 556 abstracts and citations. The second section is an Author's Database of 238 listings. The final section presents 252 citations from the driving literature.

Pamela Della Rocco, COTR

Part I
Bibliographic Database

1. ABBAS, L.; BELLANGER, G. (Compagnie Nationale Air France, Service d.eMedecine, du Travail, Orly-Aerogare, Val-de-Marne, France); FUCHEZ, J. CANTEGRIL, M. (Compagnie Nationale Air France, Service de Medecine d.aTravail, Roissy, Val-d'Oise, France). The lipidic balance of technical flight personnel between 50 and 55 years old in commercial and civil aviation. Medecine Aeronautique et Spatiale, vol. 21, 3rd Quarter, 1982, p. 194-198. In French; Sep. 1982 24 Refs. Note: Language: French Country of Origin: France Document Type: JOURNAL ARTICLE Journal Announcement: IAA8306 A total of 170 pilots over the age of 50 who were applying for certification for new aircraft were studied for lipid levels, cholesterol levels, and triglyceride levels over an 11 yr period. Additionally, the cause of death, when determined, was considered. It was found that 45 percent exhibited hyperlipidemia, 22 percent had isolated hypercholesterolemia, 9 percent displayed hypertriglyceridemia, and 14 percent had a mixed hyperlipidemia. The cholesterol excess percentages were far higher than results obtained in studies of the general population and of miners. A correlation was determined between the high lipid levels and a diet which included frequent ingestion of greasy food, especially saturated meat acids. Studies are cited to demonstrate that the restricted intake of fats and cigarettes can lead to significant elongation of life. (M.S.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

2. Action on aging legislation in the 96th Congress: an information paper. Note: Congressional Research Service of the Library of Congress, Washington, DC; and U.S. Congress, 97th, 1st Session, Senate, Special Committee on Aging, Washington, DC. Apr 1981. (22p.). NOTES: Committee print. AVAILABILITY: U.S. Government Printing Office, Washington, DC 20402. Summarized in this report of the Senate Special Committee on aging is selected legislation of interest to the elderly that was acted upon by the 96th Congress. Among the legislation that affects the largest number of elderly are laws that increased authorization for the food stamp program, changed cost-of-living adjustments (from semiannual to annual), allowed higher medical deductions, and changed eligibility requirements; laws providing cash benefits to help offset home heating costs for low-income elderly people; and laws liberalizing certain Medicare benefits, including home health benefits. Other legislation is summarized under the following headings: (1) income maintenance (Social Security, Supplemental Security Income, private pension plans, Civil Service retirement); (2) health (Medicaid, national health insurance, catastrophic health insurance, the Mental Health Systems Act, amendments pertaining to alcohol abuse treatment and prevention, veterans geriatrics research and care); (3) social services (long-term care, elderly abuse, Title XX of the Social Security Act, education, Legal Services Corporation); (4) civil rights (institutionalized persons, age limits for airline pilots, the Foreign Service Act of 1980); (5) housing (Housing and Community Development Act amendments, Housing and Urban Development Act appropriations); (6) transportation (reduced railway fares); and (7) taxation (interest rates on U.S. retirement bonds, extending the deduction for removal of architectural barriers). (CI).

3. Adatsa, Iain C. (Yarmouk U, Irbid, Jordan). Personality and somatotype of trainee pilots. Psychological Reports; 1985 Jun Vol 56(3) 835-840; 1985; CODEN: PYRTAZ; ISSN: 00332941. Note: Human. Conducted a personality and somatotype study of 31 male aviation majors (aged 18-38 yrs) who had earned their private pilots' licenses and were working toward more advanced ratings. All Ss completed Form A of the Sixteen Personality Factor Questionnaire (16PF), and 18 Ss were somatotyped using a technique developed by B. H. Heath and J. E. Carter (1967). Results from comparisons with normative scores of college males indicate that the pilots varied significantly from the norm on dominance, surgency, conscientiousness, parmia, and self-sentiment factors of the 16PF. Somatotype comparisons indicate that pilots were significantly less ectomorphic than the norm. Pearson correlations of pilot scores for the 2 scales revealed a positive correlation between mesomorphy and cyclothymia and a negative correlation between mesomorphy and self-sentiment. Paranoid tendency was positively correlated with endomorphy and negatively correlated with ectomorphy. (17 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

4. Administration's proposal to extend mandatory retirement to flight engineers: joint hearing, November 16, 1983. Note: U.S. Congress, House, Select Committee on Aging, Subcommittee on Health and Long-Term Care, Washington, DC. 1984. (137p.). AVAILABILITY: U.S. Government Printing Office, Washington, DC 20402. The subcommittees met jointly to consider the administration's proposal to extend the mandatory age 60 retirement rule for airline pilots and copilots to include flight engineers. In a prepared statement, the chairman of the Select Committee on Aging maintained that the age 60 rule was unjustified for any members of the cockpit crew. The administrator of the federal Aviation Administration and the deputy general counsel of the Department of Transportation explained that in response to conflicting views and data, an advanced notice of proposed rulemaking suggesting application of the age 60 rule to flight engineers was withdrawn on the grounds that further analysis was needed. Testifying against an arbitrary age rule were a former astronaut and four flight engineers. The director of aerospace medicine at Wright State University, Dayton, Ohio, testified that there was no medical, scientific, or operational basis for the age 60 rule for either pilots or flight engineers. A pilot/flight engineer said that different age rules could cause a loss of harmony in the cockpit, but a flight engineer said shifts in the chain of command are not a problem. Citing differences in individual abilities with age, the flight engineers favored individual medical and proficiency examinations instead of a set age rule. The appendix contains additional material received for the record from 16 interested individuals and organizations. (CM).

5. Age related changes in physical performance and physiological functions of JASDF pilots.

6. Age 60 retirement found unsupported. Aviation Week & Space Technology (AWSTA), volume 113, Dec 29, 1980, p19(1).

7. Age bias case lost by T.W.A. (contains other U.S. Supreme Court decision on music publishing). New York Times (NYTIA), Jan 9, 1985, Wed edition, p29(N) pD1(L), col 6.

8. Age discrimination. Aviation Week & Space Technology (AWSTA), volume 119, Aug 1, 1983, p31(1).

9. Age discrimination against airline pilots: hearing. Note: US Congress, 96th, 1st session, House of Representatives, Select Committee on Aging. 1979. (161p.). AVAILABILITY: U.S. Government Printing Office, Washington, DC 20402. The proceedings of hearing on age discrimination against airline pilots, held on March 21, 1979 before the House Select Committee on Aging, are presented. The purpose of the hearing was to inquire into the need for and fairness of a 1959 Federal Aviation Administration (FAA) regulations requiring the removal of commercial pilots from the position of captain at the age of 60. Participants included 15 Committee members, 3 airline captains, and FAA administrator, a professor of aerospace medicine, and a representative of the Air Line Pilots Association. Additional materials received for the record are appended, including prepared statements and letters from airlines captains, medical experts, and a consumer representative. (RW).

10. Age found insignificant to accident rate. il. Aviation Week & Space Technology, Jan 29, 1968, p95.

11. Age limit for airline pilots? Note: National Academy of Sciences. National Academy of Engineering. National Research Council. Institute of Medicine, News Report. June 1981. Vol. 31, No. 6. p. 19-22. (4p.). A committee of the Institute of Medicine of the National Academy of Sciences reviewed scientific literature on the effects of aging on pilots' health and abilities and found that while mental and physical capabilities decline with age and the risk of incapacitating illness increases, age 60 is not marked by any accelerated deterioration of function or increased risk of incapacitation. Federal Aviation Administration regulations prohibit commercial airliners from using pilots-in-command or seconds-in-command aged 60 or over. Acute incapacitation of the pilot was not found to be a significant cause of airline accidents. Slow degradation of a pilot's abilities and health is a less clearcut issue, and the committee recommended procedures, probably using flight simulators, to test perceptual function under realistic high-workload conditions. Reliable methods of assessing intellectual function and processing of perceptual information are not available. Regarding both the risks of acute incapacitation and subtle losses in function, the committee found that variability within age groups is often nearly as great as variability among age groups. Incidence of aviation accidents is unrelated to pilot age. The committee recommended less frequent but more comprehensive and careful medical examinations, with the content and frequency of the examinations dependent upon changing risks with age. (CI).

12. Age-related changes in performance of pilots.

13. Aircraft accidents by older persons. Note: U.S. Department of Transportation, Federal Aviation

Administration, Office of Aviation Medicine. Oct 1976. (9p.). AVAILABILITY: SCAN Microfiche No. CCF 002388. Accident records of general aviation pilots over the age of 60 years are analyzed. The number of older individuals holding pilot licenses is increasing: in 1965 2.2 percent of all pilots, or 9,826 individuals, were over 60. Of the total of 5,134 accidents experienced by all pilots over 60 were involved in 108 of 2.1 percent. The occurrence of accidents appears to be independent of pilots' certification level and age group. Excluding student pilots, the 60 and over age group is comparable to the 30 to 44 year age group, safer than the 16 to 29 age group, and less safe than the 45 to 59 age group. Over one-half of the accidents recorded by the older pilots occurred during landing. A total of four fatal accidents were recorded by older pilots during the year 1965. (JRA).

14. Aitasalo, K.; Silvoniemi, P.; Aantaa, E. (U Turku Central Hosp, Finland). Audiological and vestibular findings in professional helicopter pilots.Transactions of the XXIIth Congress of the Scandinavian Oto Laryngological Society: Posters (1984, Copenhagen, Denmark). Acta Oto Laryngologica; 1984 Suppl 412 119-120; 1984; CODEN: AOLAAJ; ISSN: 00016489. Note: Human. Examined pure tone audiograms and speech discrimination in 27 helicopterpilots (aged 21-49 yrs), who also underwent neurological examinations and were observed for nystagmus, and in age-matched normal controls. 24 of the pilots had normal hearing, while 3 had slight, symmetric inner-ear hearing loss. No spontaneous or positional nystagmus was found, and these Ss' caloric reactions were normal. The sensation of rotation during caloric irritation was significantly smaller, and the average nystagmus threshold during angular acceleration was significantly higher, in pilots than in controls. (3 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

15. Aitasalo, K.; Silvoniemi, P.; Aantaa, E. (U Turku Central Hosp, Finland). Audiological and vestibular findings in professional helicopter pilots. Transactions of the XXIIth Congress of the Scandinavian Oto-Laryngological Society: Posters (1984, Copenhagen, Denmark). Acta Oto-Laryngologica. 1984 Suppl 412 119-120; CODEN: AOLAAJ; ISSN: 0001-6489. Note: English (EN). Examined pure tone audiograms and speech discrimination in 27 helicopter pilots (aged 21-49 yrs), who also underwent neurological examinations and were observed for nystagmus, and in age-matched normal controls. 24 of the pilots had normal hearing, while 3 had slight, symmetric inner-ear hearing loss. No spontaneous or positional nystagmus was found, and these Ss' caloric reactions were normal. The sensation of rotation during caloric irritation was significantly smaller, and the average nystagmus threshold during angular acceleration was significantly higher, in pilots than in controls. (3 ref) (PsycINFO Database Copyright 1986 American Psychological Assn, all rights reserved).

16. ALLUISI, E. A. (USAF, Human Resources Laboratory, Brooks AFB, TX)ALLUISI, M. J.; DE, GROOT, S., EDS. Human Factors Society, Annual Meeting, 28th, San Antonio, TX, October 22-26, 1984, Proceedings. Volumes 1 & 2. Santa Monica, CA, Human Factors Society, 1984. Vol. 1, 566 p.; vol. 2, 505 p. For individual items see A86-23702 to A86-23750; 1984. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PROCEEDINGS Journal Announcement: IAA8609 Developments regarding methods and techniques are considered along with human factors in falls of the elderly, prototyping and design of computer systems, consumer product design, human factors in system safety and robotics, visual performance and display design, mental models, the selection and evaluation of computer systems, programs and techniques in human factors education, industrial ergonomics, and industrial safety. Topics related to human factors and nuclear power are discussed, taking into account a systems approach to improved operations, a maintenance personnel performance simulation model, and nuclear power plant control room operators' performance research. Attention is also given to visual display design, computer displays, new alternatives in managing human factors and human resources functions, army aviation selection and training, visual detection and tracking, applications of fuzzy sets and systems methodologies in human factors, human factors and automation technology, computer based training, and human factors in computerized I/O communications products. (G.R.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-).

17. ALPA argues case in pilot age fight. Aviation Week & Space Technology, Feb 29, 1960, p47.

18. ALPA attacks pilot age limits. Aviation Week & Space Technology, Aug 3, 1959, p36.

19. ALPATOV, I. M.; ANOKHIN, G. A.; KHAVRUK, N. D.; SBORETS, G. G. Medical support for young pilots. Voenno-Meditsinskii Zhurnal (ISSN 0026-9050), Jan. 1986, p. 43-45. In Russian; Jan. 1986. Note: Language: Russian Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE Journal Announcement: IAA8713 Due to drastic differences between the physical and emotional environments of

flight school and actual service, which are connected with unique stress during the initial period of service, pilots at the start of their career demand special medical attention. The medical program designed for the thorough examination of young pilots arriving at their base and for treating sources of potential mental or physical disorders is described. The first stage of the program includes a thorough examination of the medical history of a pilot, his present physical and emotional status, dexterity, and acuteness, as well as his habits, social skills, family life, and living conditions. This stage of the program includes lectures for pilots' wives, preparing them for their role as partners in their husbands' stressful and demanding careers. The second stage of the program consists of the appraisal of the functional status of a pilot during the first month of flight assignments. Pilots displaying slow learning or those committing errors in the piloting techniques are subjected to a battery of physiological and psychological tests designed to pinpoint the source of their unsatisfactory performance. (I.S.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

20. ANDERSON, R. (Air Canada, Montreal, Canada); GULLETT, C. C. (Harvey W. Watt, and Co., Atlanta, GA). Airline pilot disability - Economic impact of an airline preventive medicine program. Aviation, Space, and Environmental Medicine, vol. 53, Apr. 1982, p. 398-402; Apr. 1982. Note: Language: English Country of Origin: Canada Document Type: JOURNAL ARTICLE Journal Announcement: IAA8212 The current economic crisis facing most major United States airlines has forced a close examination of airline-sponsored activities. The effectiveness of one airline's pilot preventive medicine program was estimated by comparing disability experience of its pilots against the experience of a larger population of airline pilots. The preventive medicine program at the studied airline was shown to reduce disability experience by one-third, while saving the airline better than $6 million annually. This program yielded the airlines better than a 6-1 return on investment during the years studied. ((Author)). Documents available from AIAA Technical Library.

21. ANLAUF, M. /RUHR-UNIVERSITAET, BOCHUM, WEST GERMANY/. Type and amount of the body training for maintaining the physical fitness of a pilot (Body training type and amount effect on physiological functions and physical fitness of pilots, discussing pulse frequency). Place of Publication: DARMSTADT; 1968 4P. Note: IN- STRESS IN FLIGHT AND CURRENT PROBLEMS OF FLIGHT MEDICINE /STRESS UND FLIEGEN SOWIE AKTUELLE PROBLEME DER FLUGMEDIZIN/. EDITED BY H. W. KIRCHHOFF. /A70-23002 09-05/ /WEHRDIENST UND GESUNDHEIT. VOLUME 16/, P. 86-89. Language: German Country of Origin: Germany, Federal Republic of Document Type: ANALYTIC OF COLLECTED WORK Documents available from AIAA Technical Library Journal Announcement: IAA7009 Source of Abstract/Subfile: AIAA/TIS. Publication.

22. AOA supports two pilot TV programs for the elderly. Aging, Dec, 1976, p20.

23. Appeals court rules TWA discriminated against older pilots. Wall Street Journal (WSJOAP), Aug 18, 1983, The edition, p4(W) p4(E), col 4.

24. Ashs from the deluge; far from being dusty storehouses, the world's great libraries are both the pilots, and the lifeboats, of the n w information age. (The World's Great Libraries). The Economist, volume 313, issue n7634-5, Dec 23, 1989, p41(7).

25. Ashman, A.; Telfer, R. (U Newcastle, Australia). Personality profiles of pilots. Aviation, Space, and Environmental Medicine; 1983 Oct Vol 54(10) 940-943; 1983; CODEN: AEMEAY; ISSN: 00956562. Note: Human. 102 male US Air Force fighter pilots (mean age 30.1 yrs), 67 trainee commercial pilots (mean age 19.7 yrs), and males (mean age 27.5 yrs) drawn from the general community completed the EPPS. Four significant effects were found for individual subscales; 3 scales--Achievement, Affiliation, and Nurturance--identified air force fighter pilots. Commercial pilot trainees scored significantly less than the community sample on Succorance and Nurturance. Data suggest that the EPPS consists of several related personality dimensions; one of these, "sociability," discriminated fighter pilots from the general community. (14 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

26. Auerbach, Stuart. Gandhi begins visit here today; former pilot seeks computer-age technology for India. (Rajiv Gandhi). Washington Post, June 11, 1985, Tue edition, pA16, col 3.

27. Australia pilots resign en masse as sackings start. Reuters, August 24, 1989, R082403336.

28. Australia struggles to restore air service using military, regional and foreign aircraft. Aviation Week & Space Technology, volume 131, issue n10, Sept 4, 1989, p70(1).

29. Australian pilot exodus. (resignation of 1,647 Australian pilots during wage dispute). The New York Times (NYTIA), volume 139, Nov 20, 1989, Mon edition, pD5(L), col 4.

30. Aviation safety: information on FAA's age 60 rule for pilots. Note: U.S. General Accounting Office, Washington, DC. Nov 1989. (22p.). AVAILABILITY: U.S. Government Printing Office. Washington, DC. Provides data on the Federal Aviation Administration's (FAA) regulation prohibiting individuals aged 60 or older from piloting large commercial aircraft (known as the "Age 60 Rul."). Legal challenges to the rule are discussed, and it is noted that after fighting the Age 60 Rule for two decades, the Air Line Pilots.

31. Avolio, Bruce J.; Barrett, Gerald V.; Sterns, Harvey L. (State U New York, School of Management, Binghamton). Alternatives to age for assessing occupational performance capacity. Experimental Aging Research; 1984 Sum Vol 10(2) 101-105; 1984; CODEN: EAGRDS; ISSN: 0361073X. Note: Human. Examines the assessment of performance of older workers, which is takingplace in both psychological and legal arenas. It is contended that in view of the current emphasis on life-span studies, there should be a diminution in the insistence that CA is the best predictor of performance. However, neither the employment sector nor the courts have felt compelled by the repeated findings of individual differences in performance to reject the use of CA in employment decisions. The courts, faced with the lack of utility demonstrated by the concept of functional age, have found no alternative to reliance on CA. It is argued that this shift should concern all gerontologists, particularly those concerned with industrial implications of gerontology, whose goal is to point out new directions in the prediction of job-pertinent behaviors in the older worker. The authors suggest that intrinsic attributes should serve as the basis for determining the competence of both older and younger workers. Research pertaining to aircraft flight proficiency by pilots of different CAs is reviewed. (31 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

32. Avolio, Bruce J.; Barrett, Gerald V.; Sterns, Harvey L. Alternatives to age for assessing occupational performance capacity. Note: Experimental Aging Research. Summer 1984. Vol, 10, No. 2. p. 101-105. (5p.).

33. BABICHUK, A. Age limitations of flying personnel (Age limitations of flying personnel taking into account physical condition and professional capabilities). IN- SOME PROBLEMS OF AVIATION AND SPACE MEDICINE. EDITED BY P. LEVIT. PRAGUE, KARLOVA UNIVERSITA, 1967, P. 111-117. IN RUSSIAN; 1967. Note: Language: Russian Country of Origin: U.S.S.R. Document Type: ANALYTIC OF COLLECTED WORK Journal Announcement: IAA6722 Source of Abstract/Subfile: AIAA/ITIS. Documents available from AIAA Technical Library.

34. Bachman, William G.; Behar, Isaac (US Army Aeromedical Research Lab, Ft Rucker, AL). The effect of cycloplegia on the visual contrast sensitivity function. Aviation, Space, and Environmental Medicine; 1987 Apr Vol 58(4) 339-342; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined the effect of cycloplegia in the contrast sensitivity function, a major tool for evaluating human spatial vision, among 12 officers (aged 22-27 yrs) in preparation for flight training. Contrast sensitivity functions were obtained under normal ambient conditions and in the presence of a glare source both under manifest and cycloplegic conditions. Cycloplegia produced a small reduction in contrast sensitivity under normal ambient conditions and a greater reduction under glare conditions. For both conditions, the cycloplegia effect was greater for the higher spatial frequency gratings than for the lower. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

35. Backman, H. A.; Smith, F. D. The design and prescription of multifocal lenses for civil pilots. Am-J-Optom-Physiol-Opt ; 1975 Sep; 52(9): 591-9; ISSN: 0093-7002. 3PJ. Note: EN. The aging (presbyopic) pilot has difficulty with near vision which can be a serious problem in the cockpit because of the complexity and uniqueness of his visual tasks. Numerous individual studies have been reported, but the aviation industry and vision care professionals do not have available to them a set of guidelines to permit the optimum fitting of spectacles for civil aviation pilots. In this study the cockpit vision environment was studied in ten contemporary aircraft. Twenty-five pilots of seven of these aircraft types participated in a spectacle design study. Experimental spectacles were designed for each pilot and evaluated for performance. Problems of pilot acceptance of reading aids, custom designing to the geometry of a given aircraft, balancing of the visual gains from complex designs versus difficulties in use and manufacture have been analyzed. Results of this study should be of value for human factors engineering, vision testing and accurate prescription for the presbyopic pilot. Author-abstract.

36. BAISDEN, A. G.; MONACO, W. A. Distribution of visual characteristics of Naval aviation personnel Final Report. Naval Aerospace Medical Research Lab., Pensacola, Fla; Aug. 1983 27P. Note: Report No.: AD-A135930; NAMRL-1301 Contract No.: NR PROJ. F58-524 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8410 Failure to meet required visual standards provides a significant source of rejections to naval aviation training and of disqualifications of designated aviators for Service Group I. It is important to assure these standards represent the visual abilities which are critical to mission performance, and to assure their proper application throughout the aviator's career. The purpose of this report is to assess the visual characteristics of stratified samples (active duty/retired) within the naval aviation community through the examination of health records, to determine the distribution of those characteristics, and to identify those characteristics that have been noted to change during the course of the naval aviator's career. The findings, based on an examination of 72 health records, show that with increasing age there are decreases in visual acuity and accommodative amplitude, increases in against-the-rule astigmatism and myopia, and stability in fusion-related variables and intraocular pressure. (GRA) Source of Abstract/Subfile: DTIC COSATI Code: 6E Clinical Medicine.

37. Baisden, A.G.; Monaco, W.A (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Distribution of Visual Characteristics of Naval Aviation Personnel. Final rept.. 065612000, 406061; 5 Aug 83. 27p 1983. Note: UNITED-STATES PC A03/MF A01. Failure to meet required visual standards provides a significant source of rejections to naval aviation training and of disqualifications of designated aviators for Service Group I. It is important to assure these standards represent the visual abilities which are critical to mission performance, and to assure their proper application throughout the aviator's career. The purpose of this report is to assess the visual characteristics of stratified samples (active duty/retired) within the naval aviation community through the examination of health records, to determine the distribution of those characteristics, and to identify those characteristics that have been noted to change during the course of the naval aviator's career. The findings, based on an examination of 72 health records, show that with increasing age there are decreases in visual acuity and accommodative amplitude, increases in against-the-rule astigmatism and myopia, and stability in fusion-related variables and intraocular pressure.

38. BAKER, G. L. /U.S. ARMY, WALTER REED GENERAL HOSPITAL, WASHINGTON, D.C.; REID, R. L. Army aviation and the lower extremity amputee (Lower extremity Army aviator amputee retention on flight status regarding service need, amputation and prosthetic fit, age, career, hours flown and time in military). AEROSPACE MEDICINE, VOL. 42, P. 667-669; Jun. 1971. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7116 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

39. BAKER, SUSAN P. Fatigue, pilot deviations and time of day Report, 15 Jul. 1988 - 30 Jun. 1989. Johns Hopkins Univ., Baltimore, MD. Injury Prevention Center; Jun. 1989 36P. Note: Report No.: NASA-CR-185369; NAS 1.26:185369 Contract No.: NCC2-555 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR9004 The relationships between pilot fatigue, pilot deviations, reported incidents, and time of day are examined. A sample of 200 Aviation Safety Reporting System (ASRS) reports were analyzed from 1985 and 200 reports from 1987, plus 100 reports from late 1987 and early 1988 that were selected because of possible association with fatigue. The FAA pilot deviation data and incident data were analyzed in relation to denominator data that summarized the hourly operations (landings and takeoffs of scheduled flights) at major U.S. airports. Using as numerators FAA data on pilot deviations and incidents reported to the FAA, the rates by time of day were calculated. Pilot age was also analyzed in relation to the time of day, phase of flight, and type of incident. (B.G.) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations.

40. BANDE, J. Study of the normal valves of the vital capacity and maximum/second expiring volume in the navigators in the Belgian Air Force (Vital capacity and expiration rates as function of size and age of navigation personnel and student pilots). Belgian Air Force, Brussels. CENTRE DE MEDECINE AERONAUTIQUE; Oct. 1967. Note: Language: French Country of Origin: France Document Type: REPORT; CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR6814 Source of Abstract/Subfile: NASA STIF. IN AGARD BEHAVIOURAL PROBL. IN AEROSPACE MED. OCT. 1967 /SEE N68-24859 14-04/.

41. Barnard, Charles N. The old man & the sky. (Modern Maturity's travel editor learns to fly). Modern

Maturity (MMATB), volume 33, issue n1, Feb-March, 1990, p62(10).

42. Bambridge, Tom. Why pilots are grounded. (retirement, dismissal of baseball coaches). Sporting News (SPONB), Sept 17, 1984, p10(1).

43. Barrett, Connor E. L. (Department of Community and Family Medicine, University of California, San Diego, California). Obesity, atherosclerosis, and coronary artery disease. Ann-Intern-Med . (Review); 1985 Dec; 103(6 (Pt 2)): 1010-9; ISSN: 0003-4819. 5A6. Note: EN. Although several risk factors for heart disease including high blood pressure, diabetes mellitus, and lipid and lipoprotein abnormalities are associated with overweight, overweight is not consistently associated with coronary heart disease risk. Some prospective studies of white men (life insurance cohorts, airline pilots, cancer study volunteers, and the Framingham population) have shown a positive linear relationship of weight to coronary heart disease. Other epidemiologic studies show a negative association, no association, a U-shaped relationship, or a threshold effect. The inconsistencies do not appear to be explained by differences in the definition or distribution of obesity, duration of follow-up, or risk factor distribution. Neither misclassification bias nor confounding by cigarette smoking or chronic disease appears to explain the inconsistencies. No known protective effect of obesity could explain these divergent findings. Inconsistent results with regard to the nature, strength, and linearity of the association between obesity and atherosclerosis do not support the hypothesis that obesity causes atherosclerosis, despite its biological plausibility. Author-abstract. 92 Refs.

44. Baumann, F.; Beck, A. [Work-related spinal damage in jet pilots due to extreme acceleration]. Z-Orthop ; 1975 Aug; 113(4): 645-8; ISSN: 0044-3220. XZA. Note: GE.

45. BECKMANN, G.; AMTHOR, M.; APEL, G. (Bundesministerium der Verteidigung, Flugmedizinisches, Institut, Fuerstenfeldbruck; Muenchen, Universitaet, Munich, West Germany). Comparative examinations concerning the fatty change in the liver cells of pilots. Wehrmedizinische Monatsschrift, vol. 19, Dec. 1975, p. 367-371. In German; Dec. 1975 11 Refs. Note: Language: German Country of Origin: Germany, Federal Republic of Document Type: JOURNAL ARTICLE Journal Announcement: IAA7605 In 21 autopsies performed on pilots killed in aircraft accidents the histological examinations of the inner organs revealed, among others, a fatty degeneration of the hepatic tissue of varying degrees. These observations gave rise to discuss the question of the cause of these findings. The hepatic tissue of selected examinees consisting of unexpected fatalities - suicides and traffic fatalities - was examined as to fatty degeneration. In order to obtain analogous possibilities for comparison, only male subjects aged between 18 and 40 were considered and emphasis was placed on the case history. The fatty change in the liver cells was classified according to criteria presently applied in the pathological anatomy. The examination of liver findings in fatally crashed pilots and the results of the examination series from the civilian sector considering case history and other pathomorphological findings obtained during post-mortem examinations are discussed. ((Author)). Documents available from AIAA Technical Library.

46. BEDELL, R. H. S.; MOHLER, S. R.; ROSS, A. /JOHNS HOPKINS U., SCHOOL O.FHYGIENE, AND PUBLIC HEALTH, BALTIMORE, MD./.; VEREGGE, E. J. /FEDERALAVIATION, ADMINISTRATION, OFFICE OF AVIATION MEDICINE, WASHINGTON, D.C./,. Aircraft accidents by older persons. (Accident record of general aviation pilots over age 60 /1965/). AEROSPACE MEDICINE, VOL. 40, P. 554-556; May 1969. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE; CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA6914 Source of Abstract/Subfile: AIAA/TIS. Presentation Note: /AEROSPACE MEDICAL ASSN., LOVELACE MEMORIAL SESSION ON AGING, WASHINGTON, D.C., APR. 10-13, 1967./.

47. Behar, I.; Bachman, W.G.; Egenmaier, W. (Performer: Army Aeromedical Research Lab., Fort Rucker, AL). Contrast Sensitivity in Army Aviator Candidates: Cycloplegia Effects and Population Norms. Final rept.. 026909000, 404578; Sep 88. 29p 1988. Note: UNITED-STATES PC A03/MF A01. This study was designed to provide information regarding three aspects of contrast sensitivity testing aviator candidates: 1. To determine whether contrast sensitivity functions (CSFs) obtained with the VISTECH Visual Contrast Test System (VCTs) are affected by ocular cycloplegia; 2. Since Army aviator candidates differ from the general population by being more highly selected with respect to visual and refractive status, more homogenous in age and in an age bracket when vision is optimal, a second purpose was to obtain a large normative sample of CSFs for establishing future contrast sensitivity standards for this population; and 3. To determine whether the VCTS provides useful CSFs under clinical screening conditions in a timely and simple manner. Contrast sensitivity thresholds were obtained at 5 spatial frequencies from 106 aviator candidates, prior to and following the administration of a cycloplegic. Contrast sensitivity

functions obtained under cycloplegia were reduced about 20 percent. The CSFs of the aviator candidates are much superior than the general population norms. The VCTS provides useful CSFs under military screening conditions. Keywords: Visual acuity; Vision; Aviation medicine. (KT).

48. BENNETT, G. (Civil Aviation Authority, London, England). Pilot incapacitation. (Pilot incapacitation as cause of aircraft accidents, noting age connected cardiovascular disease as leading cause for loss of pilot license). Flight International, vol. 102, Oct. 26, 1972, p. 569-571; Oct. 1972. Note: Language: English Document Type: JOURNAL ARTICLE Journal Announcement: IAA7301 Discussion of the incidence, causes, consequences, and prevention of pilot incapacitation. Though rather uncommon as a cause of accidents, incapacitation is nevertheless important because small reductions in accident risks are increasingly important as aircraft size increases. The leading cause of loss of license among UK professional pilots is shown to be cardiovascular disease. This is attributed to the relatively high number of pilots in the 40-55 age group when they are most susceptible to high blood pressure and coronary disease. Advances in pilot examination techniques are reviewed. (M.V.E.) Source of Abstract/Subfile: AIAA/TIS. Country of Origin: United Kingdom Country of Publication: United Kingdom Documents available from AIAA Technical Library.

49. BIESEMANS, I.; INGELS, M.; VANDENBOSCH, P. (Belgian Air Force, Brussels.). A survey of cervical pain in pilots of a Belgian F-16 Air Defence Wing. Belgian Air Force, Beauvechain; In AGARD, Neck Injury in Advanced Military Aircraft Environments 5 p (SEE N90-25459 19-52) Feb. 1990.

50. BIGGIO, M.; CASINI, G.; FARFALETTI-CASALI, F.; LANZA, F.; MATERA, R. PIERINI, G.; PONTI, C.; REITER, F. W.; RIEGER, M.; ROCCO, P. (EURATOM andComitato, Nazionale per l'Energia Nucleare, Centro Comune di Ricerche, Ispra, Italy). Engineering aspects of demonstration fusion power reactors. In: Intersociety Energy Conversion Engineering Conference, 14th, Boston, Mass., August 5-10, 1979, Proceedings. Volume 2. (A79-51726 23-44) Washington, D.C., American Chemical Society. 1979, p. 1565-1571; 1979.

51. BILLINGS, C. E. /OHIO STATE U., COLUMBUS, OHIO/.; KULAK, L. L.; WICK, R. L., JR. Epidemiological study of in-flight airline pilot incapacitation (Epidemiological statistics for age specific incidence rate of serious in-flight pilot failure, considering fatal and nonfatal causes). AEROSPACE MEDICINE, VOL. 42, P. 670-672; Jun. 1971 10 Refs. Note: RESEARCH SUPPORTED BY THE AIRLINE PILOTS' ASSN. INTERNATIONAL. Language: English Country of Origin: Other Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7116 Source of Abstract/Subfile: AIAA/TIS. Publication.

52. Bishop, Katherine. Pan Am to pay retired pilots in age bias suit; other work in cockpit had not been allowed. (pilots forced to retire). New York Times (NYTIA), volume 137, Feb 4, 1988, Thu edition, p9(N) pA18(L), col 6.

53. BITER, W. J.; SZEDON, J. R.; TAKEI, W. J.; SCHROEDER, D. K. Plasma-induced deposition of InP films for solar cell applications Final Technical Report, 16 Apr. 1979 - 15 Apr. 1980. Westinghouse Research and Development Center, Pittsburgh, Pa. Device and Materials Research Dept; Oct. 1981 52P. Note: Report No.: DE82-003723; DOE/ET-23003/2 Contract No.: DE-AC02-79ET-23003.

54. BLANC, P.; CHOUARD, C.; FONTELLE, P. /HOPITAL LARIBOISIERE, PARIS, FRANCE/.; GIBERT, J.; PIALOUX, P. Study on vestibular habituation among pilots and flying staff in terms of their training and seniority (Vestibular habituation among pilots and flying staff from training and seniority standpoint); 1970 2P. Note: SYMPOSIUM SPONSORED BY THE UNIVERSITAET BASEL. /ADVANCES IN OTO-RHINO-LARYNGOLOGY. VOLUME 17/, DATE- 1970. IN-INTERNATIONAL OTONEUROLOGICAL SYMPOSIUM, BASEL, SWITZERLAND, 1969, PROCEEDINGS. P. 167, 168. /A70-30908 14-04/ Language: English Country of Origin: France Document Type: CONFERENCE PROCEEDINGS Documents available from AIAA Technical Library Journal Announcement: IAA7014 Source of Abstract/Subfile: AIAA/TIS. Publication Presentation.

55. Boddie, Ellen. Great Scott! Note: Fifty Plus. Dec 1987. Vol. 27, No. 12. p. 30-31+. (6p.). Profiles 53-year-old "Today Show" weatherman and personality Willard Scott. Scott believes that caring for our senior citizens is the nation's biggest challenge and hopes to spend more time in his later years lobbying Congress and heightening public awareness of this issue. Among other things, he believes that the government is going to have to develop some sort of a long term care program. Scott's mother developed Alzheimer's disease in the early 70s and he does whatever he can on the air to make others aware of this problem. He feels that retiring at age 55 makes no sense and has no plans to retire. Scott stresses the

importance of interactions between young people and senior citizens and says he has a wonderful relationship with most of his younger coworkers. He enjoys his high salary, but works hard for it. In addition to his job on the "Today Show," Scott also keeps other irons in the fire, including guest appearances on "Valerie's Family" and several talk show pilots--his real dream. He also enjoys clowning (Scott was the original Ronald McDonald and also posed as Bozo the Clown) and wearing costumes. He is currently changing his eating and drinking habits in an attempt to lose weight. (LS).

56. Boeing settles suit with pilots; raises maximum flying age. PP. Newswire, April 18, 1990, 0418SE013.

57. Boer, L.C (Performer: Institute for Perception RVO-TNO, Soesterberg (Netherlands). Funder: National Aeronautics and Space Administration, Washington, DC.). Attention Tasks and Their Relation to Aging and Flight Experience. 013273000, IK311704; Feb 86. 28p 1986. Note: NETHERLANDS PC A03/MF A01 Contract: A83KLU078. The Dichotic Listening Task (DLT) of Gopher and Kahneman (1971) was studied in a group of 143 aviators, aged between 17 and 70 yr. Other tasks of the study were the Continuous Memory Task (CMT) and two choice-RT tasks with visual stimuli. An attention questionnaire was also administered. Aging has negative effects on all tasks, especially on the DLT. With age factored out, no substantial correlations between DLT and other tasks are found. The only exception is a moderate correlation with choice RT. Differences between subgroups of aviators (42 airline pilots and 50 private pilots) were studied. The assumption was that airline pilots had higher levels of aviator skill. The DLT, CMT, and one of the RT tasks correlate with aviator subgroup. A second study with 16 flight cadets finds significant correlations between DLT and RT tasks on the one hand, and pilot gradings obtained later, It is concluded that DLT and RT tasks offer prospects for improving the selection of aviators.

58. Boone, J.O (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Functional Aging in Pilots: An Examination of a Mathematical Model Based on Medical Data on General Aviation Pilots.. 009020006, 264320; Jun 82. 10p 1982. Note: UNITED-STATES PC A02/MF A01. The purpose of this study was to apply mathematical procedures to the Federal Aviation Administration (FAA) pilot medical data to examine the feasibility of devising a linear numbering system such that (1) the cumulative probability distribution functions (CPDF) for persons who are not diagnosed as having an acute pathology are lower on the scale than those diagnosed as having an acute pathology, and (2) the CPDF's for both groups overlap minimally. The analyses presented some pertinent results. (1) age is not as accurate in discriminating between the sudden incapacitating pathology and nonpathology groups as the linear discriminant composite. (2) As age increases from post-50, to post-55, to post-60, classification using the discriminant index increases monotonically. (3) Better measures that predict these pathologies with more accuracy would further separate the CPDF's of the pathology and nonpathology groups. Based of these results a possible strategy for future study on pilot certification is discussed.

59. Boone, James O. (FAA Civil Aeromedical Inst, Oklahoma City, OK). Functional aging in pilots: An examination of a mathematical model based on medical data on general aviation pilots. FAA Office of Aviation Medicine Reports. 1982 Jun FAA-AM-82-18 1-8. Note: English (EN). Examined the feasibility of devising a linear numbering system such that (a) the cumulative probability distribution functions (CPDF) for persons who are not diagnosed as having an acute pathology are lower on the scale than those diagnosed as having an acute pathology, and (b) the CPDF's for both groups overlap minimally. The Federal Aviation Administration medical records on pilots were used in a series of discriminant function analyses for 2 groups, one of which contained records with no pathology listed and the other contained those with a cardiovascular, cerebrovascular, or diabetes pathology listed. Analyses indicated that (a) age was not as accurate in discriminating between the sudden incapacitating pathology and nonpathology groups as the linear discriminant composite; (b) as age increased (from post-50, to post-55, to post-60 yrs), the accuracy of classification using the discriminant index increased monotonically; (c) better measures that predict these pathologies with more accuracy would further separate the CPDF's of the pathology and nonpathology groups. (4 ref) (PsycINFO Database Copyright 1983 American Psychological Assn, all rights reserved).

60. BOOZE, C. F., JR. (FAA, Civil Aeromedical Institute, Oklahoma City, OK)SIMCOX, L. S. (Oklahoma, University, Oklahoma City). Blood pressure levels of active pilots compared with those of air traffic controllers. Aviation, Space and Environmental Medicine (ISSN 0095-6562), vol. 56, Nov. 1985, p. 1092-1096; Nov. 1985 12 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8603 Currently some 15,212 active airmen are certified to fly with a diagnosis of hypertension. Federal Aviation Administration blood pressure standards for certification of airmen are considered to be quite liberal. A systematic sample of pre-strike air traffic controllers was extracted from automated medical files maintained by the Aeromedical

Certification Branch of the Civil Aeromedical Institute for comparison with airman data. Distributions of blood pressure by age were compared by using conventional non-parametric techniques for 10-year age intervals. Data were also compared with general population findings. Prevalence of hypertension is greater in the general United States population than found with any of the groups reported here. Prevalence of borderline and definite hypertension is seen to increase with age for all groups studied. Prevalence of any degree of hypertension is lower for airline pilots than either the all-airmen group or the air traffic controller group. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

61. BOOZE, C. F. An epidemiologic investigation of occupation, age and exposure in general aviation accidents. Civil Aeromedical Inst., Oklahoma City, Okla; Apr. 1977 22P. Note: Report No.: AD-A040978; FAA-AM-77-10 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A02/MF A01 Journal Announcement: STAR7720 A census of general aviation accident-involved airmen records was studied. Population comparison data for occupation, age, exposure, and other epidemiologic profile information were obtained from a sample of currently certified airmen medical records. (Author) COSATI Code: 1B Aeronautics.

62. Boone, C. F.; JrSimcox, L. S. (Civil Aeromedical Institute, Federal Aviation Administration, Oklahoma City, Oklahoma 73125). Blood pressure levels of active pilots compared with those of air traffic controllers. Aviat-Space-Environ-Med ; 1985 Nov; 56(11): 1092-6; ISSN: 0095-6562. 9JA. Note: EN. Currently some 15,212 active airmen are certified to fly with a diagnosis of hypertension. Federal Aviation Administrative blood pressure standards for certification of airmen are considered to be quite liberal. A systematic sample of pre-strike air traffic controllers was extracted from automated medical files maintained by the Aeromedical Certification Branch of the Civil Aeromedical Institute for comparison with airman data. Distributions of blood pressure by age were compared by using conventional non-parametric techniques for 10-year age intervals. Data were also compared with general population findings. Prevalence of hypertension is greater in the general United States population than found with any of the groups reported here. Prevalence of borderline and definite hypertension is seen to increase with age for all groups studied. Prevalence of any degree of hypertension is lower for airline pilots than either the all-airmen group or the air traffic controller group. Author-abstract.

63. Boone, C. F.; JrStaggs, C. M. (Civil Aeromedical Institute, Federal Aviation Administration, Oklahoma City, Oklahoma 73125). A comparison of postmortem coronary atherosclerosis findings in general aviation pilot fatalities. Aviat-Space-Environ-Med ; 1987 Apr; 58(4): 297-300; ISSN: 0095-6562. 9JA. Note: EN. The autopsy reports of 710 pilots involved in fatal general aviation accidents were received by the FAA for the years 1980-82; they were reviewed to appraise the age-specific prevalence of coronary atherosclerosis among the autopsied group and to compare findings with those of an earlier study. Of the autopsies on pilots killed in aircraft accidents, 69% indicated some degree of coronary atherosclerosis, ranging from minimal to severe. This finding is higher than for a similar group of pilots studied for the years 1975-77. However, only about 2.5% of the 1980-82 study group were found to have severe coronary atherosclerosis, compared with 5% in the previous study. Prevalence of severe coronary atherosclerosis increased with age from 5.8 per 1,000 for ages less than 40 years to 73.9 for age 50 years and above, also reflecting lower age-specific rates for severe coronary atherosclerosis than were found in the previous study. Author-abstract.

64. BOOZE, C. F.; PIDKOWICZ, J. K.; DAVIS, A. W.; BOLDING, F. A. (FAA, CivilAeromedical, Institute, Oklahoma City, Okla.). Postmortem coronary atherosclerosis findings in general aviation accident pilot fatalities - 1975-77. Aviation, Space, and Environmental Medicine, vol. 52, Jan. 1981, p. 24-27; Jan. 1981 7 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8108 The autopsies of 764 pilots involved in fatal general aviation accidents during the years 1976-77 were reviewed to appraise the age specific prevalence of coronary atherosclerosis among the autopsied group. Of the pilots killed in aircraft accidents and autopsied during 1975-77, 51% were found to have some degree of coronary atherosclerosis ranging from minimal to severe. However, only about 5% of the autopsied group were categorized as having severe coronary atherosclerosis. The rate per 1,000 of severe coronary atherosclerosis increased with age from 14.5 for ages less than 30, to 89.9 for ages 50 years and above; the rate nearly tripled from ages 30-39 to 40-49 (22.1 to 63.6). The prevalence of coronary atherosclerosis among this group of autopsied airmen is less than would have been expected based on the results of other recent studies. ((Author)). Documents available from AIAA Technical Library.

65. Boone, C.F.; Simcon, L.S (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Blood Pressure Levels of Active Pilots Compared with Those of Air Traffic Controllers.. 009020006, 264320; Apr 84. 14p 1984. Note: UNITED-STATES PC A02/MF A01. Currently some 15,212 active airmen are certified to fly with a diagnosis of hypertension. Federal Aviation Administration blood pressure standards for certification for considered to be quite liberal; however, recent FAA policy further liberalized medications a ges allowed in certification of airmen. Since limited information is available concerning the recor blood pressures of airmen, a systematic sample of active pilots was extracted from automated medical files maintained by the Aeromedical Certification Branch of the Civil Aeromedical Institute for descriptive purposes as well as to compare with a sample of air traffic controllers, given the continuing interest in the relationship of stress of air traffic control work. This is a pre-strike ATCS sample. Distributions of blood pressure by age were compared by using conventional nonparametric techniques for 10-year age intervals. Data were also compared with general population findings. Prevalence of hypertension is greater in the general United States population than found with any of these groups reported. Prevalence of borderline and definite hypertension is seen to increase with age for all groups studied. Prevalence of any degree of hypertension is lower for airline pilots than the all-airmen group or the air traffic controller group. Of the three airmen groups, prevalence of hypertension is highest for the air traffic controllers, but the influence of more liberal waiver and retention criteria for air traffic controllers is an important reason for the excess.

66. Boone, C.F.; Staggs, C.M (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Comparison of Postmortem Coronary Atherosclerosis Findings in General Aviation Pilot Fatalities.. 009020006, 264320; Aug 85. 12p 1985. Note: UNITED-STATES PC A02/MF A01. Autopsy reports of 710 pilots involved in fatal general aviation accidents and received by the FAA for the years 1980-82 were reviewed to appraise the age-specific prevalence of coronary atherosclerosis among the autopsied group and compare findings with those of an earlier study of a similar pilot group. Sixty-nine percent of the autopsies on pilots killed in aircraft accidents indicated some degree of coronary atherosclerosis ranging from minimal to severe. This finding is higher than for a similar group of pilots studied during the years 1975-77. However, only about 2.5 percent of the 1980-82 study group were found to have severe coronary atherosclerosis, compared with 5 percent in the previous study. Prevalence of severe coronary atherosclerosis increased with age from 5.8 per 1,000 for ages less than 40 years to 73.9 for ages 50 years and above, also reflecting lower age-specific rates for severe coronary atherosclerosis than were found in the previous study. Recent emphasis on autopsy format and attention to sudden incapacitation is felt to have resulted in more accurate reporting for recent years. Prevalence of severe coronary atherosclerosis among the recently studied pilot group was less than that observed in an earlier study of a similar group.

67. BOOZE, C. F., JR.; STAGGS, C. M. (FAA, Civil Aeromedical Institute, Oklahoma, City, OK). A comparison of postmortem coronary atherosclerosis findings in general aviation pilot fatalities. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 58, April 1987, p. 297-300; Apr. 1987. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8716 The autopsy reports of 710 pilots involved in fatal general aviation accidents for the years 1980-1982 were reviewed to appraise the age-specific prevalence of coronary atherosclerosis. Of the autopsies on pilots killed in aircraft accidents, 69 percent indicated some degree of coronary atherosclerosis, ranging from minimal to severe. This finding is higher than for a similar group of pilots studied for the years 1975-1977. However, only about 2.5 percent of the 1980-1982 study group were found to have severe coronary atherosclerosis, compared with 5 percent in the previous study. Prevalence of severe coronary atherosclerosis increased with age from 5.8 per 1,000 for ages less than 40 years to 73.9 for age 50 years and above, also reflecting lower age-specific rates for severe coronary atherosclerosis than were found in the previous study. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

68. Boustany, Nora. Retired British pilot feared kidnapped by Beirut gunmen. (Jack Mann). The Washington Post, volume 112, May 14, 1989, Sun edition, pA32, col 2.

69. Boxcar pool ready for pilot test. (managed by Fleet Management Inc.). Railway Age (RAAGA), volume 188, July, 1987, p28(1).

70. BRAUNE, R. J.; WICKENS, C. D. (Illinois, University, Champaign, IL). The functional age profile - An objective decision criterion for the assessment of pilot performance capacities and capabilities. IN: Symposium on Aviation Psychology, 2nd, Columbus, OH, April 25-28, 1983, Proceedings (A85-21551 08-53). Columbus, OH, Ohio State University, 1984, p. 437-444; 1984 7 Refs. Note: Contract No.:

N00204-82-C-0113 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8508 Source of Abstract/Subfile: AIAA/TIS.

71. BRAUNE, R.; WICKENS, C. D. (Illinois, University, Urbana). The functional age profile - An objective decision criterion for the assessment of pilot performance capacities and capabilities. Human Factors (ISSN 0018-7208), vol. 27, Dec. 1985, p. 681-693; Dec. 1985 23 Refs. Note: Contract No.: N00204-82-C-0113 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8613 The initial development of a computer-based information-processing performance battery with aviation-relevant task structures is reported. It is shown that the currently existing prototype is sensitive to individual differences within chronological age groups as well as to age-related changes across different age groups. The utilization of such a test battery for the longitudinal assessment of aviator performance capabilities is discussed. (Author) Source of Abstract/Subfile: AIAA/TIS.

72. Braune, R.; Wickens, C.D (Performer: Illinois Univ. at Urbana-Champaign. Engineering-Psychology Research Lab.). Individual Differences and Age Related Performance Assessment in Naval Aviators. Part 1. Battery Development and Assessment. Final technical rept. 1 Aug 82 1 Nov 83.. 034597127, 410871; Sep 82. 68p 1982. Note: UNITED-STATES PC A04/MF A01 Contract: N0020482C0113. This report describes the construction of a test battery to measure the functional age profile of Naval aviators as this impacts on their flight proficiency. In the first phase of this study, reported here a battery of 21 task configurations is developed. These consist of a series of Sternberg memory search tasks measuring processing speed, a running memory task, tracking tasks performed alone and with the memory tasks, a dichotic listening task, and a computerized version of three tasks of spatial ability. The battery was administered to 15 subjects in each of the four age decades between 20 and 60. Factor analyses and ANOVAs performed on the data revealed three main clusters of effects: 1) age-related reductions in processing speed appeared to emerge beyond age 40. This slowing was general, not reflecting specific processes more than others. 2) Age-related changes in spatial and perceptual-motor ability appeared to emerge during the first decade. 3) The present data suggested little evidence for any age-related reduction in time-sharing or dual task skill that was not evident in the single task components. Part 2 of this report describes the validation of the battery accomplished by predicting performance on a Gat 2 simulated flight task from battery components.

73. BRAUNE, R.; WICKENS, C. D. (Illinois, University, Urbana, IL). Individual differences and age-related changes in time-sharing ability of aviators. IN: Human Factors Society, Annual Meeting, 27th, Norfolk, VA, October 10-14, 1983, Proceedings. Volume 1 (A84-19276 06-54). Santa Monica, CA, Human Factors Society, 1983, p. 117-121; 1983 13 Refs. Note: Contract No.: N00204-82-C-0113 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8406 Performance in single task and dual task configurations was examined across four different age groups to determine the presence of an attention deficit hypothesis with increasing chronological age. Although a general slowing of performance could be shown no interaction between age and dual task loadings could be observed which is interpreted as negative evidence for the attention deficit hypothesis. A separate analysis revealed individual differences in time-sharing ability within age groups to be a significant factor in dual task performance. (Author) Source of Abstract/Subfile: AIAA/TIS.

74. Braune, R.; Wickens, C.D (Performer: Illinois Univ. at Urbana-Champaign. Dept. of Psychology). Initial Validation of a Functional Age Profile for Aviators. 034597073, 400159; Apr 84. 5p 1984. Note: This article is from 'Proceedings of the Symposium: Psychology in the Department of Defense (9th) Held at Colorado Springs, Colorado on 18-20 April 1984', AD-A141 043, p178-182. UNITED-STATES PC A02/MF A01. The initial validation of the concept of the 'Functional Age Profile' for aviators is reported. This concept is based on objective performance parameters assessed by a computer-based information processing test battery. Preliminary results suggest that the 'Functional Age Profile' may be an indicator of attentional resource capacity in flight simulator performance. (Author).

75. Braune, Rolf; Wickens, Christopher D. (U Illinois-Willard Airport Inst of Aviation, Aviation Research Lab, Savoy). The functional age profile: An objective decision criterion for the assessment of pilot performance capacities and capabilities. Human Factors; 1985 Dec Vol 27(6) 681-693; 1985; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Developed a computer-based information-processing performance battery withaviation-relevant task structures to assess performance capability within and across age groups. 60 males (aged 20-60 yrs) completed the test battery; results show a decline in some

spatial abilities, dichotic listening, and perceptual-motor coordination across all age groups; a decline in speed beyond age 40 yrs; and no apparent decline in time-sharing or hidden-figures task abilities. (23 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

76. Brechner, Bert. New prescription; changeover in the office that oversees pilot medicals. (retirement of Homer Rathgeb from Federal Aviation Agency) (column). Flying (FLYGA), volume 1, Dec, 1984, p18(1).

77. Brinchmann, Hansen, Olaf; Myhre, Kjell (Ullevaal University Hosp, Dept of Ophthalmology, Oslo, Norway). The effect of hypoxia upon macular recovery time in normal humans. Aviation, Space, and Environmental Medicine; 1989 Dec Vol 60(12) 1183-1186; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Measured macular recovery time (time needed to restore normal visual acuityafter bright light illumination of the macula) in 30 healthy, normal-vision, male pilot trainees (aged 18-23 yrs), using a nyctometer. Ss were exposed to simulated altitudes between sea level and 18,000 feet. Recovery of macular cone function was sensitive to reduced partial pressure of oxygen equivalent to altitudes at and below 15,000 feet, which suggests that no visual decrements should be expected during normal air operation. A significant impairment of macular recovery existed within 2 min of adaptation at 18,000 feet, establishing a critical level of hypoxia in which complete macular recovery is not achieved. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

78. British bloc integrates operations. Aviation Week & Space Technology, Dec 14, 1959, p41.

79. Brody, Robert. Grounded - at age 60. (commercial pilot John Berryhill). 50 Plus (FIFPDG), volume 26, June, 1986, p52(3).

80. Brown, J. E.; Thompson, R. N.; Folk, E. D. Certain non-auditory physiological responses to noises. Am-Ind-Hyg-Assoc-J ; 1975 Apr; 36(4): 285-91; ISSN: 0002-8894. 3CI. Note: EN. The non-auditory physiological effects of extended exposure of pilots to high intensity noise were investigated. The health records of 22 professional pilots (FAA) were examined for recorded measurements of heart rate, systolic and diastolic blood pressure, serum cholesterol, and glucose. These data were compared to records of the same measurements from 29 non-flying FAA personnel of the same age, social and economic status as the pilots. The yearly means for each parameter were analyzed for changes with time, within the same population, and for differences between the two study groups. Audiometric histories were tabulated and compared, and noise levels inside aircraft were determined. Although it was demonstrated that FAA pilots were exposed to high occupational noise levels there was no indication that their exposure produced any significant non-auditory physiological response. Author-abstract.

81. Brown, W.R.; Dohme. J.A.; Wick, D.C (Performer: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, VA.). Evaluation of Minority and Female Performance in Army Rotary Wing Aviation Training. Volume I. Executive Summary. Final rept. Jul 74 Jul 79.. 054823000, 408010; May 80. 18p 1980. Note: UNITED-STATES PC A02/MF A01. This report contains the Executive Summary of the evaluation of minority (Black, Hispanic, Asian, American Indian) and Female performance in the Army's Initial Entry Rotary Wing flight training program. Each minority group was compared to a matched sample of majority students. The groups were matched on FAST score, GT score, educational level, age, rank, and source of entry. The performance of the two groups (each minority and its matched control group) was compared on the following criteria: Warrant Officer Candidate Military Development Course grades; Academic grades by phase of training; Flight performance grades by phase of training; Overall grade; Attrition experience during the Warrant Officer Development Course and; Attrition experience during the flight portion of training. (Author).

82. Bruce, R. A.; Fisher, L. D. Exercise-enhanced risk factors for coronary heart disease vs. age as criteria for mandatory retirement of healthy pilots. Aviat-Space-Environ-Med ; 1987 Aug; 58(8): 792-8; ISSN: 0095-6562. 9JA. Note: EN. Exercise-enhanced risk assessment for subsequent morbidity and mortality due to coronary heart disease is examined in 4105 asymptomatic healthy men of 15 to 80 years of age (mean of 44.7 years) observed in Seattle community practice. Annual incidence of primary coronary events averages 0.22% in 1792 men (43.6%) without conventional risk factors, and 0.42% in the majority of men (55.3%) with risk factor(s), but less than two abnormal responses to maximal exercise. Among 44 men (1.1%) at high risk defined by any conventional risk factor(s) and two or more abnormal responses to maximal exercise, annual incidence of primary coronary events averages 5.2% (p less than 0.001). The proportion of men of 60-64 years at low risk with a 98% 3-year survival rate is 16 times that of men of 55-59 years at high risk with a 78% survival rate in this asymptomatic population. Of 1718 men under 60

years of age and without conventional risk factors, 117 or 6.8% developed ischemic ST depression with maximal exercise testing, but none reported any coronary event during 5.6 years of follow-up surveillance. Author-abstract.

83. BRUCE, ROBERT A.; FISHER, LLOYD D. (Washington, University, Seattle). Exercise-enhanced risk factors for coronary heart disease vs. age as criteria for mandatory retirement of healthy pilots. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 58, Aug. 1987, p. 792-798. Research supported by the Health Resources Administration, University of Washington, and NIH; Aug. 1987 12 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8722 Exercise-enhanced risk assessment for subsequent morbidity and mortality due to coronary heart disease is examined in 4105 asymptomatic healthy men of 15 to 80 years of age (mean of 44.7 years) observed in Seattle community practice. Annual incidence of primary coronary events averages 0.22 percent in 1792 men (43.6 percent) without conventional risk factors, and 0.42 percent in the majority of men (55.3 percent) with risk factor(s), but less than two abnormal responses to maximal exercise. Among 44 men (1.1 percent) at high risk defined by any conventional risk factor(s) and two or more abnormal responses to maximal exercise, annual incidence of primary coronary events averages 5.2 percent (p less than 0.001). The proportion of men of 60-64 years at low risk with a 98 percent 3-year survival rate is 16 times that of men of 55-59 years at high risk with a 78 percent survival rate in this asymptomatic population. Of 1718 men under 60 years of age and without conventional risk factors, 117 or 6.8 percent developed ischemic ST depression with maximal exercise testing, but none reported any coronary event during 5.6 years of follow-up surveillance. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

84. Bugrov, S. A.; Kiselev, R. K.; Beleda, R. V.; Plakhatniuk, V. I.; Artamonov, N. N. [Blood lipids and the incidence of hyperlipidemia in pilots]. Kosm-Biol-Aviakosm-Med ; 1986 May-Jun; 20(3): 39-43; ISSN: 0321-5040. KXC. Note: RS. The content of cholesterol and triglycerides was measured in healthy pilots. Over 1500 subjects were examined and age-related norms of the parameter were established. They were compared with published data. Physiological variations of cholesterol and triglycerides were related to age, height and body weight. The authors developed a method for diagnosing hyperlipidemia based on the agreement or disagreement between experimentally measured and theoretically calculated values. The authors maintain that hyperlipidemia can be diagnosed if the difference between the real and expected values is over 10%. The authors calculated the incidence of hyperlipidemia in all subjects examined (over 2100) and found that it was high: even in pilots of the age group 20-29 years hyperlipidemia occurred in 30% of subjects. Author-abstract.

85. Bugrov, S.A.; Kiselev, R.K.; Beleda, R.V.; Plakhatnyuk, V.I.; Artamonov, N.N (Performer: Joint Publications Research Service, Arlington, VA. Funder: National Aeronautics and Space Administration, Washington, DC.). Blood Lipids and Incidence of Lipemia in Flight Personnel. 056306000, J1957: 94; 15 Aug 86. 6p 1986. Note: In Its USSR Report: Space Biology and Aerospace Medicine, Vol. 20, No. 3, May - Jun. 1986 (JPRS-USB-86-005) p 52-57. Trans. into English from Kosmicheskaya Biologiya I Aviakosmicheskaya Meditsina (Moscow, USSR), V. 20, No. 3, May Jun. 1986 p 39-43. USSR (Order as N87-20731 PC A08/MF A01). The content of cholesterol and triglycerides was measured in healthy pilots. Over 1500 subjects were examined and age-related norms of the parameter were established. They were compared with published data. Physiological variations of cholesterol and triglycerides were related to age, height and body weight. The authors developed a method for diagnosing hyperlipidemia based on the agreement or disagreement between experimentally measured and theoretically calculated values. The authors maintain that hyperlipidemia can be diagnosed if the difference between the real and expected values is over 10%. The authors calculated the incidence of hyperlipidemia in all subjects examined (over 2100) and found that it was high: even in pilots of the age group 20 to 29 years hyperlipidemia occurred in 30% of the subjects.

86. Bulpitt, C. J. (London School of Hygiene and Tropical Medicine). Risk indicators for death in patients treated for hypertension; emphasis on consequences for airline pilots. Eur-Heart-J; 1984 Mar; 5 Suppl A. P 33-5(Review); ISSN: 0195-668X. EM8. Note: EN. The treatment of hypertensive aircrew should also include changes in dietary habits, and advice against smoking. Relaxation exercises and changes in life style may prove of benefit. Increasing age, hypertension and smoking multiply to give a risk of cardiovascular event which merits careful assessment. Author-abstract. 9 Refs.

87. Burr, R.G.; Heiberg, A. (Performer: Naval Health Research Center, San Diego, CA). Health Profile of U.S. Navy Pilots of Electronically Modified Aircraft. Interim rept.. 055017000, 391642; Sep 85. 13p 1985. Note: UNITED-STATES PC A02/MF A01. This study compared hospitalization rates of pilots

who primarily flew electronically modified aircraft (n = 1,063) with an age-matched group of pilots who flew other types of aircraft (n = 2,126). Of the two groups, control pilots at ages 21-26 had a significantly higher mortality rate for aviation-related injuries and a higher hospitalization rate for the diagnostic category of accidents, poisonings, and violence. Their hospitalization rates also were significantly higher than pilots of electronically modified aircraft for mental disorders at ages 27-32 and supplementary classifications at ages 39-44. Significant age-specific increases in rates were observed for cardiovascular disease and alcoholism in the control group whereas no significant increases were noted for pilots of electronic models. Pilots in the latter group had low rates for conditions postulated as related to radiation exposure. Such results indicated that pilots of electronically modified aircraft were not at increased risk for illness or injury because of the aircraft models they primarily flew. (Author).

88. BURR, RALPH G.; HOIBERG, ANNE (U.S. Navy, Naval Health Research Center, San, Diego, CA). Health profile of U.S. Navy pilots of electronically modified aircraft. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 59, Feb. 1988, p. 168-171. Navy-supported research; Feb. 1988 20 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8809 This study compared hospitalization rates of pilots who primarily flew electronically modified aircraft (n = 1063) with an age-matched group of pilots who flew other types of aircraft (n = 2126). Of the two groups, control pilots at ages 21-26 had a significantly higher mortality rate for aviation-related injuries and a higher hospitalization rate for the diagnostic category of accidents, poisonings, and violence. Their hospitalization rates also were significantly higher than pilots of electronically modified aircraft for mental disorders at ages 27-32 and supplementary classifications at ages 39-44. Significant age-specific increases in rates were observed for cardiovascular disease and alcoholism in the control group, whereas no significant increases were noted for pilots of electronic models. Pilots in the latter group had low rates for conditions postulated as related to radiation exposure. Such results indicated that pilots of electronically modified aircraft were not at increased risk for illness or injury because of the aircraft models they primarily flew. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

89. Burr, Ralph G.; Hoiberg, Anne (US Naval Health Research Ctr, Environmental Medicine Dept, San Diego, CA). Health profile of U.S. Navy pilots of electronically modified aircraft. US Naval Health Research Center Report. 1986 Sep Rpt No 85-46 10 p. Note: English (EN). Compared the health profiles of 1,063 pilots of electronically modified aircraft (EMA) with those of 2,126 age-matched controls. Hospitalization rates were significantly higher among controls than EMA Ss in the following diagnostic categories: (1) accidents, poisonings, and violence at ages 21-26 yrs; (2) mental disorders at ages 27-32 yrs; and (3) supplementary classifications at ages 39-44 yrs. Selection and retention standards for EMA pilots were effective in ensuring that healthy pilots were assigned to EMA. Findings also showed that piloting EMA did not pose a unique health risk. (PsycINFO Database Copyright 1988 American Psychological Assn, all rights reserved).

90. Butler, Robert N. When pilots turn 60: experience vs. age. The Washington Post, volume 112, July 25, 1989, Tue edition, pWH6, col 3.

91. Buzzelli, Andrew R.; Trowell, Harris, Irene; Protsko, Richard (Pennsylvania Coll of Optometry Eye Inst, Philadelphia, US). The measurement of visual efficiency standards for pilots in the United States Air Force. Annual Meeting of the American Academy of Optometry (1987, Denver, Colorado). Military Medicine; 1989 Jul Vol 154(7) 345-347; 1989; CODEN: MMEDA9; ISSN: 00264075. Note: Human. Evaluated the performance of 7 pilots (aged 36-46 yrs) and 7 matched nonpilots (aged 26-48 yrs) on a test of visual change (i.e., vergence facility) by comparing Ss' ability to make rapid fusional movements in a base-in and base-out direction. Pilots' ability to initiate and sustain fusional vergence movements was similar to that of nonpilots. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

92. Buzzelli, Andrew R.; Trowell, Harris Irene; Protsko, Richard (Pennsylvania Coll of Optometry Eye Inst, Philadelphia, US). The measurement of visual efficiency standards for pilots in the United States Air Force. Annual Meeting of the American Academy of Optometry (1987, Denver, Colorado). Military Medicine. 1989 Jul Vol 154(7) 345-347; CODEN: MMEDA9; ISSN: 0026-4075. Note: English (EN). Evaluated the performance of 7 pilots (aged 36-46 yrs) and 7 matched nonpilots (aged 26-48 yrs) on a test of visual change (i.e., vergence facility) by comparing Ss' ability to make rapid fusional movements in a base-in and base-out direction. Pilots' ability to initiate and sustain fusional vergence movements was similar to that of nonpilots. (PsycINFO Database Copyright 1990 American Psychological Assn, all rights reserved).

93. Cabb, B. B.; Lay, C. D.; Bourdet, N. M. The relationship between chronological age, and aptitude test measures of advanced-level air traffic control trainees. Note: Federal Aviation Administration, Office of Aviation Medicine, Civil Aeromedical Institute, Oklahoma City, OK. Jul 1971. (37p.). NOTES: Performed under Tasks AM-C-60-PSY-5, AM-A-70-PSY-23, and AM-B-71-PSY-23. AVAILABILITY: NTIS, 5285 Port Royal Rd, Springfield, VA 22161; SCAN Microfiche No. CCF 001218.

94. Camp, T. F. Jr; Connolly, J. M. Colorectal polypoid lesions. Note: Maj. Camp, Dept. of the Air Force, USAF School of Aerospace Medicine (AFSC), Brooks Air Force Base, TX. Archives of Surgery. Oct 1966. Vol. 93. p. 625-630. (6p.). NOTES: Reprint. AVAILABILITY: SCAN Microfiche No. CCF 001448. Recommendations based on findings of polypoid lesions and a literature review are presented. Data were derived from medical examinations of test pilots and astronaut candidates. (A total of 703 patients were examined, and slightly over 10 percent of them had polypoid lesions.) Polypoid lesions can be classified into eight groupings. Pathological classifications is straightforward until the carcinoma groups is considered. Clear definitions of cancer are confounded by numerous factors. Sigmoidoscopic examinations are recommended to assess cancer potential. Routine sigmoidoscopic examinations should be provided to all patients over the age of 40. Polypoid tissues should be totally removed and biopsied. Anorectal symptoms are unrelated to the presence or absence of polypoid lesions. Follow up examinations are important after lesions are removed. (JRA).

95. CANAVERIS, G. (Instituto Nacional de Medicina Aeronautica y. Espacial, Buenos, Aires, Argentina). Intraventricular conduction disturbances in flying personnel Right bundle branch block. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 57, June 1986, p. 591-596; Jun. 1986 43 Refs. Note: Language: English Country of Origin: Argentina Document Type: JOURNAL ARTICLE Journal Announcement: IAA8619 Fourty-one cases of complete right bundle branch block detected in a population of 6915 male, civilian flyers in Argentina are studied. The block was observed in 17 subjects in the first ECG and in 24 after normal ECG tracing. The effects of complete right bundle branch block development on the electrical axis are analyzed. It is observed that the block is most prevalent in men in the 35-44 year range. The cause of this block is investigated. It is noted that complete right bundle branch block etiology in asymptomatic subjects is uncertain and prognosis depends on the underlying disease. (I.F.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

96. Carlstroem, A. (Performer: Foersvarets Forskningsanstalt, Stockholm (Sweden). Funder: National Aeronautics and Space Administration, Washington, DC.). Correlations Between Incidents During Helicopter Missions and Background Variables and Moods.. 063330000, RR628060; Apr 84. 30p 1984. Note: SWEDEN PC A03/MF A01. Correlations between background variables (e.g., flight experience and age, and moods and ambition before flight) and incidents during flight missions were assessed during 180 helicopter missions. Results show that one group of pilots with relatively short and one group with very long flight experience were affected by significantly more incidents than the group with medium flight experience. Relaxation shows a positive and activity a negative correlation with incidents. No correlation between age and incidents is found.

97. Carlstroem, A. (Performer: Foersvarets Forskningsanstalt, Stockholm (Sweden)). Korrelationer Mellan Incidenter under Helikopterflygning och Bakgrundsvariabler och Sinnesstaemning (Correlations between Incidents during Helicopter Missions and Background Variables and Moods.. 063330000; Apr 84. 32p 1984. Note: SWEDEN PC E04/MF E01. In the present study the correlations between, on one hand, background variables e.g. flight experience and age, and moods and ambition before flight and, on the other hand, incidents during flight missions has been assessed during 180 helicopter missions. The results showed that one group of pilots with relatively short and one group with very long flight experience were affected by significantly more incidents than the group with medium flight experience. Relaxation showed a positive and activity a negative correlation with incidents. No correlation between age and incidents was found in this study. In the light of the findings recommendations are given.

98. CARRE, R.; NOGUES, C.; PLAS, F. (Centre Principal d'Expertise Medicale d.uPersonnel, Navigant, Paris, France). Use of cardiac mechanograms in the assessment of aircrew. In: International Congress on Aviation and Space Medicine, 21st, Munich, West Germany, September 17-21, 1973, Preprints of Lectures. (A74-10828 01-04) Munich, Sekretariat, Internationaler Kongress fuer Luft- und Raumfahrtmedizin, 1973, p. 179, 180. In French; 1973. Note: Language: French Document Type: CONFERENCE PAPER Journal Announcement: IAA7401 Mechanogram techniques are nonbleeding, are easily reproducible at each assessment, and provide graphs which are included in the dossier of each pilot, making possible the comparison of one assessment with another. Cardiac mechanograms bring three types of information: analysis of cardiac murmurs defining the variety of the cardiopathy by

phonocardiography, study of the arterial distensibility by the carotidogram, and the chronocardiographic measurement of an index of systolic flow and the contraction of the myocardial muscle. (F.R.L.) Source of Abstract/Subfile: AIAA/TIS. Country of Origin: France Country of Publication: Germany, Federal Republic of.

99. Carrier reaches tentative settlement in age-bias suit. (Boeing Co.). The Wall Street Journal (WSJOAF), April 18, 1990, Wed edition, pB2(W), col 1.

100. Carter, P.W (Performer: Federal Aviation Administration, Washington, DC. Office of Management Systems.). U.S. Civil Airmen Statistics. 1980. Annual rept. 009020038, 403600; 31 May 81. 44p 1981. Note: UNITED-STATES PC A03/MF A01. The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. Selected Tables include: Active Pilot Certificates Held: December 31, 1971-1980; Women Actively Engaged in Aviation; Active Pilots and Nonpilots Certificates Held, by Class of Certificates, by FAA Region; Active Pilots and Flight Instructors by FAA Region and State; Active Helicopter Pilots by Class of Certificates; Active Glider Pilots by Class of Certificates; Airline Transport Certificates Held, by Selected Age Groups; Active Pilot Certificates Held, by Category and Age Group of Holder; Active Nonpilot Airmen Certificates Held, by FAA Region and State; Pilot Certificates Issued, by Category; Student Certificates Issued, by Month.

101. Carter, P.W (Performer: Federal Aviation Administration, Washington, DC. Office of Management Systems.). U.S. Civil Airmen Statistics: 1983. 009020038, 403600; 31 May 84. 44p 1984. Note: UNITED-STATES PC A03/MF A01. The U.S. Civil Airmen Statistics is an annual study published to meet the demands of FAA, other government agencies, and industry for more detailed airmen statistics than those published in other FAA reports. Statistics pertaining to airmen, both pilot and nonpilot, were obtained from the official airman certification records maintained at the FAA Aeronautical Center, Oklahoma City, Oklahoma. An active airmen is one who hold both an airmen certificate and a valid medical certificate. Airmen who must have a valid medical to exercise the privileges of their certificate are all airplane pilots, control tower operators, flight navigators, flight engineers, and flight instructors. Selected tables are Active Pilot Certificates Held: December 31, 1974-1983; Active Women Pilot Certificates Held; Active Helicopter Pilots by Class of Certificates; Airline Transport Certificates Held, by Selected Age Groups.

102. CASTELLO-BRANCO, A.; CABRAL, SA, A.; COELHO-BORGES, J. (TAP Air Portugal, Lisbon, Portugal). A study of the psychophysiological behavior in a group of airline pilots after the operational age limit /60 years/. (Academie Internationale de Medecine Aeronautique et Spatiale and Societe Francaise de Physiologie et de Medecine Aeronautiques et Cosmonautiques, Congres International de Medecine Aeronautique et Spatiale, 29th, Nancy, France, Sept. 7-11, 1981.) Medecine Aeronautique et Spatiale, vol. 21, 4th Quarter, 1982, p. 263-269. In French; Dec. 1982 11 Refs. Note: Language: French Country of Origin: Portugal Document Type: JOURNAL ARTICLE Journal Announcement: IAA8308. Documents available from AIAA Technical Library.

103. CASTELO-BRANCO, A.; CABRAL-SA, A.; BORGES, J. C. (TAP Air Portugal, Lisbon, Portugal). Comparative study of physical and mental incapacities among Portugese Airline pilots under and over age 60. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, Aug. 1985, p. 752-757; Aug. 1985 18 Refs. Note: Language: English Country of Origin: Portugal Document Type: JOURNAL ARTICLE Journal Announcement: IAA8520 The number of definitive flight incapacitations and deaths which occured between 1945 and 1983 among Portugese airline pilots age 60 or older (group of 28) were compared with the data for the pilots under 60 (group of 408). The comparisons were made according to results of medical (cardiovascular, metabolic, osteomuscular, urologic, ophthalmologic, respiratory, and other syndromes) and psychological (psychomotor efficiency, intellectual efficiency, personal structure, and signs of involution) examinations. There were 21 cases of death and incapacities in the younger groups through accidents and unforeseen severe diseases while in the group of 60 and over, the ten incapacities found resulted from slow chronic degenerative disorders, with association of both chronic physical and psychic involution. The remaining 18 pilots over 60 (64 percent) were perfectly fit for flight duties. (I.S.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

104. Castelo, Branco, A.; Cabral, Sa, A.; Borges, J. Coelho (Portuguese Air Transport-Air Portugal, Medical Services, Lisbon). Comparative study of physical and mental incapacities among Portuguese airline pilots

under and over age 60. Aviation, Space, and Environmental Medicine; 1985 Aug Vol 56(8) 752-757; 1985; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Evaluated the number of definitive flight incapacitations and deaths thatoccurred between 1945 and 1983 among 436 Portuguese airline pilots, 28 of whom were aged 60-69 yrs and no longer flying at the time of the present study. These 28 Ss, however, continued to be submitted to the same medical, psychological, and psychomotor tests as the other Ss. The number of incapacities and deaths was found to be related to age groups of 5 yrs, ranging from age 20-24 yrs to 65-69 yrs. Under age 60 yrs, the reasons for career interruption included unforeseen severe diseases and violent deaths. Over age 60 yrs, no deaths occurred, and the majority of psycho/physiological problems were expressed by degenerative disorders connected with aging. The rate of incapacities was higher among Ss over 60 yrs than among Ss under 60 yrs, but 64% of these older Ss were absolutely fit for flight duties. (18 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

105. Canelo, Branco A.; Cabral, Sa A.; Coelho, Borges J. (Tap-Air Portugal, Medical Services, Lisbon). Comparative study of physical and mental incapacities among Portuguese airline pilots under and over age 60. Aviat-Space-Environ-Med ; 1985 Aug; 56(8): 752-7; ISSN: 0095-6562. 9JA. Note: EN. This study evaluated the number of definitive flight incapacitations and deaths which occurred among Portuguese airline pilots between 1945 and 1983. Also, all pilots over 60, no longer flying, continued to be submitted to the same medical, psychological and psychomotor tests as before. The number of incapacities and deaths was related to the number of pilots by age groups of 5 years from age 20-24 to 65-69, in a total of 1528 pilots at risk. Under age 60, the pilots' careers were interrupted for pathological reasons (8) and deaths (13), mainly through unforeseen severe diseases (13) and violent deaths (6). Over age 60, no deaths occurred and the majority of the psycho-physiological problems susceptible to being considered incapacitating (10) were expressed by expected degenerative disorders which were strictly connected with aging. The rate of incapacities became higher than under age 60, but 64% of over 60 examinees were absolutely fit for flight duties. Author-abstract.

106. Catlett, G. F.; Kidera, G. J. Detection of respiratory impairment in pilots. Aerosp-Med ; 1969 Nov; 40(11): 1252-7; ISSN: 0001-9402. 2RQ. Note: EN.

107. Ceausu, Valeriu (Ctr for Aviation Medicine, Bucharest, Romania). A method for the assessment of the tonus of the psychic component of thecapacity for work. Revue Roumaine des Sciences Sociales Serie de Psychologie; 1981 Jul-Dec Vol25(2) 99-119; 1981; ISSN: 00353892. Note: Human. Presents a method for determining indicators of the activity component (theneuropsychic tonus) and whether the lowering of the neuropsychic tonus represents an actual fatigue process or only a phenomenon that imitates fatigue. The method consists of 2 subtests: (1) the self-estimate of energy mobilization, and (2) the free association of numbers (FAN) test. It was hypothesized that under fatigue conditions, the determination process of the activity develops, up to a certain point, in a way similar to that characterizing neuropsychic diseases. The method was used to assess 200 aviation school candidates before and after a tiresome activity and 26 student pilots before and after rheoencephalographic testing. Results show that performance levels achieved during the FAN test were lower than those achieved on repeated testings after a standard activity. Findings indicate that the objective indicator presented variations under the influence of factors such as atmospheric pressure, precipitation, temperature, wind, S's age, and duration of the activity. (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

108. Ceausu, Valeriu. Particularitati ale activitatii operatorului uman in conditii de "dubla sarcina." / Characteristics of the human operator's activity under "double task" conditions. Revista de Psihologie; 1987 Vol 33(4) 271-277; 1987; ISSN: 00348759. Note: Human. Studied performance modifications under double-task conditions. Humansubjects: 536 normal Romanian adolescents and adults (aged 18-24 yrs). Aviation school candidates completed tracking- and compensation-type tasks first singly and then jointly. (English abstract) (0 ref) (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

109. CHADWICK, J. H. (Stanford Research Institute, Menlo Park, Calif.)PODOLAK, E. (FAA, Office of Aviation Medicine, Oklahoma City, Okla.). Measures of cardiovascular risk. (Multivariate algorithms of optimum content and form for cardiovascular risk assessment in pilots and air transport personnel). In: Aerospace Medical Association, Annual Scientific Meeting, 43rd, Bal Harbour, Fla., May 8-11, 1972, Preprints. (A72-28251 12-04) Washington, D.C., Aerospace Medical Association, 1972, p. 31, 32; 1972. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Journal Announcement: IAA7212 The application of a general method for defining algorithms of optimum content and form to a study of more than 300 cardiovascular-risk variables in 456 subjects is

reviewed. The study group included a large number of pilots and other types of air transport personnel. The underlying concepts, some of the techniques used, and the results obtained are discussed. (M.V.E.) Source of Abstract/Subfile: AIAA/TIS.

110. CHAPEK, A. V.; ISAAKYAN, L. S.; KOZIN, V. M.; KULESHOV, D. S.; KULIKOVA, N. M.; KUZNETSOVA, YE. I.; SHISHOVA, A. A.; USTINOVA, A. N.; et, al. Some results of a clinical and physiological study of senior pilots of the civil air fleet (Clinical and physiological study of age factor in flight performance of pilots). IN ITS AVIATION AND SPACE MED. DEC. 1964 P 184-187 /SEE N65-13626 04-04/ OTS- HC $7.63; Dec. 1964. Note: Language: English Country of Origin: U.S.S.R. Document Type: REPORT Journal Announcement: STAR6504 Source of Abstract/Subfile: NASA STIF.

111. CHAPEK, A. V.; POLESHCHUK, I. P.; YEROKHIN, V. P. The influence of age-associated changes in older pilots during re-learning in the new aviation technology and during performance (Influence of age-associated changes in older pilots during relearning of aviation technology and during performance). IN ITS AVIATION AND SPACE MED. DEC. 1964 P 419-421 /SEE N65-13626 04-04/ OTS- HC $7.63; Dec. 1964. Note: Language: English Country of Origin: U.S.S.R. Document Type: REPORT Journal Announcement: STAR6504 Source of Abstract/Subfile: NASA STIF.

112. Charles, Michael Maya. Merger mania. (airline pilot seniority in an age of corporation mergers) (column). Flying (FLYGA), volume 117, issue n10, Oct, 1990. p106(2).

113. Chastain, Garvin D.; Kubala, Albert L. (Human Resources Research Organization, Alexandria, VA). Effects of fatigue from wearing the AN/PVS-5 night vision goggles on skills involved in helicopter operations. US Army Research Institute for the Behavioral & Social Sciences. 1979 Jul RR 1217 43 p. Note: English (EN). A review of the literature on rotary wing flight and interviews with aviators were conducted to determine which helicopter tasks and maneuvers are performed most frequently and/or are the most critical. Those operations found to be most critical were categorized into perceptual and psychomotor components, and perceptual and psychomotor tests were selected to measure these factors. 10 male US Army aviators (mean age 26.4 yrs) were tested before and after flying with the AN/PVS-5 goggles. Eye-hand coordination was marginally affected following flight, and reaction time to lights was significantly affected. (13 ref) (PsycINFO Database Copyright 1981 American Psychological Assn, all rights reserved).

114. CLARK, B. (San Jose State College, San Jose, Calif.); STEWART, J. D. (NASA, Ames Research Center, Moffett Field, Calif.). Comparison of the sensitivity to rotation of pilots and nonpilots. (Pilot and nonpilot vestibular sensitivity to rotation, determining oculogyral illusion and rotation perception thresholds). Aerospace Medicine, vol. 43, Jan. 1972, p. 8-12; Jan. 1972 22 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7206 Thirty-six airline pilots and 56 nonpilots were tested to determine their sensitivity to rotation. A staircase procedure was used to determine oculogyral illusion and perception of rotation thresholds, in a precision rotation device. The results indicated that (1) there were no significant differences between the two groups for either threshold measure, (2) the thresholds for the oculogyral illusion were significantly lower than the perception of rotation thresholds for both groups, and (3) changes in threshold as a function of age were minimal for 91 of the men. The validity and results of the tests are discussed with regard to the pilot's use of motion information in control tasks for aircraft and simulators. ((Author)). Documents available from AIAA Technical Library.

115. CLARK, JOSEPH Y. (U.S. Army Aeromedical Center, Fort Rucker, AL). Renal calculi in Army aviators. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 61, Aug. 1990, p. 744-747; Aug. 1990 20 Refs.

116. Cobb, B. B.; Nelson, P. L.; Mathews, J. J. The relationships of age and ATC experience to job performance ratings of terminal area traffic controllers. Note: Federal Aviation Administration, Civil Aeromedical Institute, Oklahoma City, OK; and US Department of Transportation, Washington, DC. Apr 1973. (54p.). AVAILABILITY: NTIS, 5285 Port Royal Rd, Springfield, VA 22161; SCAN Microfiche No. CCF 001284.

117. Connolly, T.W (Performer: Air Force Inst. of Tech., Wright-Patterson AFB, OH. School of Systems and Logistics.). Influence of Individual Differences in Learning and Motivation on the Performance of Students in RAAF (Royal Australian Air Force) Pilots' Courses. Master's thesis.. 000805004, 012250; Sep 88. 150p 1988. Note: UNITED-STATES PC A07/MF A01. The study had two objectives: 1. to develop a valid instrument to measure the learning and motivation of students in pilot training for the

Royal Australian Air Force; and 2. to test the hypothesis that students of a certain ability level would achieve a level of performance dependent on the learning experiences and their motivation. A survey of all students on course was conducted in late March- early April 1988. Scales were developed to measure variables related to the quality of instruction and the level of motivation reported by the students. The scales appeared to validly discriminate among students on a basis of age and position in the training pipeline. Aptitude test scores and relevant biographical data (e.g., number of hours in powered aircraft prior to the course) were collected to provide an independent measure of ability. Finally, a measure of performance was collected for as many students as possible. The hypothesis was tested by investigating the nature of relationships between the predictor variables and the performance measure. Unfortunately, the hypothesis was not proved. Although this research did not explicitly specify the relationships between ability, instruction, motivation, and performance, it did indicate the potential of some variables to explain part of the variance in student performance in pilot training. Theses.

118. Continental flying director resigns. (William S. Laughlin Jr.). Aviation Week & Space Technology (AWSTA), volume 119, Nov 7, 1983, p31(1).

119. Cooper, Cary L.; Sloan, Steven J. (Victoria U of Manchester, England). Coping with pilot stress: Resting at home compared with resting away fromhome. Aviation, Space, and Environmental Medicine; 1987 Dec Vol 58(12) 1175-1182; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Assessed the impact of resting at home vs resting away from home among 272British commercial airline pilots (aged 21-60 yrs) to (1) see whether resting at home and resting away from home are equivalent in the quality of rest they provide pilots and (2) highlight the factors that may be predictive of poor mental health and mood shifts while resting away or at home. On balance, pilots away from home managed to rest, but not really to relax (from a psychological perspective). Explanations are based on bivariate and multivariate analyses. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

120. Cote, David O.; Kroeger, Gerald P.; Simmons, Ronald R. (Defence & Civil Inst of Environmental Medicine, Canadian Forces Base, Toronto). Helicopter copilot workload during nap of the earth flight. Aviation, Space, and Environmental Medicine; 1985 Feb Vol 56(2) 153-157; 1985; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined 2 automatic navigation systems, a Doppler radar system and aprojected map system, and a hand-held map for their effects on copilot/navigator workload and performance in 18 male US Army aviators (median age 25 yrs). It was found that the automatic navigation systems reduced the number of navigation errors and the size of deviations from intended track. The Doppler system reduced the time devoted to navigating and the number of verbal navigation messages exchanged between pilot and copilot. The projected map system reduced visual workload. However, with all 3 navigation systems, more than 80% of copilots' time was spent on navigation tasks, less than 10% of their time was visual free time that could be used for other tasks, and greater than 20% of the crew's time was occupied with navigation communications. Other advantages of automatic navigation systems, such as preventing errors and aiding recovery from disturbed flights, are outlined. (10 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

121. Court voids ruling on age discrimination. (United Airlines). New York Times (NYTIA), volume 133, June 1, 1984, Pri edition, p11(N), col 6.

122. Coyle, Joseph S. Good-bye to Panama: thanks to the new treaties, Paul Guerriero's time as a high-paid canal pilot is running out. But our advisers see clear sailing ahead. Money (MNEYA), volume 7, Oct, 1978, p111(6).

123. Dallos, Robert E. Retired pilots die earlier than most, study finds. Los Angeles Times, volume 109, April 13, 1990, Pri edition, pD6, col 1.

124. Damos, Diane L.; Smist, Thomas E. (Arizona State U, Tempe). Individual differences in multi task response strategies. Aviation, Space, and Environmental Medicine; 1982 Dec Vol 53(12) 1177-1181; 1982; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Conducted 2 experiments examining differences in multiple-task performance in order to identify information-processing strategies of individuals who would be good pilots. In Exp I, 11 males (aged 18-35 yrs) were classified according to the response strategy they used to perform 2 discrete tasks. Ss then performed 3 different task combinations on 4 successive days. MANOVA revealed significant between-strategy group differences in multiple-, but not single-, task performance. Exp II was designed to determine if the results of Exp I reflected between-group differences in information processing. 37 adults (aged 18-35 yrs) completed memory and classification tasks in single- and dual-task trials using simultaneous, alternating, or massed information-

processing strategies. Results show that Ss who used massed responses had difficulty changing strategies and performed more poorly than the others. (5 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

125. DANTINO, E. (Aeronautica Militare, Istituto Medico Legale, Rome, Italy). Flight fitness of pilots over sixty years old - Clinical studies and medical and legal considerations. Rivista di Medicina Aeronautica e Spaziale, vol. 42, Jan.-June 1979, p. 85-102. In Italian; Jun. 1979 30 Refs. Note: Language: Italian Country of Origin: Italy Document Type: JOURNAL ARTICLE Journal Announcement: IAA8024. Documents available from AIAA Technical Library.

126. Dark, S.J (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Characteristics of Medically Disqualified Airline Pilots. 009020006, 264320; Jan 83. 18p 1983. Note: UNITED-STATES PC A02/MF A01. Observations on the airline pilot group probably come as close to a true reflection of incidence of disqualifying disease as is possible to observe. Prescreening by airline companies before employment and the stringent Federal Aviation Administration (FAA) requirements for issuance of a first-class medical certificate result in this group being essentially purged of disease prevalence that contributes to higher rates for other groups. Also, because of occupational/economic reasons, these individuals are less likely to voluntarily remove themselves from followup observation for known medical conditions that would preclude FAA medical certification. Conversely, voluntary attrition is a more frequent occurrence among nonoccupationally connected pilots who recognize that they are not medically qualified and, therefore, are never heard from again by the FAA. Age-specific denial rates for airline pilots increase to the highest rate at age interval 55-59. The most significant causes for denial are cardiovascular, neuropsychiatric, and the miscellaneous category. The importance of these causes for denial, particularly above age 45, is again recognized. Age-cause-specific findings for the airline pilot group follow epidemiologic expectations, with age being a significant variable associated with increased rates. Of interest in the data on denial be employer is that the larger employers, many of which have their own medical facilities, have uniformly lower denial rates than smaller employers. (Author).

127. Dark, S.J (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Medically Disqualified Airline Pilots. 009020006, 264320; Aug 84. 20p 1984. Note: UNITED-STATES PC A02/MF A01. Observations on the airline pilot group probably come as close to a true reflection of incidence of disqualifying disease as is possible to observe. Prescreening by airline companies before employment and the FAA's requirements for issuance of a first-class medical certificate result in this group's being essentially purged of a disease prevalence that contributes to higher rates for other groups. These individuals are also less likely to voluntarily remove themselves from followup observations for known medical conditions that could preclude FAA medical certification. This study examined medical records of airline pilots medically disqualified by the FAA over a 220-year period. Date of birth, employer, date of disqualification, and reason for disqualification were recorded for each pilot. The data represent the final action taken on each pilot for a particular examination. During this period, 842 airline pilots were medically disqualified. Cardiovascular diseases represent the highest cause for denial, with age being a major factor in the incidence of cardiovascular disease. Denials for cardiovascular reasons account for 50% of all denials in this group. FAA medical certificate denial is minimal before age 45 but increases rapidly thereafter, with cardiovascular diseases responsible for more than half of this dramatic rise in incidence of disease. Maintenance of high standards of safety requires close cardiovascular supervision as pilots grow older.

128. Dark, S.J (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Medically Disqualified Airline Pilots. Final rept. 009020006, 264320; Jun 86. 18p 1986. Note: UNITED-STATES PC A02/MF A01. This study presents comprehensive data reflecting pertinent denial rates regarding the medical and general attributes of those airline pilots denied medical certification in calendar years 1983 and 1984. The overall annual denial rate of this group is 4.7 per 1,000 active airline pilots. Age-specific denial rates for airline pilots increase to the highest rate at age interval 55-59. The most significant causes for denial are cardiovascular, neuropsychiatric, and the miscellaneous category. The importance of these causes for denial, particularly above age 45, is again recognized. Denials for cardiovascular reasons account for 33% of all denials in this airline pilot group. Reasons/causes for denial and age-specific denial rates are changing. Denial rates of older pilots have decreased while rates for younger pilots have increased when compared with previous studies' rates. This could be attributed to changes in the interpretation of FAA regulations, certification policies, and pilots' concepts and concerns regarding the economic status of their employer. On the basis of these and previous findings, pilots should be educated to report history or symptoms of any disease during their periodic medical certification

examinations.

129. Dunton, John. Old Loyalists in Spain demanding their due as good soldiers. (aging Socialists petition new Socialist regime for pensions). New York Times (NYTIA), volume 132, Feb 14, 1983, Mon edition, p6(N) pA2(L), col 2.

130. Dellinger, John A.; Taylor, Henry L.; Porges, Stephen W. (U Illinois Coll of Veterinary Medicine, Urbana). Atropine sulfate effects on aviator performance and on respiratory heart period interactions. Aviation, Space, and Environmental Medicine; 1987 Apr Vol 58(4) 333-338; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined the use of atropine sulphate as an antidote to the effects oforganophosphorus compounds, which are used in chemical warfare. 20 male aviation instrument student pilots (age 19-30 yrs) received a placebo and atropine (0.5, 1.0, 2.0, and 4.0 mg/75 kg) in a Latin-square double-blind design, and effects were monitored for 3 hrs postinjection. The 2.0 mg and the 4.0 mg doses resulted in significant flight simulator performance decrements. Data were used to estimate the amplitude of respiratory sinus arrhythmia, and these parasympathetic effects were observed to be relatively rapid in onset. The onset of performance effects was delayed 1 hr 40 min for the 2.0 mg and 1 hr for the 4.0-mg treatments. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

131. Dellinger, John A.; Taylor, Henry L.; Richardson, Bruce C. (U Illinois Coll of Veterinary Medicine, Urbana). Comparison of the effects of atropine sulfate and ethanol on performance. Third Symposium on Aviation Psychology (1985, Columbus, Ohio). Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect I)1185-1188; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Compared the flight simulator performance decrements resulting from atropinesulfate injections in 20 male Ss (aged 19-30 yrs) to similar decrements resulting from ethanol toxicosis in 8 males (aged 21-25 yrs) in a previous study by H. L. Taylor et al (1983). Probit analysis was used to estimate the effective dose (ED-sub-5-sub-0) at which 50% of the Ss were expected to display decrements in excess of those observed for the .082% blood alcohol level in the previous study. The ED-sub-5-sub-0 was 3.12 mg of atropine sulfate. (14 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

132. Dellinger, John A.; Taylor, Henry L.; Richardson, Bruce C. (U Illinois Coll of Veterinary Medicine, Urbana). Comparison of the effects of atropine sulfate and ethanol on performance. Third Symposium on Aviation Psychology (1985, Columbus, Ohio). Aviation, Space, & Environmental Medicine. 1986 Dec Vol 57(12, Sect I) 1185-1188; CODEN: AEMEAY; ISSN: 0095-6562. Note: English (EN). Compared the flight simulator performance decrements resulting from atropine sulfate injections in 20 male Ss (aged 19-30 yrs) to similar decrements resulting from ethanol toxicosis in 8 males (aged 21-25 yrs) in a previous study by H. L. Taylor et al (1983). Probit analysis was used to estimate the effective dose (ED-sub-5-sub-0) at which 50% of the Ss were expected to display decrements in excess of those observed for the .082% blood alcohol level in the previous study. The ED-sub-5-sub-0 was 3.12 mg of atropine sulfate. (14 ref) (PsycINFO Database Copyright 1987 American Psychological Assn, all rights reserved).

133. (Performer: Department of the Air Force, Washington, DC). Department of the Air Force Justification of Estimates for Fiscal Years 1990/1991 Biennial Budget Estimates Submitted to Congress January 1989. National Guard Personnel, Air Force.. 000260000, 109850; Jan 89. 130p 1989. Note: UNITED-STATES PC A07/MF A01. This appropriation provides military personnel funds for the Air National Guard (ANG). The FY 1990/FY 1991 Biennial Budget request is based on an average of 115,600 Guardsmen in FY 1990 and 116,000 Guardsmen in FY 1991 who will be assigned to ANG flying and mission support units. In addition to annual 15-day tours and 48 drill periods; additional flying training for a limited number of personnel. This appropriation also includes funds for ANG personnel called to full-time active duty. FY 1990 reflects an overall average strength increase of 678 from FY 1989. Average strength increases in Active Guard and Reserve, mostly in Direct Unit Support and United States Air Force Mission Support, and in Pay Groups F and P to achieve end strength growth. FY 1991 includes an overall average strength increase of 500 (mostly the result of prior year hiring) and several School Training program changes. As a result of a large number of conversion of FY 1990, School and Special Training will increase and Pay Group A participation rates will increase. In FY 1990 the School Training program Initial Skill Acquisition and Refresher and Proficiency training increases. Increases to Undergraduate Pilot Training (upt) and Navigator Training are result of a policy change requiring all UPT candidates to attend initial flight screening, and increasing UPT quotas required as Vietnam era pilots retire. (kr).

134. DIAMOND, S.; LEEDS, M. F. (Pan American World Airways, Inc., SanFrancisco, Calif.). Prevention of visual anxiety and proficiency problems in the senior air transport pilot. (Airline Medical Directors Association, Annual Scientific Meeting, 32nd, Las Vegas, Nev., May 7, 1977.) Aviation, Space, and

Environmental Medicine, vol. 48, Sept. 1977, p. 877-881; Sep. 1977 9 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE; CONFERENCE PAPER Journal Announcement: IAA7724 The special vision-related needs of pilots between age 50 and 60 are considered, taking into account the characteristics of glasses which will provide the pilot with the required range of near vision. It is pointed out that the panel distance is the critical factor. The outermost portion or longest portion of the near range should be at least 80-83 cm. The lenses should be ground exactly to prescription; plus or minus 0.25 D is very important. Special vision problems affecting pilots and approaches used for correcting these problems are illustrated with the aid of five case reports. (G.R.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

135. DIDIER, A. G.; ILLE, H. P.; ALLEGRINI, N. D.; MAUREL, C. M.; THOMAS, C. M. (Centre Principal d'Expertise Medicale du Personnel Navigant, Paris, France). Ischemic cardiopathology in pilots - The risk, the methods of detection and prevention. (Societe Francaise de Medecine des Armees, Seance de Medecine Aeronautique, Metz, France, June 19, 1985) Medecine Aeronautique et Spatiale, vol. 24, 4th Quarter, 1985, p. 246-250. In French; 1985 7 Refs. Note: Language: French Country of Origin: France Document Type: JOURNAL ARTICLE Journal Announcement: IAA8609 Cardiac ischemia is a principal cause of death in humans over 40 years of age and a principal reason for removing pilots from flight duty. The rate of ocurrence among French military pilots over the period 1982-84 was 4.3/1000, less than the rate of occurrence in the general population. The main symptoms are anginal pain, infarctions and death. A 2 year study done of 1080 military pilots over 39 years old covered such factors such as smoking, systolic arterial pressure, cholesterol level and the severity of diabetes. The study was performed to identify, if possible, the risk of ischemia relative to the conditions monitored. A numerical model derived from the data showed that the risk of ischemia is related to the magnitudes of each of the assumed predisposing conditions. The data, when compared to the population of pilots studied, indicates that 5 percent of the population was a risk of an ischemic attack in the following year. However, the duration of the study is not considered sufficient to make truly quantitative predictions. (M.S.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

136. Diehl, A.E.; Lester, L.F (Performer: Federal Aviation Administration, Washington, DC. Office of Aviation Medicine.). Private Pilot Judgement Training in Flight School Settings. 009020006, 264320; May 87. 39p 1987. Note: UNITED-STATES PC A03/MF A01. Pilot judgment errors have long been recognized as an important factor in aviation accidents. Previous studies have demonstrated that specialized training procedures can significantly reduce the number of decisional errors made by newly certified private pilots during in-flight tests. However, the subjects in these studies were all college-age students enrolled in full time aviation training programs which were taught by highly motivated instructors. The present study examined the utility of revised judgement training was compared with that of a control group drawn from these same FBOs. The behavioral test of judgement was in the form of an observation flight administered by observers who were uninformed of the details of the experimental design. Students and instructors also completed a critique of the program materials. The results of the study suggest that improvements in pilot decisionmaking skills can be achieved in the less formal instructional climate which characterizes many conventional flight school programs. The revised judgment training program and instructional materials are acceptable to the user community, and most participants found them to be very useful.

137. DIKSHIT, M. B. (Indian Air Force, Institute of Aviation Medicine, Bangalore, India). Comparative cardiovascular responses to 70 head up tilt in pilots and non-pilots. Aviation Medicine, vol. 27, June 1983, p. 36-42; Jun. 1983 21 Refs. Note: Language: English Country of Origin: India Document Type: JOURNAL ARTICLE Journal Announcement: IAA8323 Cardiovascular responses to 70 deg head up tilt were investigated in 29 pilots and 29 nonpilots who were classified either as old (average age = 29.9 + or - 2.6 years) or young (average age = 22.4 + or - 5.7 years). No differences were observed in the absolute values of heart rate and blood pressure in pilots and nonpilots. A new index, the orthostatic index, was developed which revealed significant differences in the orthostatic responses of pilots and nonpilots, especially in the older pilots and nonpilots. It was also found that inexperienced pilots (less than 100 hours of flying experience) exhibited greater cardiovascular strain than did experienced pilots (greater than 1000 hours of flying experience). The change in the heart rate and the orthostatic index values were found to be significantly different in the young and old groups. It is concluded that age and flying experience affect the cardiovascular response to head up tilt. (N.B.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

138. Dille, J.R.; Haraway, A. (Performer: Federal Aviation Administration, Washington, DC. Office of

Aviation Medicine.). Index to FAA (Federal Aviation Administration) Office of Aviation Medicine Reports: 1961 through 1982.. 009020006, 264320; Jan 83. 79p 1983. Note: UNITED-STATES PC A05/MF A01. An index to Office of Aviation Medicine Reports (1964-1982) and Civil Aeromedical Research Institute Reports (1961-1963) is presented as a reference for those engaged in aviation medicine and related activities. It provides a listing of all FAA aviation medicine reports published from 1961 through 1982 by year, number, author, title, and subject.

139. DOROGOBED, V. S. Effect of complicated situations on young pilots (Young pilot performance in emergency situations including communication system failure and other equipment breakdowns, noting emotional reactions). VOENNO-MEDITSINSKII ZHURNAL, P. 64-66; Apr. 1971. Note: Language: Russian Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE Journal Announcement: IAA7116 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

140. Doubled pay lures airmen with experience to industry. New York Times (NYTIA), Sept 23, 1980, Tue edition, p20(N) pB14(LC), col 1.

141. DOUGHERTY, J. D. (Harvard University, Boston, Mass.). Application of military human factors techniques to general aviation accident prevention. In: International Congress on Aviation and Space Medicine, 21st, Munich, West Germany, September 17-21, 1973, Preprints of Lectures. (A74-10828 01-04) Munich, Sekretariat, Internationaler Kongress fuer Luft- und Raumfahrtmedizin, 1973, p. 296-299; 1973 9 Refs. Note: Language: English Document Type: CONFERENCE PAPER Journal Announcement: IAA7401. Country of Origin: United States Country of Publication: Germany, Federal Republic of.

142. Dr. Ken Dychtwald, noted expert on marketing to an aging America, to address luncheon of advertising executives. (NEWS ADVISORY). PR Newswire, Feb 7, 1990, 0207FL004.

143. DREYFUSS, U. Y.; ORTHOP, M.; CAINE, Y. G.; MARGALIOT, S. Z. (Israel AirForce, Aeromedical Centre, Ramat Gan). Will they fly again? - The probability of wounded military aviators returning to flying duty - A study of 70 cases. Aviation, Space, and Environmental Medicine (ISSN 0095-6562). vol. 56, July 1985, p. 702-708; Jul. 1985. Note: Language: English Country of Origin: Israel Document Type: JOURNAL ARTICLE Journal Announcement: IAA8521 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

144. Dubin, Reggi Ann. At TWA, the age of Icahn is about to begin. (pilots union courts Carl C. Icahn to avoid Texas Air Corp. takeover). Business Week (BUWEA), Sept 2, 1985, p31(2).

145. DUNSKY, I. L.; LEVENE, J. R. An analysis of some refractive error trends in US Air Force pilots and navigators (Refractive error trends with age in US Air Force pilots and navigators). Indiana Univ., Bloomington. DIV. OF OPTOMETRY; Jun. 1969 73P. Note: Report No.: NASA-CR-99667 Contract No.: NAS9-8078 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6915 COSATI Code: 6E Clinical Medicine.

146. DURRER, D. (Amsterdam, Universiteit, Amsterdam, Netherlands). Cardiological aspects of the aging pilot. Aerospace Medicine, vol. 45, Apr. 1974, p. 438-442; Apr. 1974 10 Refs. Note: Language: English Country of Origin: Netherlands Document Type: JOURNAL ARTICLE Journal Announcement: IAA7411 Review of the influence of the aging process on the heart, with particular reference to the detection of heart disease in the aging pilot. Some aspects of the aging process studied in several experimental models are reviewed, and the specificity of the age-induced changes of the heart and circulation is discussed. The relation between the workload of the pilot and the influence of aging is considered, taking into account such psychological stresses as acute emotional factors, emotional factors of a chronic nature, and static exercise. The problem of timely detection of hypertension and coronary heart disease in pilots is discussed, noting the relation between abnormal plasma lipid levels and accelerated atherosclerosis and the effects of nicotine and alcohol on the cardiovascular system. (A.B.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

147. DURRER, D. /INTERNATIONAL ACADEMY OF AVIATION MEDICINE, BRUSSELS, BELGIUM/. Homo Sapiens on the wings and the cardiologist (Cardiology role in aviation medicine, evaluating jumbo jet and SST flight stress effects on pilots and passengers in age factor study of arteriosclerosis); Sep. 1969 7P. 14 Refs. Note: INTERNATIONAL CONGRESS OF AEROSPACE MEDICINE, 18TH, AMSTERDAM, NETHERLANDS, SEP. 15-18, 1969, PAPER. Language: English Country of Origin: Belgium Document Type: PREPRINT Journal Announcement: IAA7005 Source of Abstract/Subfile:

AIAA/TIS. Presentation Documents available from AIAA Technical Library.

148. Eastern pilot attrition being effectively controlled. (Eastern Airlines). PR Newswire, April 25, 1988, 0425FL14.

149. Edwards, R.J.; Sanders, M.G.; Price, D.R (Performer: Army Aeromedical Research Lab., Fort Rucker, AL). Comparison of Army Flight School Performance in Smokers and Nonsmokers. Final rept. 1984 1985.. 026909000, 404578; May 88. 23p 1988. Note: UNITED-STATES PC A03/MF A01. The effects of smoking on performance were examined in this study by comparing flight school performance in groups of nonsmoking and smoking Army aviation students. Academic and in-flight grades for five phases of Initial Entry Rotary Wing (IERW) classes between January 1984 and November 1986 were extracted from Aviation Center records and compared to the student's responses on the auxiliary questionnaire portion of the Aviator Epidemiologic Data Register, a comprehensive database collected yearly on every Army aviator by the joint effort of the U.S. Army Aeromedical Research Laboratory and the Aeromedical Activity. There were 2,025 students with data sufficiently complete and analysis, with the average age of 24.5 years, and with a rank and sex distribution as follows: 96.3 percent males, 3.7 percent females; 53.2 percent commissioned officers, 46.7 percent warrant officers. Through past studies (1982) have shown 56 percent of all Army personnel were smokers, strict criteria defining smokers and nonsmokers in this study, plus recent decreases in smoking rates, produced a 15:85 ration of smokers to nonsmokers (recent quitters and those who smoke less than one pack/day were not included in the analysis. That smoking is detrimental to overall health is clear from many controlled medical studies, however, using a very adequate number of aviators, no evidence of a statistically significant relationship was found between smoking behavior and flight school performance. (SDW).

150. Elworth, C. L.; Larry, C.; Malmstrom, F. V. (Boeing Aerospace Co. (MS 2K-58), Seattle, Washington 98124). Age, degraded viewing environments, and the speed of accommodation. Aviat-Space-Environ-Med ; 1986 Jan; 57(1): 54-8; ISSN: 0095-6562. 9JA. Note: EN. Subjects were 35 males in an accommodation experiment which utilized a subjective laser optometer. Seven different age groups, from average age 22-52, were measured on the time to change accommodation from a near to an infinity target. During the experiment, room illumination, time duration of reading at a near distance, and the distance of a near-reading task were varied. Results indicated that the time to accommodate from a near to infinity target varied as a function of age, room illumination, and the distance of the near-reading task. During ideal conditions, older subjects could accommodate nearly as quickly as the younger subjects; however, during degraded viewing conditions, the accommodation time for older subjects increased as much as tenfold. Time to accommodate to a distant target also increased solely as a function of time spent reading at a near distance, regardless of age. In accordance with previous reviews of aging and military pilots, it is suggested that the time to accommodate may be used as an objective measure of degraded vision as it relates to age. Author-abstract.

151. Elworth, Charles L.; Larry, Clarence; Malmstrom, Frederick V. (Boeing Aerospace Co, Seattle, WA). Age, degraded viewing environments, and the speed of accommodation. Aviation, Space, and Environmental Medicine; 1986 Jan Vol 57(1) 54-58; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. 35 male airline employees (aged 20-54 yrs) were divided into 7 age groups in an accommodation experiment, which utilized a subjective laser optometer, to investigate the effects of age on the speed of accommodation. Age groups were assessed with regard to the time taken to change accommodation from a near to an infinity target. During the experiment, room illumination, time duration of reading at a near distance, and the distance of a near-reading task were varied. Results indicate that the time to accommodate from a near to infinity target varied as a function of age, room illumination, and the distance of the near-reading task. During ideal conditions, older Ss could accommodate nearly as quickly as younger Ss; however, during degraded viewing conditions, the accommodation time for older Ss increased as much as 10-fold. Time to accommodate to a distant target also increased solely as a function of time spent reading at a near distance, regardless of age. In accordance with previous reviews of aging and military pilots, it is suggested that the time to accommodate may be used as an objective measure of degraded vision as it relates to age. (16 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

152. Enforcer tests. (resignation of David L. Lawrence, Larry Lee). Aviation Week & Space Technology (AWSTA), volume 119, Nov 7, 1983, p53(1).

153. Erwin, D.E.; Stein, E.S.; Root, R.T.; DiGrazia, J. (Performer: Army Research Inst. for the Behavioral and Social Sciences, Alexandria, VA.). Air Ground Engagement Simulation (AGES) Field Test USAREUR

1978. Final rept. for period ending Aug 78.. 054823000, 408010; Aug 80. 52p 1980. Note: UNITED-STATES PC A04/MF A01. A field experiment was carried out to assess the training effectiveness of the Air-Ground Engagement Simulation (AGES) tactical training system relative to conventional air defense training on the Army's three short-range air defense artillery (ADA) weapon systems: Chaparral, Vulcan and Redeye. Twelve squads were randomly assigned to one of two training conditions, AGES or conventional, and given one week of training. Performance was evaluated during each training exercise using a Controller's Evaluation form, which is a checklist and rating form. This procedure was followed for a second group of 12 squads. AGES squads on the Chapparral and Vulcan showed improved performance through the third day of training. This improvement was superior to that of conventionally trained squads. Redeye teams trained with AGES did not demonstrate greater performance than that achieved with conventional methods. A demonstration of a three-dimensional engagement simulation was accomplished during a third training week. This exercise consisted of integrating AGES with ground maneuver engagement simulation known as REALTRAIN. Personnel involved stated that the training was highly realistic and motivating.

154. Eskow, Dennis. Dawn of a new age: the 'information mall.' (Computers and Hardware)(Special Supplement). PC Week, volume 6, issue n45, Nov 13, 1989, pS1(3).

155. The estimation of atherosclerosis in physical examination for flying duty - An examination about serum value of high density lipoprotein and atherogenic index.

156. Evans, Wendy (Whitecroft Psychiatric Hosp, Newport, England). Personality and stress. Personality and Individual Differences; 1986 Vol 7(2) 251-253; 1986; ISSN: 01918869. Note: Human. Investigated the relationship between stress, personality, and life events, using 43 commercial airline pilots (mean age 42.9 yrs). Ss were asked to complete the Eysenck Personality Questionnaire, a social adjustment rating scale, and an occupational stress inventory. Results support the hypothesis that personality factors rather than the environment play a causal role in the generation of a stress reaction within individuals. (5 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

157. Everett, W. D.; Jenkins, S. W. The aerospace screening electroencephalogram: an analysis of benefits and costs in the U.S. Air Force. Aviat-Space-Environ-Med ; 1982 May; 53(5): 495-501; ISSN: 0095-6562. 9JA. Note: EN. Using the techniques of decision analysis, three possible EEG screening strategies for U.S. Air Force pilots are evaluated. Available clinical and epidemiological data are organized so that the relative merits of the three strategies can be assessed by decision makers. The optimal strategy is found to be screening fighter pilot candidates only. Screening all pilot candidates is less "cost-effective" and using the EEG as a routine screening test in evaluating combat-qualified pilots for nonneurological conditions is the least effective strategy. Needs for further research and unanswered questions are discussed. Author-abstract.

158. Exercise at any age. Time, Feb 21, 1964, p72.

159. Exercise-enhanced risk factors for coronary heart disease vs. age as criteria for mandatory retirement of healthy pilots ? type 7/5/1-146.

160. EYRAUD, M. Y.; BOROWSKY, M. S. (U.S. Naval Safety Center, Norfolk, VA). Age and pilot performance. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, June 1985, p. 553-558; Jun. 1985 7 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8520 The relationship between pilot age and the likelihood of pilot-factor aviation mishaps is investigated statistically using data on naval pilots of fighter, attack, and helicopter aircraft for the period 1977-1982. The numbers of mishaps of various types are determined per 100,000 h flown by pilots of the age groups 26 and under, 27-29, 30-33, 34-37, and 38 and over, and the results are presented in tables and graphs. Of the mishap types found to be strongly associated with age, several (including improper use of flight controls, overrun/undershoot at landing, improper landing response/technique, carrier landings, failure to maintain flying speed, and loss of control of attack and fighter aircraft) occur most frequently with pilots aged 26 or under; the highest rates for violation of regulations (helicopters) improper instrument procedures, and inadequate flight preparation are found in pilots aged 38 or more. The implications of these findings for the certification and (re)training of older pilots are considered. (T.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

161. Eyraud, Micheline Y.; Borowsky, Michael S. (Old Dominion U). Age and pilot performance. Aviation, Space, and Environmental Medicine; 1985 Jun Vol 56(6) 553-558; 1985; CODEN: AEMEAY; ISSN:

00956562. Note: Human. Analyzed aircraft mishap and exposure data for the fighter, attack, andhelicopter communities to determine if there were differences in mishap rates and in the type of human error mishap causal factors as a function of pilot age. Flight records for US Navy pilots from 1977 to 1982 were categorized flight-by-flight by age and combined with mishap records to obtain mishap rates. Pilots were aged 22-47 yrs. Analysis showed that the mishap rate for pilots aged 26 yrs and under was high, while the rate for pilots aged 38 yrs and older did not differ significantly from the rate of pilots in the 23-37 yr age range. Younger pilots had mishaps as a result of improper response/poor landing technique, loss of control, failure to maintain flying speed, and improper use of flight controls. Older pilots had mishaps involving violation of existing regulations and instructions, offensive maneuvers, and inadequate flight preparation. It is suggested that mishap reduction may be effected by age-specific training. (7 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

162. FAA again denies pilots' age 60 petition, but will expand its study of the issue. PR Newswire, May 26, 1989, 0526DC019.

163. FAA Age 60 Rule questionable; court says FAA should provide better evidence of safety risk. PR Newswire, Sept 15, 1988, 0915NY043.

164. FAA aligns pilot age, training regulations for jet age demands. Aviation Week & Space Technology, Jul 6, 1959, p33.

165. FAA is studying effects of pilot aging. R. H. Cook. Aviation Week & Space Technology, Feb 20, 1961, p39.

166. FAA likes pilot age extension to test program. Aviation Week & Space Technology (AWSTA), volume 117, July 19, 1982, p32(2).

167. FAA sets pilot age limit, tightens rules. R. H. Cook. Aviation Week & Space Technology, Dec 7, 1959, p45.

168. FARFALETT-CASALI, F.; ROCCO, P. (Commission of the European Communities, Joint, Research Centre, Ispra, Italy). Vacuum outer containment of a fusion power plant - Implications for overall safety and tritium control (Fintor-D tokamak reactor). In: Symposium on Engineering Problems of Fusion Research, 7th, Knoxville, Tenn., October 25-28, 1977, Proceedings. Volume 2. (A78-39783 17-75) Piscataway, N.J., Institute of Electrical and Electronics Engineers, Inc., 1977, p. 1812-1815; 1977 7 Refs.

169. Farr, W. D. (Department of Pathology, Brooke Army Medical Center, Fort Sam Houston, TX). Compatibility of the aviation night vision imaging systems and the aging aviator. Aviat-Space-Environ-Med ; 1989 Oct; 60(10 Pt 2): B78-80; ISSN: 0095-6562. 9JA. Note: EN. With the advent of the night vision goggle (NVG) mission requirements in the United States Army, the reserve components began training with the second generation (AN/PVS-5 & AN/PVS-5A) systems. These systems prohibit the wear of spectacles by the aviator. Certain modifications on some systems allowed for spectacle wear. However, there still exists a 5-h day filter training minimum in which the full NVG with facemask and cushion must be worn without spectacles. The NVG system corrects up to +2.00 diopters of hyperopia and up to -6.00 diopters of myopia, but only +/- 1.00 diopter of astigmatism. A survey of the reserve component (USAR and NG) aviators in the Southwest was conducted to establish the relative incompatibility of the NVG system among an aviator population older than the active component aviators. All medical record custodians received questionnaires and the flight surgeon followed up replies by telephone or on-site visits. We screened a total of 127 aviator records. The aviator's average age was 39.5 years; 65.3% had 20/20 vision and were emmetropes. Of those that wore spectacles, 82.4% had hyperopia or myopia correctable by the built-in optical adjustments contained in the NVG. The other 17.6%, who had vision that exceeded the correction factors built into the NVG, consisted of astigmats with greater than 2.00 diopters of cylinder. Nearly 20% of the aviators who wore corrective lenses exceeded the corrective limits of the goggles that they used. Further, pilots had no specific prescreening instruction. With the development of more sophisticated aviation optics. Three options exist: modify visual standards, allow contact lens wear, or design future systems to be compatible with spectacles. Author-abstract.

170. Farr, Warner D. (Brooke US Army Medical Ctr, Dept of Pathology, Ft Sam Houston, TX, US). Compatibility of the aviation night vision imaging systems and the agingaviator. 14th Biennial Scientific Session of the Joint Committee on Aviation Pathology (1984, Washington, DC). Aviation, Space, and Environmental Medicine; 1989 Oct Vol 60(10, Sect 2)B78-B80; 1989; CODEN: AEMEAY; ISSN:

00956562. Note: Human. Surveyed 127 reserve US Army and National Guard aviators (average age 39.5yrs) to examine their compatibility with night vision goggles (NVGs). NVGs were designed to be worn without eyeglasses (EGs), but were modified to accommodate EGs. 65.3% had 20/20 vision and were emmetropes. 26.8% wore corrective lenses. Nearly 20% of Ss who wore corrective lenses exceeded the corrective limits of the goggles that they used. 3 options exist for development of more sophisticated aviation optics: modify visual standards, allow contact lens wear, or design future systems to be compatible with spectacles. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

171. Farr, Warner D. (Brooke US Army Medical Ctr, Dept of Pathology, Ft Sam Houston, TX, US). Compatibility of the aviation night vision imaging systems and the aging aviator. 14th Biennial Scientific Session of the Joint Committee on Aviation Pathology (1984, Washington, DC). Aviation, Space, & Environmental Medicine. 1989 Oct Vol 60(10, Sect 2) B78-B80; CODEN: AEMEAY; ISSN: 0095-6562. Note: English (EN). Surveyed 127 reserve US Army and National Guard aviators (average age 39.5 yrs) to examine their compatibility with night vision goggles (NVGs). NVGs were designed to be worn without eyeglasses (EGs), but were modified to accommodate EGs. 65.3% had 20/20 vision and were emmetropes. 26.8% wore corrective lenses. Nearly 20% of Ss who wore corrective lenses exceeded the corrective limits of the goggles that they used. 3 options exist for development of more sophisticated aviation optics: modify visual standards, allow contact lens wear, or design future systems to be compatible with spectacles. (PsycINFO Database Copyright 1990 American Psychological Assn, all rights reserved).

172. Fatigue, pilot deviations and time of day. Note: Report, 15 Jul. 1988 - 30 Jun. 1989 ? type 7/6/6-10.

173. Fay, R. C. Air safety and the older airline pilot. Note: Aging and Work. Summer 1978. Vol. 1, No. 3. p. 153-161. (9p.). The ruling by the Federal Aviation Administration (FAA), which prohibits pilots over 60 from flying for commercial airlines, represents unfair age discrimination and ignores the public interest aspects of allowing healthy older pilots to fly. The Age 60 Rule is based on pre-1959 data taken from the general male population rather than from a pilot population. The rule was indirectly at issue in a recent lawsuit, Houghton v. McDonnell Douglas Corp., that was decided in favor of a 52-year-old test pilot who had been terminated unlawfully from employment on the basis of age. Expert witnesses testified that for individual pilots under individual circumstances, enough data now exist to establish that a pilot is physiologically young in relation to his/her chronological age. The two prime evaluation elements necessary are a longitudinal medical history and exercise electrocardiogram testing. In 1977, four commercial airline captains petitioned for exemption from the Age 60 Rule, stating that they met or exceeded the functional standards set forth in the Houghton case. The FAA denied the petitions, declaring the case inapplicable to the question of airline safety. The FAA has, however, granted exemptions from other safety rules to pilots with past alcoholism or heart disease. Allowing healthy older pilots to fly would produce cost savings and improved safety because the most experienced pilots could continue flying, and would make the airline industry's practices consistent with the national policy against age discrimination. (CI).

174. Fenelon, B.; Neill, R. A.; Manning, M. (U Newcastle, Australia). Stereoscopic cerebral evoked potentials of Air Force pilots and civilian comparison groups. Aviation, Space, and Environmental Medicine; 1984 Oct Vol 55(10) 914-920; 1984; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Reports the investigative application of a new type of random-dot stereogram(RDS) unit, including a generating and display system, in the measurement of stereopsis. The dynamic RDSs were presented to 14 Air Force jet pilots (aged 21-38 yrs) through a new visual display system. Games that simulated target-detection exercises were included in the test sequence. A pattern of response was revealed in the event-related potential measures. In general, left-hemisphere amplitudes exceeded those of the right hemisphere, and the predominant response was recorded at the left-temporal site. Amplitudes of responses in Ss able to describe the stimuli in subjective report (perceivers) exceeded those of nonperceivers. Stimuli with definite boundaries evoked stronger and earlier-latency responses than stimuli with nebulous boundaries. (16 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

175. Finesilver, S. G. Compendium of studies on the senior driver in the United States including highlights and significant findings: a part of the final report. Note: University of Denver, College of Law, Denver, CO. Mar 1970. (269p.). AVAILABILITY: SCAN Microfiche No. CCF 000296. A compendium of 11 studies and reports on various facets of senior drivers is presented. The studies and reports focus on the old driver and his or her licensing and accident involvement in 30 States and the District of Columbia, a survey of insurance company officials regarding the insurability of senior drivers, insurance premium reductions for

senior drivers in 1970, anticancellation insurance statues and their impact on senior driver, legal aspects of licensing, medical and health standards, improving the safe mobility of older persons, the driving ability of the elderly (reflected in a survey of traffic judges, safety professionals, and licensing officials), the driving record of older Americans, and the effect of the aging process on commercial drivers and pilots. Significant findings of the studies are included. (JG).

176. Fitoussi, Y.; Corbe, C.; Hamard, H.; Perdriel, G. (Service d'Ophtalmologie, C.H.U. de Nancy, Hopital central, Vandoeuvre-les-Nancy). [A glaucoma follow-up of 1500 persons over 20 years]. J-Fr-Ophtalmol ; 1988; 11(2): 151-4; ISSN: 0181-5512. IAE. Note: FR. The parameters of glaucoma risk have been compiled and computer processed on 1,571 patients during 20 years at the C.P.E.M.P.N. (Medical Evaluation Center for the Aeronautic Staff) of Paris. The goal of this study is to follow in real time the evolution of these parameters and to determine their physiological variations across time in terms of age and professional categories. An average intra-ocular pressure of 15.1 mmHg as well as hypertonia and glaucoma percentages respectively of 3.88% and 0.6% have been recorded in this study. These results were below the results of other previous surveys due to the greater age range of our study the youngest being 15 years old. There was no significant difference among pilots and non pilots. The optic disc examination was not decisive for diagnostic screening. Author-abstract.

177. Fitzpatrick, D. T. (School of Public Health, University of Hawaii-Manoa). An analysis of noise-induced hearing loss in Army helicopter pilots. Aviat-Space-Environ-Med ; 1988 Oct; 59(10): 937-41; ISSN: 0095-6562. 9JA. Note: EN. Hearing loss in the aviation environment has been attributed to a variety of factors ranging from aircraft noise exposure to the aging process. Consequently, this study was conducted to determine the relative contribution of age, total flight hours, type of aircraft, and use of hearing protection to hearing loss in U.S. Army aviators. Information from a survey of the aviators in an aviation brigade was combined with audiometric records to create the data file. The final study group, 83% of the unit aviators, was evaluated for hearing loss using two criteria: 1) existing U.S. army standards, and 2) four empirical categories of significant threshold shift. Data analysis suggests that hearing loss is primarily a function of noise exposure as measured by total flight hours. Age was found to be a less significant factor; aircraft type had no significant effect. The results indicate that combination hearing protection appears to significantly lower the risk of hearing loss. Author-abstract.

178. Flaherty, Tom. Ferguson resigns post as traveling secretary. (Tommy Ferguson: Braves, Angels, Pilots, Brewers). Sporting News (SPONB), Feb 7, 1983. p38(1).

179. Fluctuation limits of the acid-base status and of the gas content of blood in healthy untrained men performing standard physical exercise.

180. Flying after 60. (age restriction on air pilots) (editorial). The New York Times (NYTIA), volume 139, Dec 29, 1989, Fri edition, pA18(N) pA34(L), col 1.

181. Flynn, John Thomas. Older pilot. Flying, Nov, 1961, p73.

182. Foreign aircraft, crews replace flights halted by Australian pilots. Aviation Week & Space Technology, volume 131, issue n11, Sept 11, 1989, p129(1).

183. Fotos, Christopher P. FAA weighs response to age-60 challenge. (Federal Aviation Administration; rule preventing pilots over 60 from flying commercial flights). Aviation Week & Space Technology, volume 129, issue n22, Nov 28, 1988, p98(2).

184. Fowler, Barry; Elcombe, David D.; Kelso, Barry; Porlier, Gerald (York U, Stong Coll, Downsview, Canada). The threshold for hypoxia effects on perceptual motor performance. Human Factors; 1987 Feb Vol 29(1) 61-66; 1987; CODEN: HUFAA6; ISSN: 00187208. Note: Human. The hypoxia threshold for a decrement in perceptual-motor performance wasdetermined with 6 Ss (aged 21-27 yrs) using a serial choice response time task at 2 levels of stimulus brightness. Results provide a threshold estimate of 9,750 ft for performance decrements due to hypoxia and point to the disruption of vision as a factor influencing this decrement. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

185. Frank, C.; Ohman, J. (Performer: Transportation Systems Center, Cambridge, MA. Funder: Federal Aviation Administration, Washington, DC. Office of Management Systems.). General Aviation Pilot and Aircraft Activity Survey. Final rept. CY 84. 039664000, 407082; Sep 85. 83p 1985. Note: Prepared in cooperation with Automated Sciences Group, Inc., Silver Spring, MD. UNITED-STATES PC A05/MF A01 Contract: DTRS5784C00100. This report provides a summary and analysis of the data collected in the 1984 General Aviation Pilot and Aircraft Activity Survey. The survey was conducted at a random

sample of general aviation airports across the nation throughout the months of July, August, September, and October, 1984 by the Federal Aviation Administration with the assistance of the Civil Air Patrol. The survey data provide information regarding the magnitude and characteristics of general aviation including: type and source of weather information services, trip length in time and distance, and pilot age and certification. Estimates are made of total 1984 general aviation operations, fuel consumption and aircraft miles flown.

186. Freudenheim, Milt; Slavin, Barbara. Polish economy getting new pilot. (Edward Babiuch). New York Times (NYTIA), Feb 17, 1980, Sun edition, section 4, pE2, col 2.

187. FROEHLICH, G. H. Pure tone hearing losses in pilots of various aircraft, age and flying time and its significance for inflight speech communication. Institute of Aviation Medicine, Fuerstenfeldbruck (West Germany); Oct. 1973. Note: Language: English Country of Origin: Germany, Federal Republic of Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR7405 The punch cards of 2000 pilots investigated in 1971 have been separated into 4 groups of flying time respectively age, subdivided into pilots of jet aircraft, piston engined aircraft and helicopters. High tone hearing losses were increasing with age and flying time and in helicopter pilots more rapidly than in pilots of the other types of aircraft. A number of pilot's speech audiograms have been investigated. The intelligibility scores of hearing losses above 3000 Hz were excellent and there are no problems with inflight speech communications. Hearing losses above 2000 Hz resulted in intelligibility scores of 72% at low and 85% at medium speech levels. Less than 10% of the pilots above 45 years of age had hearing losses above 1500 Hz. At medium speech levels they obtained only a score of 70%, 100% are frequently not reached even with high speech levels. Together with the masking effect of inflight cabin noise, voice communication might be endangered, especially if the attenuation characteristics of headsets and flying helmets are poor. In these cases, the use of properly fitting headgear is especially important to insure a favorable noise to speech ratio. (Author). In AGARD Pathophysiol. Conditions Compatible with Flying 4 p (SEE N74-13784 05-04).

188. Froom, P.; Barzilay, J.; Caine, Y.; Margaliot, S.; Forecast, D.; Gross, M. (Israel Air Force Aeromedical Center, Tel Hashomer). Low back pain in pilots. Aviat-Space-Environ-Med ; 1986 Jul; 57(7): 694-5; ISSN: 0095-6562. 9JA. Note: EN. A questionnaire on low back pain (LBP) was administered to 373 fighter pilots, 165 transport pilots, and 264 helicopter pilots. Helicopter pilots had more pain during flight than did fighter or transport pilots (34.5%, 12.9%, and 5.1%, respectively). A history of LBP temporally unassociated with flight was found in 26.5% of helicopter pilots, 31.5% of transport pilots and 25.2% of fighter pilots. We conclude that, despite the pain experienced by helicopter pilots in flight, they are not at increased risk for LBP unassociated with flight. Author-abstract.

189. Froom, P.; Benbassat, J.; Gross, M.; Ribak, J.; Lewis, B. S. (Israel Air Force Aeromedical Center, Tel Hashomer). Air accidents, pilot experience, and disease-related inflight sudden incapacitation. Aviat-Space-Environ-Med ; 1988 Mar; 59(3): 278-81; ISSN: 0095-6562. 9JA. Note: EN. The epidemiology of sudden death, the etiology of inflight sudden incapacitation, and the influence of pilot age and experience on air accident rates are reviewed in order to determine the aeromedical emphasis needed to minimize accidents. Sudden deaths in men over age 35 are nearly all due to coronary artery disease, whereas in those under 35 years they are mostly due to hypertrophic cardiomyopathy. The incidence of fatal accidents from human error is, however, far greater than that from physical illness. Since inexperienced pilots have a 2-3 times increased incidence of mishaps due to pilot error, the estimated risk of disease related in-flight sudden incapacitation should be balanced by consideration of pilot experience. Therefore, it may be preferable to grant waivers to experienced pilots with an increased incidence of disease-related inflight sudden incapacitation than to replace them with novices. We conclude that overly strict medical criteria may paradoxically increase accident rates. Author-abstract.

190. Froom, Paul; Et, Al (Israel Air Force Aeromedical Ctr, Clinical Branch, Tel Hashomer). Systolic blood pressure in fighter pilots after 12 15 years service. Aviation, Space, and Environmental Medicine; 1986 Apr Vol 57(4) 367-369; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Measured systolic blood pressure (SBP) at entry and after 12-15 yrs in 112fighter pilots and 112 transport and helicopter pilots. At entry, Ss were aged 20-24 yrs; mean SBP was 122 mm Hg in fighter pilots and 124 mm Hg in transport and helicopter pilots. After 12-15 yrs, mean SBP was 118 mm Hg in both groups. It is concluded that the stress of flying fighter aircraft for 12-15 yrs is not associated with an increased risk of hypertension. (26 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

191. Froom, Paul; Ribak, Joseph; Burger, Abraham; Gross, Moshe (Israel Air Force Aeromedical Ctr, Clinical Branch, Tel Hashomer). Visual acuity, corrective lenses, and accidents in helicopter pilots. Aviation, Space, and Environmental Medicine; 1987 Mar Vol 58(3) 252-253; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Compared the visual acuity of 38 helicopter pilots experiencing serious airaccidents to that of a control group of 72 pilots matched for age, aircraft, and hours of flight. Decrease in visual acuity was divided into 2 groups: (1) minor decreases in vision up to 20/25 (not requiring corrective lenses); and (2) visual acuity of 20/30 or less with correction to 20/20. Minor decreases in visual acuity were found in 23.7% of those in the accident group compared to 25% in the control group. There were more pilots in the control group who needed corrective lenses (12.5% vs 2.8%). It is concluded that helicopter pilots with corrective lenses or minor uncorrected decreases in visual acuity are not at increased risk for serious air accidents. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

192. FUCHS, H. S., ed. (German Fed. Armed Forces, Bonn). Pathophysiological conditions compatible with flying. Advisory Group for Aerospace Research and Development, Paris (France); Oct. 1973 152P. Note: Presented at AGARD Aerospace Med. Panel Specialist Meeting, Pensacola, Fla., 16-17 May 1973 Report No.: AGARD-CP-129 Language: MULTIPLE; In ENGLISH and FRENCH Document Type: COLLOQUIA Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR7405 Medical selection and maintenance procedures for aircrews are reported. The effects of ageing, flight stress, clinical and psychophysiological pathological factors on pilot flight fitness are considered. Presentation Country of Origin: France Country of Publication: International Organization.

193. FUCHS, H. S. Technical evaluation report, conclusion, recommendations (Drug therapy effects on flying effectiveness and psychosomatic fitness of flying personnel). Advisory Group for Aerospace Research and Development, Paris (France); Feb. 1973. Note: Language: English Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR7312 Inasmuch as flying effectiveness depends on an optimum degree of psychosomatic fitness, it is axiomatic that the need in a flyer for drugs should raise serious doubts as to his fitness to fly. Increasing age of the flying population is the major contributing factor since there is an increased incidence of disease commonly associated with aging. Improved diagnostic techniques and augmented information about normals and early disease have also had a significant influence upon both the types of problems evaluated and their disposition. The flight surgeon must keep well informed on all drugs, particularly newly accepted ones, so that no medication will be prescribed which might compromise flight safety. Individual susceptibility and hypersensitivity to drugs in general must always be considered. In certain situations drug therapy is warranted to prevent complications and to effect an improvement in long term prognosis. Another problem is acute illness, wherein drug therapy is warranted either to treat primarily the etiology of the disease or more frequently merely to control the symptoms in a selflimited condition. (Author). In its The Use of Medication and Drugs in Flying Personnel 13 p (SEE N73-21102 12-04) Country of Origin: France Country of Publication: International Organization.

194. FUJII, Z.; KURIHARA, Y. /AIR SELF DEFENCE FORCE, AEROMEDICAL LAB., TACHIKAWA, JAPAN/.; MATSUMOTO, I.; NAKAHARA, K.; WATANABE, T.; YAMAZAKI, Y. Studies on physiological functions with reference to age in JASDF jet fighter pilots. II. (Blood pressure and electrocardiographic finding during tests conducted on 100 F-86F jet pilots with reference to age); Oct. 1966 15P. 20 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA6803 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

195. Gallagher, R. Michael; Warner, Joanne B. (Medical Ctr for Headache, Moorestown, NJ). Patient motivation in the treatment of migraine: A non medicinal study. Headache; 1984 Sep Vol 24(5) 269-271; 1984; ISSN: 00178748. Note: Human. Six military pilot, 6 fertile female, and 6 other migraine sufferers (aged 21-36 yrs) participated in a 5-mo nonmedical treatment program that included counseling, biofeedback, stress reduction, dietary restriction, exercise, and sleep-pattern adjustment components to investigate the role of Ss' motivation in migraine treatment. Motivation was defined as Ss' willingness to follow a prescribed regimen and actively participate in the program. Results indicate that, according to the program staff, pilots were generally more motivated; these Ss showed the most improvement in terms of the frequency and duration of headaches. Findings suggest that motivation plays a significant role in migraine treatment. (5 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

196. Gammill, James. Reflexions sur les mecanismes contraphobiques et la position depressive.(Reflections on the counterphobic mechanisms and the depressive position.). Revue Francaise de Psychanalyse; 1989 May-Jun Vol 53(3) 919-936; 1989; ISSN: 00352942. Note: Human. Discusses the problem of counterphobic mechanisms from a psychoanalytic viewpoint, exemplifying this theme with 3 specific clinical vignettes and the author's recollections of working with aging British Air Force pilots, efficient, even daring in their youth (due to their counterphobic mechanisms) but subsequently grown fearful of piloting any plane. Counterphobic mechanisms (especially those activated by behavior therapy) may turn phobias into dangerous disregard or real dangers. Related topics addressed include the psychodynamics of counterphobic mechanisms, involving eroticisation of anxiety and mustering of manic defenses against the depressive and persecutory contents of the underlying phobias. (English, German & Spanish abstracts) (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

197. Garcia, Alcon J. L.; Moreno, Vazquez J. M.; Mena, Arias P.; Martinez, Martinez M.; Campillo, Alvarez J. E. (Physiology Department, Extramadura University, Badajoz, Spain). Relation between flight hours and peripheral nervous conduction velocity. Aviat-Space-Environ-Med ; 1990 Apr; 61(4): 353-5; ISSN: 0095-6562. 9JA. Note: EN. The peripheral nervous system is highly sensitive to variations in the internal medium. A neurophysiological study (peripheral nervous conduction velocity) and an enzymatic study (catalase and glutathione-peroxidase) were performed in both instructor and student pilots. Pilots do not show the age-dependent decrease in the peripheral sensory nervous conduction velocity observed in non-pilot subject controls. The sensory conduction velocity (SCV) was significantly (p less than 0.01) increased when hours of flight experience increased, yielding a positive correlation ($r = 0.6461$; $p = 0.0016$). A significant (p less than 0.01) increase in the erythrocite catalase and glutathione-peroxidase activities were observed in pilots vs. controls. The present data suggest that a chronically increased oxygen consumption could be the reason for the increase in peripheral nervous conduction velocity observed in pilots. Author-abstract.

198. Garrison, Peter. Age-old problem; does aging erode your flying skills? Flying (FLYGA), volume 113, Sept, 1986, p68(4).

199. Garrison, Peter. My lunch with Bob Hoover. (air pilot). Flying (FLYGA), volume 115, issue n4, April, 1988, p76(5).

200. Garvey, William. Chocking it. (Flying's editor-in-chief resigns) (column). Flying (FLYGA), volume 117, issue n4, April, 1990, p10(1).

201. Gault, Owen. When is it time to quit? (aging and the ability to fly an aircraft). Air Progress (AIRPB), volume 52, issue n6, June, 1990, p20(2).

202. Gerathewohl, S. J. (Research Planning Branch, Office of Aviation Medicine, Washington, Dc, Usa). Age and the aviator; developing a psychophysiological proficiency index for pilots. S-Afr-Med-J ; 1977 Jul 20; 52(4): 145; ISSN: 0038-2469. U4R. Note: EN.

203. GERATHEWOHL, S. J. Psychophysiological effects of aging: Developing a functional age index for pilots. 3: Measurement of pilot performance. Federal Aviation Administration, Washington, D.C. Office of Aviation Medicine; Aug. 1978 61P. Note: Report No.: FAA-AM-78-27 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A04/MF A01 Journal Announcement: STAR7908 If a functional age index for pilots is to be developed that can be used as a criterion for extending or terminating an aviator career, means for the assessment of pilot proficiency must be available or devised. The most advanced concept of measuring pilot performance is based on automated data recording and processing independently of or in conjunction with the judgment and interpretation of an instructor, examiner, or inspector. Owing to the capability of simultaneously monitoring the performance of the human operator and the aircraft, automatic inflight monitors are the ultimate in systems design and application. Their implications for the development of a functional age index for pilots are discussed. (Author).

204. Gerathewohl, S. J. (FAA Ofc of Aviation Medicine, Washington, DC). Psychophysiological effects of aging: Developing a functional age index for pilots: I. A survey of pertinent literature. FAA Office of Aviation Medicine Reports. 1977 Apr No 77-6 25 p. Note: English (EN). Surveys selected studies of age and aviation-related psychophysiological functions. Particular attention is given to age differences as measured by standardized tests of sensory, perceptual, mental, cognitive, and neurophysiological functions and processes, to the objective assessment of personality traits and structures, and to other implications for the development of a functional age index for pilots. (122 ref) (PsycINFO Database

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205. GERECHT, KLAUS (Deutsche Forschungsanstalt fuer Luft- und Raumfahrt, Cologne, Germany, F.R.). Biochemical and physiological changes in glider pilots during multi-hour flights. European Space Agency, Paris (France); May 1990 106P. Note: Translation Transl. into ENGLISH from Biochemische und physiologische Veraenderungen bei Piloten von Segelflugzeugen waehrend laengerer Fluege (Cologne, Fed. Republic of Germany, DLR), Jun. 1989 118 p Announcements: Original language document was announced as N90-13018 Report No.: ESA-TT-1183; DLR-FB-89-29; ETN-90-97082.

206. Gidney, L.H (Performer: Air War Coll., Maxwell AFB, AL). Air Force Reserve Pilot A Critical Resource. Research rept. 001030000, 014550; Mar 89. 54p 1989. Note: UNITED-STATES PC A04/MF A01. This study reviews the importance of reserve forces to the overall effectiveness of military capability and then focuses on the need for a fully manned and capable pilot force in the Air Force Reserve (AFRES). The current AFRES pilot force structure is examined and the conclusion is drawn that an extremely high rate of turnover due to retirements and reassignments is likely in the next five to ten years. Next, AFRES's ability to recruit and retain pilots in the same time frame is discussed relative to its main competitors for Air Force pilots, the regular Air Force and commercial aviation. The conclusion suggests that recruiting and retention may suffer in the future with a concomitant drop in pilot manning and goes on to suggest several potential steps to remedy the situation. (kr).

207. GILLEN, MARTIN H.; RAYMOND, DENIS. Progressive cervical osteoarthritis in high performance aircraft pilots. National Defence Medical Centre, Ottawa (Ontario). Rehabilitation Centre; In AGARD, Neck Injury in Advanced Military Aircraft Environments 6 p (SEE N90-25459 19-52) Feb. 1990.

208. GOLDMAN, R. F. /U.S. ARMY, RESEARCH INST. OF ENVIRONMENTAL MEDICINE, NATICK, MASS./. Physical fitness, flight requirements and age (Physical fitness relation to flight requirements, pilot performance and age, considering muscular strength, cardio-respiratory capacity, body weight and mental aspects). AEROSPACE MEDICINE, VOL. 42, P. 635-641; Jun. 1971 26 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7116 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

209. Goodman, L.S (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Development Factors and Field Dependence Independence. Interim rept. 065612000, 406061; Nov 84. 20p 1984. Note: UNITED-STATES PC A02/MF A01. The use of field dependence-field independence measures has been suggested for both the selection and classification of naval aviators. If measures of field dependence-field independence are predictive of pilot proficiency, the utility of the construct for selection and classification could be moderated by the influence of intraindividual changes in field dependence-field independence (FD-FI) over time. This report reviews (1) particulars of the field dependence-field independence construct, (2) evidence for and against age-related changes in field dependence-field independence, (3) intraindividual lability in field-dependence-field independence, and (4) various measurement, sampling, and experimental design concerns associated with investigations of the construct. Though great care may be taken to select subjects and statistically control known moderator variables in studies of FD-FI, it is often difficult, if not impossible, to impose appropriate selection and control procedures in a priori fashion. The simultaneous employment of cross-sectional and longitudinal sequences in data collection is best suited to the description of intraindividual changes in FD-FI with age.

210. GOURBAT, J. P.; BURLATON, J. P.; GUERMAZI, N.; LEGUAY, G.; SEIGNEURIC, A. (Hopital, d'Instruction des Armees Dominique Larrey, Versailles, France). Mitral valve prolapse in a young person - An estimation of the risk of arrhythmia - The impact on the flight fitness of a pilot. (Societe Francaise de Medecine des Armees, Seance de Medecine Aeronautique, Metz, France, June 19, 1985) Medecine Aeronautique et Spatiale, vol. 24, 4th Quarter, 1985, p. 244-246. In French; 1985 15 Refs. Note: Language: French Country of Origin: France Document Type: JOURNAL ARTICLE Journal Announcement: IAA8609 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

211. Graeber, R. Curtis; Dement, William C.; Nicholson, Anthony N.; Sasaki, MitsuO. Et, Al (NASA-Ames Research Ctr, Aeronautical Human Factors Research Office,Moffett Field, CA). International cooperative study of aircrew layover sleep: Operational summary. Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect II)10-13; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. In a study of layover sleep, it was found that eastward flight produced moresleep disruption than westward. Different sleep and scheduling strategies are recommended for each flight direction, and the importance of

individual crewmember factors is discussed in relation to age and circadian type. (3 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

212. Graeber, R. Curtis; Lauber, John K.; Connell, Linda J.; Gander, Philippa H. (NASA-Ames Research Ctr, Aeronautical Human Factors Research Office,Moffett Field, CA). International aircrew sleep and wakefulness after multiple time zone flights: A cooperative study. Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect II) 3-9; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Provides an overview of an international EEG study of sleep and wakefulnessin flight crews operating long-haul routes across 7 or 8 time zones, using 56 crewmembers (aged 31-61 yrs). The study's history, research design, and standardization of procedures are discussed. The overall results are consistent among 4 participating laboratories and support the feasibility of cooperative international sleep research in the operational arena. (15 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

213. GRAEBER, R. CURTIS (NASA, Ames Research Center, Moffet Field, CA)DEMENT, WILLIAM C. (Stanford University, CA); NICHOLSON, ANTHONY N. (RAF, Institute, of Aviation Medicine, Farnborough, England); SASAKI, MITSUO(Japan, Air Lines, Co., Ltd., Flight Crew Medical Dept., Tokyo); WEGMANN, HANS, M. (DFVLR, Institut fuer Flugmedizin, Cologne, West Germany). International cooperative study of aircrew layover sleep Operational summary. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Dec. 1986. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8710 The findings of this cooperative study of layover sleep have direct implications for flight operations. In the consensus view of the principal investigators, these can be divided into their relevance for eastward or westward flight. Eastward flight produced more sleep disruption than westward. Different sleep and scheduling strategies are recommended for each flight direction, and the importance of individual crewmember factors is discussed in relation to age and circadian type. Despite the limitations of this study with regard to trip simplicity and the baseline data, the results for each airline are highly consistent and should be applicable to a wide range of long-haul crewmembers and carriers. (Author) Source of Abstract/Subfile: AIAA/TIS. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 57, Dec. 1986, p. B10-B13.

214. Gray, G.W (Performer: Advisory Group for Aerospace Research and Development, Neuilly-sur-Seine (France). Funder: National Aeronautics and Space Administration, Washington, DC.). Cardiopulmonary Screening for High Performance Flying: Selection and Retention Issues.. 056102000, AD455458; c1987. 4p 1987. Note: In AGARD Short Course on Cardiopulmonary Aspects of Aerospace Medicine 4p. FRANCE (Order as N87-24070 PC A07/MF A01). Detection methods used in the cardiopulmonary screening of aircrew are discussed with reference to candidate selection standards and retention of older experienced pilots. Aircrew candidate screening emphasizes the diagnosis of mostly asymtomatic diseases and disorders. It is designed to identify structural cardiac abnormalities and cardiac arrhythmias that may be a problem in the high +G(z) environment. Screening should also be directed toward pulmonary disorders which may compromise human effectiveness in rapid onset high G (ROHG) and high sustained G (HSG) fighter operations. In experienced aircrew, screening emphasis shifts to the detection of abnormalities which develop with age, particularly, coronary heart disease and small airways disease. Current issues including tobacco smoking, the effects of repetative HSG on the heart and lungs, minimal coronary heart disease, and coronary angioplasty are also discussed.

215. GRAY, G. W. Cardiopulmonary screening for high-performance flying: Selection and retention issues. Advisory Group for Aerospace Research and Development, Neuilly-Sur-Seine (France); Mar. 1987. Note: Language: English Country of Origin: United Kingdom Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A07/MF A01 Journal Announcement: STAR8717 Detection methods used in the cardiopulmonary screening of aircrew are discussed with reference to candidate selection standards and retention of older experienced pilots. Aircrew candidate screening emphasizes the diagnosis of mostly asymtomatic diseases and disorders. It is designed to identify structural cardiac abnormalities and cardiac arrhythmias that may be a problem in the high +G(z) environment. Screening should also be directed toward pulmonary disorders which may compromise human effectiveness in rapid onset high G (ROHG) and high sustained G (HSG) fighter operations. In experienced aircrew, screening emphasis shifts to the detection of abnormalities which develop with age, particularly, coronary heart disease and small airways disease. Current issues including tobacco smoking, the effects of repetative HSG on the heart and lungs, minimal coronary heart disease, and coronary angioplasty are also discussed. (M.G.) Source of Abstract/Subfile: NASA STIF. In AGARD

Short Course on Cardiopulmonary Aspects of Aerospace Medicine 4 p (SEE N87-24070 17-52).

216. GRAYBIEL, A.; HARLAN, W. R., JR.; LANE, N. E.; MITCHELL, R. E.; OBERMAN, A. Trends in systolic blood pressure in the thousand aviator cohort over a 24-year period (Age, weight, and parental longevity effects on trends in systolic blood pressure in thousand aviator cohort over 24 year period). Naval School of Aviation Medicine, Pensacola, Fla; Apr. 1967. Note: Report No.: NASA-CR-85973; NAMI-1004 Contract No.: NASA ORDER R-136 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6718 COSATI Code: 6P Physiology. 25 APR. 1967 22 P REFS.

217. Greeley, Brendan M. Jr. Small corporations hardest hit by pilot shortage, airline hiring. (business flying). Aviation Week & Space Technology (AWSTA), volume 123, Sept 23, 1985, p145(2).

218. Greenhouse, Linda. Forced retiring at 60 barred. New York Times (NYTIA), June 18, 1985, Tue edition, p29(N) pD1(L), col 6.

219. Group wants greater role in Interand Corp. (Hawthorne Associates Inc., Eastern Air Lines Variable Retirement Plan for Pilots). Reuters, July 10, 1990, R071001774.

220. GUBSER, A. W. (Swiss Air Force, Institute of Aviation Medicine, Duebendorf, Switzerland). Aging problems and their impact on pilot performance. Cockpit, vol. 18, Oct.-Dec. 1983, p. 4-8; Dec. 1983. Note: Language: English Country of Origin: Switzerland Document Type: JOURNAL ARTICLE Journal Announcement: IAA8408 The aging effects on physiological systems important to aircraft pilots, except vision, may be alleviated by regular physical exercise and by avoiding cigarette smoking and obesity. Cerebral circulation is of maximum importance to compensate for age-induced decreased cerebral performance. Older pilots do not perform as well as younger pilots on new and more complex tasks, though due to experience older pilots perform as well as or even better on accustomed tasks. Physical exercise has the following benefits: reduction of arteriosclerosis affecting the brain; improved general vision; and maintenance of the musculoskeletal system which otherwise thickens, calcifies and becomes porotic. In particular the outer eye muscles responsible for fine eye movement may be affected, causing reduced vision. However, in conclusion it must be remembered that aging is an individual process. (C.M.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library

221. Guilmette, Thomas J.; Treanor, J. J. (Keller US Army Community Hosp, West Point, NY). Baseline and comparative neuropsychological data on U.S. Army aviators. Aviation, Space, and Environmental Medicine; 1986 Oct Vol 57(10, Sect 1)950-953; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Administered a battery of tests, including the Wechsler Adult IntelligenceScale--Revised and the Halstead-Reitan Neuropsychological Test Battery, to 15 US Army aviators (mean age 36.6 yrs) and 15 nonaviator military personnel (mean age 36.6 yrs) matched for education and years of military service. The intent was to begin to establish norms for unimpaired aviators. Results are generally nondiscriminatory, although aviators performed in the high-average range on a number of variables, (e.g., memory functioning, mathematical problem solving, motor speed, concentration). Although no clinical inferences are drawn from the data, it is suggested that the tests can be used to obtain normative group and individual baseline data and assist flight surgeons in assessing intellectual abilities of aviators. (16 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

222. Haegerstrom, Portnoy, Gunilla; Jones, Reese; Adams, Anthony J. Jampolsky, Arthur (Smith-Kettlewell Inst of Visual Sciences, San Francisco, CA). Effects of atropine and 2 PAM chloride on vision and performance in humans. Aviation, Space, and Environmental Medicine; 1987 Jan Vol 58(1) 47-53; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Assessed the time course and severity of effects of atropine sulfate and 2-PAM Cl on selected visual functions, physiological measures, and tracking performance in 10 males (aged 21-31 yrs). A dose-related increase in pupillary diameter and decrease in accommodative amplitude with accompanying loss of near visual acuity was found following atropine administration, and tracking performance was significantly decreased. Most of the physiological tests, tracking performance, and all visual functions were unaffected by 2-PAM Cl. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

223. Hager, Philip. Pan Am to pay former pilots $17.2 million in age bias case. (Pan American World Airways). Los Angeles Times, volume 107, Feb 4, 1988, Thu edition, section I, p3, col 5.

224. Hairston, J.; Wright, M.R.; Narva, A.; Schwenk, J. (Performer: Verve Research Corp., Rockville, MD. Funder: Federal Aviation Administration, Washington, DC. Office of Management Systems. Funder:

Transportation Systems Center, Cambridge, MA.). General Aviation Pilot and Aircraft Activity Survey. Final rept. CY 81. 100997000, 409711; Dec 83. 78p 1983. Note: UNITED-STATES PC A05/MF A01 Contract: DTRS5782C00039. This report provides a summary and analysis of the data collected in the 1981 General Aviation Pilot and Aircraft Activity Survey. The survey was conducted at a random sample of airports across the nation throughout the months of July, August, and September, 1981 by the Federal Aviation Administration with the assistance of the Civil Air Patrol. The survey data provide information regarding the magnitude and characteristics of general aviation including: type and source of information services, trip length in time and distance, pilot age and certification. Estimates are made of total 1981 general aviation operations, fuel consumption and aircraft miles flown. (Author).

225. Haitch, Richard. Pilots on the shelf. New York Times (NYTIA), March 8, 1981, Sun edition, section 1, p20, col 1.

226. Halaby, Najeeb E. Supreme court denies retiring age review. Aviation Week & Space Technology, Jun 26, 1961, p40.

227. Harrison, W. K.; Smith, J. E. (University of California, San Diego). Age trends in the cardiovascular dynamics of aircrewmen. Aviat-Space-Environ-Med ; 1979 Mar; 50(3): 271-4; ISSN: 0095-6562. 9JA. Note: EN. Age trends in the cardiovascular dynamics of 51 aircrewmen were investigated by means of noninvasive techniques. A statistically significant (p less than 0.01) decline in the ability of their hearts to accelerate blood was found to accompany advancing age. This trend was stronger than the rise in blood pressure found in the group, and known to occur in all aging populations. Assessment of cardiovascular aging in this way may provide new information necessary for the revision of the present mandatory retirement age for airline pilots. Author-abstract.

228. Health profile of U.S. Navy pilots of electronically modified aircraft.

229. Helmreich, Robert L. (U Texas, Austin). Cockpit management attitudes. Special Issue: Aviation psychology. Human Factors; 1984 Oct Vol 26(5) 583-589; 1984; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Administered a cockpit management attitudes survey to 245 airline pilots(mean age 33 yrs). The observed divergence in attitudes indicated that many Ss were unaware or unconvinced of previous findings concerning effective flight-deck management. Data suggest that these attitudes were independent of personality traits and that training in cockpit resource management may improve performance in line operations. Differences in attitudes were noted between captains and first officers with respect to the importance of avoiding negative comments on the performance of other crew members, the value of casual conversation in improving performance, and conditions under which first officers should question the decisions of the captain. Training programs in cockpit management are recommended that would combine factual presentations, moderated group discussions, and behavioral exercises. (6 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

230. Henneman, Jim. Peters screening pilot candidates. (Oriole general manager Hank Peters replacing retired Earl Weaver). Sporting News (SPONB), Oct 18, 1982, p35(1).

231. Herrera, C.E.; Nakhjiri, K.S.; Hoyt, B.P (Performer: Seattle Dept. of Water, WA. Water Quality Div. Funder: Municipal Environmental Research Lab, Cincinnati, OH.). Seattle Distribution System Corrosion Control Study. Volume 4. On Site Evaluation of Corrosion Treatment.. 062266001; Aug 83. 80p 1983. Note: See also Volume 1, PB82-231820. UNITED-STATES PC A05/MF A01 Grant: EPAR806686. For 8 months, the Seattle Water Department conducted a corrosion treatment pilot plant study, obtaining data on the treatment of Tolt River water with lime and sodium carbonate. Pipe loop tests were conducted to determine the appropriate chemical start-up procedures for two full-scale corrosion treatment facilities; to document the effectiveness of the corrosion treatment program in suppressing corrosion, metal leaching and tuberculation in older galvanized steel premise plumbing systems; to document the bacterial effects of the corrosion treatment program on water quality; and to anticipate any possible customer problems caused by implementation of the corrosion treatment program. The study monitored the effects of simulated corrosion treatment start-up on chemical and microbial water quality from an old galvanized plumbing system. Standing water samples collected after treatment start-up displayed increased iron deposits, organic debris and bacterial populations compared to untreated standing water samples. Zinc leaching was reduced during treatment from pH 6 to pH 7 and increased from pH 7 to pH 8. Iron leaching was found to increase by approximately 38% during treatment start-up, while copper and lead leaching were reduced by 53% and 57%, respectively. Corrosion treatment also resulted in a reduction of approximately 32% in the tuberculation rate.

232. Hickman, J.R (Performer: Advisory Group for Aerospace Research and Development, Neuilly-sur-Seine (France). Funder: National Aeronautics and Space Administration, Washington, DC.). Aeromedical Aspects of Mitral Valve Prolapse. 056102000, AD455458; c1987. 7p 1987. Note: In AGARD Short Course on Cardiopulmonary Aspects of Aerospace Medicine 7p. FRANCE (Order as N87-24070 PC A07/MF A01). Mitral valve prolapse (MVP) continues to be a major aeromedical problem. Current issues revolve around diagnostic criteria, aeromedical thresholds for disqualification and the lack of definitive natural history studies upon which to base aeromedical decisions. Currently, there are no existing natural history studies of incidentally discovered mitral valve prolapse in the asymptomatic male. The USAF School of Aerospace Medicine is following over 300 mitral valve prolapse subjects on a recurrent basis in order to determine this natural history. The comparison of this natural history group with age-matched controls should be completed in approximately 1988. Preliminary data offered in this report enumerate the most common grounding causes of mitral valve prolapse in the first 202 aviators with prolapse in the study. A suggested scheme for clinical evaluation, aeromedical disposition of MVP and suggested aeromedical diagnostic criteria are offered.

233. HICKMAN, J. R.; TRIEBWASSER, J. H.; LANCASTER, M. C. (USAF, School o.fAerospace, Medicine, Brooks AFB, Tex.). Physical standards for high-performance fighter aircraft pilots. (Joint Committee on Aviation Pathology, Scientific Session, 11th, Annapolis, Md., Sept. 5-8. 1978.) Aviation, Space, and Environmental Medicine, vol. 51, Sept. 1980, p. 1052-1056; Sep. 1980. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8022 The new generation of high-performance aircraft has clearly emphasized man's physiological limitations to withstand sustained high G loading. The selection and retention standards required to function in this environment have not been completely defined. This paper presents a format of standards and screening tests, placing special emphasis on the detection of subclinical disease, particularly coronary artery disease. Cases which illustrate the spectrum of asymptomatic coronary disease are presented. Other entities discussed include conduction defects, mild valvular lesions, arrhythmias, and degenerative joint disease of the spine. An overall approach based on age, screening milestones, and specialized tests is presented. Finally, a data repository on all pilots with chronic high G exposure is discussed. ((Author)). Documents available from AIAA Technical Library.

234. Hinds, Michael deCourcy. Decision file. (includes IRS tax penalty increase, FDA plastic lens approval, pilot age case). New York Times (NYTIA), volume 131, Dec 2, 1981, Wed edition, p13(N), col 5.

235. Hinds, Michael deCourcy. Pilot age study. New York Times (NYTIA), Aug 3, 1982, Tue edition, p12(N), col 6.

236. Hoiberg, A. (Performer: Naval Health Research Center, San Diego, CA). Cardiovascular Disease among U.S. Navy Pilots. Interim rept. 055017000, 391642; Jul 84. 17p 1984. Note: UNITED-STATES PC A02/MF A01. This study's objectives were: (1) to determine the influence of age on cardiovascular disease (CVD) incidence among U.S. Navy pilots diagnosed with CVD during a 12.5-year time period (n = 150); (2) to examine pilots' occupational variables as risk factors of CVD, and (3) to identify precursory diseases associated with CVD incidence. Results showed a direct relationship between CVD incidence and the risk factor of age. Also, pilots on the average were more than three years younger at the time of CVD onset than other Navy officers. None of the occupational factors was associated with CVD incidence although fighter pilots had the highest rates of acute myocardial infarction and chronic ischemic heart disease. Angina pectoris was most frequently observed as a precursory disease of chronic ischemic heart disease, and several behaviorally related disorders (e.g., alcoholism) occurred most frequently with hypertension. Subsequent research should include all U.S. military pilots to provide a larger population in which to examine the influence on CVD incidence of such occupational factors as high performance aircraft. Also recommended was the implementation of an intervention program designed to modify the life styles of pilots who had been hospitalized for hypertension or such behaviorally related disorders as obesity and alcoholism. (Author).

237. HOIBERG, A. (U.S. Navy, Naval Health Research Center, San Diego, CA). Cardiovascular disease among U.S. Navy pilots. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, May 1985, p. 397-402. Navy-supported research; May 1985 25 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8520 This study's objectives were to determine the influence of age and occupational factors on cardiovascular disease (CVD) incidence among U.S. Navy pilots diagnosed with CVD during a 12.5-year time period (n = 150) and to identify precursory diseases associated with CVD. Results showed a relationship between CVD and age; pilots, on the average, were more than 3 years younger at the time of CVD onset than other

officers. No occupational factor was associated with CVD; fighter pilots had the highest rates of acute myocardial infarction and chronic ischemic heart disease. Angina pectoris was observed as a precursory disease of chronic ischemic heart disease, and several behaviorally related disorders (e.g., alcoholism) occurred with hypertension. Subsequent research should include all U.S. military pilots to examine, in a larger population, the influence on CVD of such occupational factors as flight in high-performance aircraft. An intervention program should be implemented to modify the lifestyles of pilots who had been hospitalized for hypertension and/or such conditions as obesity and alcoholism. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

238. Hoiberg, A. (Performer: Naval Health Research Center, San Diego, CA). Differences in Health Risks by Aircraft Model among U.S. Navy Pilots. 055017000, 391642; Aug 84. 19p 1984. Note: UNITED-STATES PC A02/MF A01. The purpose of this study was to identify health risks associated with eight aircraft models in a population of U.S. Navy pilots (n = 22,245) during a 12.5-year time period. Results showed that pilots in the trainer/miscellaneous group (< or = 35 years of age) had significantly higher hospitalization rates than other pilot groups for almost all diagnoses whereas reconnaissance pilots were distinguished from others by lower total hospitalization rates. Younger helicopter pilots had significantly higher hospitalization rates for joint diseases than four other pilot groups and significantly higher rates for nervous system disorders than attack and patrol/antisubmarine groups. Explanations for these and mortality rate results were provided by examining the influence of selection and retention criteria; age, experience, and exposure; pilot population characteristics; and aircraft model assignments.

239. HOIBERG, A. (U.S. Navy, Naval Health Research Center, San Diego, CA). Differences in health risks by aircraft model among U.S. Navy pilots. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, July 1985, p. 676-682. Navy-supported research; Jul. 1985 22 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8521 The purpose of this study was to identify health risks associated with eight aircraft models in a population of U.S. Navy pilots (n = 22,245) during a 12.5-year time period. Results showed that pilots in the trainer/miscellaneous group (not greater than 35 years of age) had significantly higher hospitalization rates than other pilot groups for almost all diagnoses whereas reconnaissance pilots were distinguished from others by lower total hospitalization rates. Younger helicopter pilots had significantly higher hospitalization rates for joint diseases than four other groups and significantly higher rates for nervous system disorders than attack and patrol/antisubmarine groups. Explanations for these and mortality rate results were provided by examining the influence of selection and retention criteria; age, experience, and exposure; pilot population characteristics; and aircraft model assignments. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

240. Hoiberg, A. (Performer: Naval Health Research Center, San Diego, CA). Longitudinal Study of Cardiovascular Disease in U.S. Navy Pilots. Interim rept.. 055017000, 391642; Feb 85. 16p 1985. Note: UNITED-STATES PC A02/MF A01. This longitudinal study examined the consequences of cardiovascular disease (CVD) in 145 U.S. Navy pilots who suffered a CVD incident during the 1967-79 time period. Results showed that one pilot died (data were only available for 1974-79), one suffered a second myocardial infarction, and 28 pilots were hospitalized and/or retired with a physical disability because of CVD. The other 79.3% of this pilot subpopulation continued on active duty, retired with no physical disability, or resigned from service. The majority of subsequent CVD incidents occurred during a 12-month period after the initial CVD event; 35% had discontinued flying prior to the initial CVD incident. These findings reflected not only the few CVD cases in this population of 22,245 pilots who served for some time from 1967-79, but also the few after-effects of CVD.

241. Hoiberg, A.; Blood, C. (Performer: Naval Health Research Center, San Diego, CA). Age Specific Morbidity Among Naval Aviators. Interim rept. 055017000, 391642; Jan 83. 18p 1983. Note: UNITED-STATES PC A02/MF A01. This study compares the morbidity (hospitalization) rates by age of male Navy pilots (n = 22,417) with rates for three male control populations: nonpilot aircrew officers (n = 9,483), unrestricted line officers (n = 55,593), and staff officers (n = 46,565). Aircrew members and pilots have the highest hospitalization rates of four officer groups for both total admissions and for most of the 16 major diagnostic categories. Younger pilots have the highest rates for disorders of tooth development and eruption and accidental injuries (primarily sports related) while one of the highest rates for older pilots is observed for circulatory diseases. In comparisons with civilian samples, the four officer populations are considerably healthier. To further protect the health of Navy personnel, a health risk profile should be developed, implemented, and used as the initial step in reducing and eliminating health risk factors.

242. Hoiberg, A.; Blood, C. (Performer: Naval Health Research Center, San Diego, CA). Age Specific

Morbidity among Navy Pilots. Interim rept. 055017000, 391642; Oct 83. 8p 1983. Note: Pub. in Aviation, Space, and Environmental Medicine, v54 n10 p912-918 Oct 83. UNITED-STATES PC A02/MF A01. No abstract available.

243. Hoiberg, A.; Blood, C. (Environmental Medicine Department, Naval Health Research Center, San Diego, California). Age-specific morbidity among Navy pilots. Aviat-Space-Environ-Med ; 1983 Oct; 54(10): 912-8; ISSN: 0095-0562. 9JA. Note: EN. This study compares the morbidity (hospitalization) rates by age of male Navy aviators (n = 22,417) with rates for three male control populations: nonpilot aircrew officers (n = 9,483), unrestricted line officers (n = 55,593), and staff officers (n = 46,565). Aircrew members and pilots have the highest hospitalization rates of the four officer groups for both total admissions and for most of the 16 major diagnostic categories. Younger pilots have the highest rates for the disorders of tooth development and eruption and accidental injuries (primarily sports-related) while one of the highest rates for older pilots is observed for circulatory diseases. Compared to civilian samples, the four officer populations are considerably healthier. To further protect the health of Navy personnel, a health risk profile should be developed, implemented, and used as the initial step in reducing and eliminating health risk factors. Author-abstract.

244. Hoiberg, A.; Burr, R.G (Performer: Naval Health Research Center, San Diego, CA). Health Risks Associated with Aircraft Model Type Among U.S. Navy Pilots. 055017000, 391642; Apr 84. 5p 1984. Note: This article is from 'Proceedings of the Symposium: Psychology in the Department of Defense (9th) Held at Colorado Springs, Colorado on 18-20 April 1984', AD-A141 043, p173-177. UNITED-STATES PC A02/MF A01. This study identified the ill health effects (hospitalizations) among U.S. Navy male pilots (n = 22,245) who primarily flew one of eight aircraft model types. Comparisons of annual hospitalization rates computed for the July 1967 through December 1979 time period determined that trainer and helicopter pilots had the highest total rates while reconnaissance pilots had the lowest. Helicopter pilots had the highest hospitalization rates for ulcers and/hearing problems; rates for calculus of the kidney were the highest among older helicopter pilots. Older track pilots had the highest rates for accidental injuries, musculoskeletal conditions, and infective/parasitic diseases. The highest circulatory disease rate was observed for older fighter pilots. An examination of the hospitalization rates of the other aircraft model types (electronic, patrol, cargo/transport, and reconnaissance) identified relatively few specific illnesses unique to each pilot group. Future research efforts will examine other factors in addition to aircraft model type that might account for the results of this study. (Author).

245. Hoiberg, Anne (US Naval Health Research Ctr, Environmental Medicine Dept, San Diego, CA). Cardiovascular disease among U.S. Navy pilots. US Naval Health Research Center Report. 1984 Jul No 84-27 14 p. Note: English (EN). Determined the influence of age on cardiovascular disease (CVD) incidence among 150 US Navy pilots diagnosed with CVD over a 121/2-yr period, examined Ss' occupational variables as risk factors of CVD, and identified precursory diseases associated with CVD incidence. Ss' age of onset of acute myocardial infarction (n = 31), chronic ischemic heart disease (n = 28), essential benign hypertension (n = 44), or symptomatic heart disease (n = 47) was determined. Annual incidence rates were computed for 5 age intervals (24-29, 30-35, 36-41, 42-47, and 48-53 yrs) and type of aircraft model for each CVD category. Comparisons of mean ages were made to determine whether Ss differed from other officers diagnosed with CVD, and means and standard deviations were compared between Ss and 600 controls by CVD category for 6 occupational factors (years of flying experience; hours flown as a pilot and copilot; carrier landings, including night, day, and total; and hours of combat flying). Results indicate a direct relationship between CVD incidence and age. Ss on the average were more than 3 yrs younger at the time of CVD onset than other officers with CVD. None of the occupational factors were associated with CVD incidence, although fighter pilots had the highest rates of acute myocardial infarction and chronic ischemic heart disease. Angina pectoris was most frequently observed as a precursory disease of chronic ischemic heart disease, and behaviorally related disorders (e.g., alcoholism) occurred most frequently with hypertension. (25 ref).

246. Hoiberg, Anne; Burr, Ralph G. (US Naval Research Ctr, San Diego, CA, US). Longitudinal study of the health status of U.S. Navy combat pilots. US Naval Health Research Center Report. 1985 Apr No 85-12 14 p. Note: English (EN). Compared the morbidity and mortality rates of 5,914 combat pilots and 4,475 age-matched noncombat pilots during a 15-yr postcombat period. Very low hospitalization rates were observed during the 1st 5-yr postcombat interval, reflecting the excellent health status of combat pilots. The higher accidental injury rates reported during subsequent 5-yr intervals suggest that combat pilots were more likely than were controls to seek activities that entailed physical risk. (PsycINFO Database).

247. Holdener, F.; Grob, P. J.; Joller, Jemelka H. I. (Swissair Medical Service, Zurich Airport, Zurich, Switzerland). Hepatitis virus infection in flying airline personnel. Aviat-Space-Environ-Med ; 1982 Jun; 53(6): 587-90; ISSN: 0095-6562. 9JA. Note: EN. Sera of 1126 flying personnel of an airline were tested for signs of ongoing or past infections with hepatitis B virus (HBV) or with hepatitis A virus (HAV). The prevalence of anti-HA antibodies was similar in all professional categories of flying personnel and the same or slightly lower than in Swiss blood donors. The frequency of immune markers identifying HBV immunity was similar in pilots, flight-engineers, and female flight attendants compared to Swiss blood donors. However, HBV immunity was clearly more prevalent in male flight attendants. Within 1 year, 13 of 2624 flying personnel had acute hepatitis. This higher-than-average incidence of hepatitis amongst flying personnel compared to the Swiss population was mainly due to a high incidence of hepatitis B amongst male flight attendants. Their special life-styles might be responsible for the high prevalence of HBV immunity and for the high incidence of hepatitis B. Author-abstract.

248. Holl, J.A (Performer: Air Force Inst. of Tech., Wright-Patterson AFB, OH). Comparison of the Air Force Female and Male Pilot Grounded Time in the Air Force Military Airlift Command. Master's thesis.. 000805000, 012200; Jun 85. 35p 1985. Note: UNITED-STATES PC A03/MF A01. The US Air Force presently has over 200 female pilots, and the numbers are steadily increasing. This thesis is the first step in determining the effect of female pilots on the Air Forces' flying squadrons' efficiency and effectiveness. This protocol will compare the average number of days per year men and women pilots are grounded for medical reasons. The 'Duty Not Involving Flying' time or DNIF statistics will be used for the data. There are no known studies indicating there is a significant difference in male/female pilot medial absenteeism rates. If the female DNIF rate is found to be significantly larger than the males, it may indicate an effect on the squadrons readiness abilities. The Military Airlift Command (MAC) is chosen for sampling because a relatively large number of female pilots (96) are assigned to this command. The women will be compared to a representative sample of 288 male pilots also assigned to MAC. AF form 1041, which reports DNIF time to Command Headquarters, will be used to collect the DNIF days from the past year; age, rank, and marital status will also be collected. DNIF rates will be calculated correcting for person/months of observation. The age, rank, and marital status specific rates will also be compared. (Author).

249. HOLT, G. W.; TAYLOR, W. F.; CARTER, E. T. (Mayo Clinic; Mayo, Foundation, Rochester, MN). Airline pilot disability - The continued experience of a major U.S. airline. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, Oct. 1985, p. 939-944; Oct. 1985 14 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8601 A statistical analysis is carried out of the results of pilot pre-employment screening by airline medical departments, along with a survey of the change of pilot disability rates over time. The survey covers 1832 pilots over the period 1975 to the end of 1982, including 368 pilots who underwent pre-employment screening. Of the screened pilots, 45 were unacceptable due to psychological reasons, 28 for nonpsychological characteristics. Cardiovascular diseases were the greatest cause of disability, indicating that attention be given to hyperlipidemia, smoking, glucose intolerance, hypertension and genetic background during screening. The study also revealed that the disability rates have decreased over time, although the cause(s) for the decrease(s) was not identified. (M.S.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

250. Holt, G. W.; Taylor, W. F.; Carter, E. T. Airline pilot medical disability: a comparison between three airlines with different approaches to medical monitoring. Aviat-Space-Environ-Med ; 1987 Aug; 58(8): 788-91; ISSN: 0095-6562. 9JA. Note: EN. To study the impact of airline medical departments on pilot disability, three major U.S. airlines, nominally airlines A, B, and C, were chosen because they had distinctly different medical programs. Airline A provided essentially no medical review. Airline B performed preemployment screening and assessment of individual disability claims, along with an irregular pilot review. Airline C provided basically the same services as airline B but also screened pilots annually. The total cohort comprised 12,866 pilots providing 79,797 person-years of experience. Between 1 January 1975 and 31 December 1982, medical losses in all three airlines increased rapidly after pilots reached the age of 45 years, with cardiovascular disease responsible for approximately 50% of the losses. For pilots 45 years old or older, the age-specific disability rates in airline A were significantly higher than those in airlines B and C; rates for airlines B and C were not significantly different. The data suggest that airlines with active medical departments have lower pilot medical disability rates than do airlines without such departments. Data also suggest that preemployment screening and assessment of individual disability claims are more important determinants of long-term disability rates than are regular (annual) pilot health reviews. Author-abstract.

251. HOLT, GEOFFREY W.; TAYLOR, WILLIAM F.; CARTER, EARL T. (Mayo Clinic andMayo, Foundation, Rochester, MN). Airline pilot medical disability - A comparison between three airlines with different approaches to medical monitoring. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 58, Aug. 1987, p. 788-791; Aug. 1987 5 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8722 The impact of airline medical departments on pilot health and medical disability was studied by comparing three major U.S. airlines (nominally A, B, and C) comparable in most regards but having distinctly different medical programs. Airline A was the only one without an active medical department and essentially no medical reviews. Airline B performed preemployment screening and an irregular pilot review, while airline C screened pilots annually (in addition to preemployment screening). The medical disability rates of all three airlines increased rapidly after the pilots reached the age of 45 years. However, the disability rates after 45 were significantly higher for airline A than were those for airlines B and C. The increased disability rate found for airline A could not be related to any one specific disease process. (I.S.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

252. Hong, X.; Regan, D. (York U, Toronto, ON, Canada). Visual field defects for unidirectional and oscillatory motion in depth. Vision Research; 1989 Vol 29(7) 809-819; 1989; CODEN: VISRAM; ISSN: 00426989. Note: Human. Recorded (1) the visual fields (VFs) for oscillatory motion (OM) in depth for 21 normally sighted Ss (aged 20-53 yrs) and (2) the VFs for unidirectional motion (UM) in depth for 16 of the Ss to examine stereomotion defects. Results confirm that VF defects for OM were common and show the existence of selective blindness to UM in depth: VFs for UM in depth were substantially different for approaching and receding motion and/or for near vs far disparities in 8 of 16 Ss. The substantial incidence of stereomotion field defects in normally sighted Ss has implications for visual assessment of pilots. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

253. Hoogerheide, J.; Rempt, F.; Hoogenboom, W. P. Acquired myopia in young pilots. Ophthalmologica ; 1971; 163(4): 209-15; ISSN: 0030-3755. OIG. Note: EN.

254. HOPKIRK, J. A. C. (King Edward VII Hospital, Midhurst, Sussex, England). The natural history of asthma - Aeromedical implications. (Association of Aviation Medical Examiners, Annual Scientific Meeting, 3rd, Bath, England, Apr. 1983) Aviation, Space, and Environmental Medicine (ISSN 0095-0562), vol. 55, May 1984, p. 419-421; May 1984 9 Refs. Note: Language: English Country of Origin: United Kingdom Document Type: JOURNAL ARTICLE; CONFERENCE PAPER Journal Announcement: IAA8414 Asthma is often incompatible with flying and it is important that the natural history of the disorder is understood in relation to both pretraining enrollment and inservice fitness checks. Studies of childhood asthma with prolonged follow-up have shown that as many as 70 percent experience some asthmatic symptoms in later life. Of asymptomatic adults with a history of childhood asthma, 60 percent have evidence of bronchial lability and therefore an ongoing asthmatic tendency. Asthma developing in adulthood may be intermittent or continuous, with a poorer prognosis. A history of childhood asthma should be disqualifying for entry into pilot training. If asthma develops after training, persistent asthma, intermittent asthma with frequent or severe attacks, and asthma requiring regular beta-agonist, theophylline or corticosteroid inhaler treatment should all preclude aircrew from further flying. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

255. Hoppe, B.J (Performer: Air Command and Staff Coll., Maxwell AFB, AL). Pilot Retention A 'Gray' Issue: The Impact of Airline Hiring of Retirement Eligible Pilots on Air Force Leadership. Student rept.. 029160000, 405502; Apr 88. 33p 1988. Note: UNITED-STATES PC A03/MF A01. In the last three years the major airlines have relaxed their rigid standards for employment to include age, vision, height, weight, education, and flying experience. As a result, literally every Air Force pilot currently qualifies for employment, and the major airlines are aggressively recruiting the Air Force's most experienced pilots. The study determines an increasing number of retirement eligible pilots are leaving the Air Force, some even turning down promotion to colonel, to pursue a career in the civilian airline industry. The study concludes that this trend will have a negative impact on the number of quality pilots who remain on active duty beyond the 20-year point to fill critical command and staff duties. Retention of the Air Force's most experienced pilot corps is a critical personnel issue.

256. HORI, H. /JAPAN AIR SELF-DEFENSE FORCE, AEROMEDICAL LAB., TACHIKAWA, JAPAN/.; TAKEMOTO, N.; TAKIGAWA, S. Characteristics of pilots on personality test. III - Effects of age, grade, educational institution and test-taking attitude on the Y-G personality scales (Age, grade, educational institution and attitude effects on pilot personality test performance). JAPAN AIR SELF DEFENCE

FORCE, AEROMEDICAL LABORATORY, REPORTS, VOL. 10, P. 165-172; Mar. 1970. Note: Language: Japanese; IN JAPANESE, WITH ABSTRACT IN ENGLISH. Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA7022 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

257. House votes down boost in pilots' retirement age. Wall Street Journal (WSJOAF), volume 101, Dec 6, 1979, The edition, p3(W) p48(E), col 4.

258. Howard, E. ADEA: age discrimination in employment act: a look at the courts. Note: Aging and Work. Winter 1981. Vol. 4, No. 1. p. 44-49. (6p.).

259. Howard, E. Grounding discrimination against older pilots proves difficult. Note: Aging and Work. Winter 1980. Vol. 3, No. 1. p. 37-39. (3p.). This article recounts how a group of older pilots organized the Pilots Rights Association (PRA) and are, so far unsuccessfully, challenging the Federal Aviation Administration's (FAA) regulation forbidding commercial airlines from using anyone over 60 as a pilot or copilot. Older pilots continue to fly commuter and private planes, but higher paying commercial jobs are denied them. PRA maintains that FAA rule is discriminatory because age is the sole basis for ending a pilot's career and that accident data show older pilots tend to be safer. In 1979, a PRA-supported House bill (H.R. 3948) was introduced calling for: (1) 18-month moratorium on forced retirement; (2) study by the National Institutes of Health (NIH) on the FAA rules safety justification, if any; and, (3) extension of the rule to pilots on commuter airlines. The House debate revealed much about the ubiquity of age stereotyping by member of Congress. Although evidence is overwhelming that valid tests for functional capacity of individual pilots exist, only a gutted version of the bill (containing only the NIH provision) was passed and signed into law. (CI).

260. Howard, E.; Chusid, J. ADEA: Age Discrimination in Employment Act: a look at the courts. Note: Aging and Work. Fall 1980. Vol. 3, No. 4. p. 258-267. (10p.).

261. Hoyt, Kendall K. Grounded at sixty? Flying, Jan, 1960, p39.

262. HULL, D. H.; WOLTHUIS, R. A.; GILLINGHAM, K. K.; TRIEBWASSER, J. H. (USAF, School of Aerospace Medicine, Brooks AFB, Tex.; PARAF, Hospital, Wroughton, Wilts., England). Relaxed +Gz tolerance in healthy men - Effect of age. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology, vol. 45, Oct. 1978, p. 626-629; Oct. 1978 12 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7906 Fifty-three healthy US Air Force aircrewmen, 26-55 yr old, volunteered for a centrifuge study designed to determine the effect of age on relaxed +Gz tolerance. Each was subjected to G forces of gradual and rapid onset, with G tolerance determined by standardized contraction of peripheral visual fields. Of the subject characteristics studied, only age was positively correlated with rapid-onset G tolerance; both age and weight were positively correlated with gradual-onset G tolerance. A combination of age and weight gave a stronger positive correlation with G tolerance (rapid- and gradual-onset) than did either characteristic alone. No significant negative correlations were observed. We conclude that aging may offer some protection from G stress; there is no evidence that aging leads to a decrement in G tolerance ((Author)). Documents available from AIAA Technical Library.

263. Hunter, Marjorie. House rejects bid to suspend retirement rule for pilots at age of 60. New York Times (NYTIA), Dec 6, 1979, The edition, section A, pA28, col 2.

264. IWATAKI, N. /JAPAN AIR SELF DEFENCE FORCE, AEROMEDICAL LAB., TACHIKAWA, JAPAN/.; KURODA, I. Epidemiological analysis of aircraft accidents in JASDF caused by human error. (Epidemiological analysis of Japanese air force aircraft accidents due to human error, comparing accident rates by aircraft types and pilot age). JAPAN AIR SELF DEFENCE FORCE, AEROMEDICAL LABORATORY, REPORTS, VOL. 8, P. 71-78; Jan. 1968. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA6816 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

265. Izraeli, S.; Avgar, D.; Glikson, M.; Shochat, I.; Et, Al (Israeli Defense Forces Medical Corps, Israel). Determination of the "time of useful consciousness" (TUC) in repeated exposures to simulated altitude of 25,000 ft (7,620 m). Aviation, Space, and Environmental Medicine; 1988 Nov Vol 59(11, Sect 1)1103-1105; 1988; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Determined TUC in 17 student pilots (aged 18-20 yrs) who were exposed to25,000 ft in an altitude chamber by determining Ss' ability to correctly add 2-digit numbers during exposure. Findings raise the need for a more scientific

approach to determination of TUC at high altitudes. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

266. Japanese, Air Self-Defense Force, Tokyo. Aeromedical Lab. The Reports of Aeromedical Laboratory, volume 25, no. 1/2; Jun. 1984 85P. Note: Report No.: ISSN-0023-2858 Language: MULTIPLE; In ENGLISH and JAPANESE Country of Origin: Japan Document Type: JOURNAL ISSUE Other Availability: NTIS HC A05/MF A01 Journal Announcement: STAR8501 The flying situations which induce emotional disturbances in pilots were determined. The effects of weight training on acceleration tolerance were evaluated. Psychological uneasiness and phobic tendencies in aircraft pilots were assessed. The inflating characteristics of an anti-G pressure suit for pilots were studied. The fatigue of air traffic controllers and other persons working shiftwork was measured. For individual titles see N85-10606 through N85-10610. Documents available from AIAA Technical Library.

267. Jefferson-Pilot Corp. (personnel change). Wall Street Journal (WSJOAF), May 3, 1983, Tue edition, p18(W) p48(E), col 4.

268. Jensen, V.S (Performer: Air Force Inst. of Tech., Wright-Patterson AFB, OH. School of Systems and Logistics.). Analysis of the Pilot Conversion Process for the Air Force T 46A Jet Trainer Aircraft. Master's thesis.. 000805004, 012250; Sep 83. 169p 1983. Note: UNITED-STATES PC A08/MF A01. The objective of this research was to critically evaluate a portion of the Air Training Command T-46A Implementation Master Plan dated 1 March 1983. The process of converting students and instructor pilots from T-37 to T-46A was analyzed for feasibility and sensitivity to changes in certain resources and schedules. A simple analytical approach was used, calculating and comparing flying hours required versus available for various resource situations. The basic plan, as written for Laughlin AFB, is infeasible because of a short-age of flying hours during several months. The primary causes of this imbalance are: use of partial- and no-simulator syllabi; peak flying during the Operational Readiness Assessment (ORA); and the relatively low initial T-46A utilization rate. Some options for making the plan more workable are analyzed, as is a plan to convert without additional instructor pilots. Other approaches are suggested, without analysis. Besides the actual pilot conversion, there are brief analyses and comments on acquiring additional instructor pilots, manning the ORA, and conversion at subsequent bases. The findings are based on specific assumptions which must be clearly understood. The author concludes that the basic plan can be made feasible by applying suggested modifications. (Author).

269. Jetliner pilot, fed up by delays, quits the helm and the air. (Eastern Air pilot). The New York Times (NYTIA), volume 135, July 25, 1986, Fri edition, p6(N) pA6(L), col 1.

270. Johnson, A.; Jr (Aeromedical Services, 375th Aeromedical Airlift Wing, Scott Air Force Base, Illinois). Medical waivers: an extension of the pilot's career. Aviat-Space-Environ-Med ; 1977 Apr; 48(4): 373-6; ISSN: 0095-6562. 9JA. Note: EN. The medical examination has been conducted periodically to determine medical qualifications for the continued performance of military service and as a preventive medicine measure to reveal latent and undiagnosed disease. When an individual fails to meet the medical standards for flying duties, he may be granted a waiver. A waiver means that the individual is considered by the reviewing authority to be capable of effective performance of duty world-wide without compromising health or safety. In 1973, a total of 1218 waivers were granted to 741 rated officers in Headquarters Command. This command is responsible for medical administration of 4057 rated officers. The ages of the officers granted waivers ranged from 27 to 58 years, with a mean age of 46 years. Over 80% of the waivers granted were to pilots. The value of the medical examination schedule followed in the United States Air Force today is often debated. Those who oppose the annual physical examination because of its questionable value speak in an even louder voice because the medical crunch has reduced the availbale grass roots flight surgeons to a bare minimum. These studies, however, point up the need for a continuous, strong, preventive medicine program in Headquarters Command. Author-abstract.

271. Jonsson, F.; Sundgren, N. Essential hypertension in airline pilots. Aerosp-Med ; 1969 Jan; 40(1): 70-5; ISSN: 0001-9402. 2RQ. Note: EN.

272. Kamen, Al. Court backs TWA workers in age-discrimination case; claim for double damages is rejected. Washington Post, Jan 9, 1985, Wed edition, pA2, col 5.

273. KAMENSKII, IU. N.; KOZIN, V. M.; KOZIN, O. V. (Institut GrazhdanskoiAviatsii, Moscow, USSR). The state of hearing in pilots in civil aviation. Gigiena Truda i Professional'nye Zabolevaniia, Mar. 1982, p. 51-53. In Russian; Mar. 1982 14 Refs. Note: Language: Russian Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE Journal Announcement: IAA8214. Documents available from

AIAA Technical Library.

274. Kamenskii, IuN; Kozin, V. M.; Kozin, O. V. [Hearing status of civil aviation pilots]. Gig-Tr-Prof-Zabol ; 1982 Mar; (3): 51-3; ISSN: 0016-9919. PQ9. Note: RS.

275. Kamenskii, IuN; Sokolova, E. A. [Age and features of psychophysiologic functions in civil aviation pilots exposed to a vibration-noise factor]. Kosm-Biol-Aviakosm-Med ; 1979 Sep-Oct; 13(5): 21-4; ISSN: 0302-5969. KXC. Note: RS.

276. KATO, N.; SAITO, I.; WADA, H. /JAPAN AIR SELF-DEFENSE FORCE, AEROMEDICALLAB., TASHIKAWA, JAPAN/. Hearing acuity of the aged pilots of JASDF. II - The results of hearing examination for verbal sound (Aged pilots hearing acuity using speech audiometry, noting discrimination loss for HF verbal sounds). JAPAN AIR SELF DEFENCE FORCE, AEROMEDICAL LABORATORY, REPORTS, VOL. 10, P. 70-81; Sep. 1969. Note: Language: Japanese; IN JAPANESE, WITH ABSTRACT IN ENGLISH. Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA7011 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

277. Kellogg, Robert S.; Kennedy, Robert S.; Woodruff, Robert (U Dayton, Research Inst). Comparison of color versus black-and-white visual displays as indicated by bombing and landing performance in the 2B35 TA-4J flight simulator. US AFHRL Technical Report. 1984 Jul Tech Rpt 84-22 18 p; CODEN: XLHTA8; ISSN: 0099-3239. Note: English (EN). Tested 22 highly qualified and experienced Navy and Marine Corps pilots, aged 24-39 yrs, to examine bombing and landing performance in the General Electric 2B35 TA-4J full-color wide-screen flight simulator. The Ss' individual flying times ranged from 650 to 9,000 hrs. In Phase 1, 10 Ss (half assigned to 1 of 2 groups) participated in an experimental sequence of flying repeated runs around a 30Deg. dive-bombing course. In Phase 2, 12 Ss (also divided into 2 equal groups) participated in simulated ground-based carrier landing. In both phases, half of the Ss flew with color first and then black-and-white simulation; and the other half flew in reverse order. Results indicate that no statistically significant differences were shown between performance with color or with black-and-white simulation. (13 ref) (PsycINFO Database Copyright 1985 American Psychological Assn, all rights reserved).

278. KHANLAROVA, T. A.; VINITSKAIA, R. S. (Nauchno-Issledovatel'skii InstitutGrazhdanskoi, Aviatsii, Moscow, USSR). Fluctuation limits of the acid-base status and of the gas content of blood in healthy untrained men performing standard physical exercise. Fiziologiia Cheloveka (ISSN 0131-1646), vol. 13, July-Aug. 1987, p. 611-615. In Russian; Aug. 1987 14 Refs. Note: Language: Russian Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA8803 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

279. KING, W. H.; BRAWLEY, W. L.; WICK, R. L. (American Airlines, Inc., Dallas, TX). High density lipoprotein /HDL/ finding in young airline patients. (Academie Internationale de Medecine Aeronautique et Spatiale and Societe Francaise de Physiologie et de Medecine Aeronautiques et Cosmonautiques, Congres International de Medecine Aeronautique et Spatiale, 29th, Nancy, France, Sept. 7-11, 1981.) Medecine Aeronautique et Spatiale, vol. 21, 4th Quarter, 1982, p. 256-261; Dec. 1982 24 Refs. Note: Language: English Count./ of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8308 Various clinical and other factors are evaluated as determinates of the potential risk for coronary disease in over 900 successful candidates for employment as commercial airline pilots. Among the factors analyzed were the age of the pilots, systolic and diastolic blood pressures, smoking habits, weight, exercise habits, cholesterol, and high-density lipoproteins (HDL). In addition, the cholesterol/HDL ratio, the cholesterol/HDL ratio in groups by exercise habits, and the cholesterol/HDL ratio in groups by weight were determined. It is concluded that the cholesterol/HDL ratio is the most sensitive indicator for evaluating coronary risk, and is closely linked with body weight and exercise habits. (N.B.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

280. KNARR, WILLIAM MITCHELL, JR. Relationship between flexibility of closure and success in pilot night vision sensor system training. Auburn Univ., AL; 1989 115P.

281. KOBLIANSKII, V. V. The effect of age and vitamin provision of pilots on their night vision characteristics. Voenno-Meditsinskii Zhurnal, Oct. 1979, p. 62, 63. In Russian; Oct. 1979. Note: Language: Russian Document Type: JOURNAL ARTICLE Journal Announcement: IAA8006. Documents available from AIAA Technical Library.

282. KOCH, A. Physical fitness and flying (requirements, stresses and training for flight personnel). British Journal of Sports Medicine, vol. 7, Nov. 1973, p. 285-288. In German; Nov. 1973. Note: Language: German Document Type: JOURNAL ARTICLE Journal Announcement: IAA7410 Discussion of the concept of physical fitness as it relates to flying personnel, in particular. Procedures for the evaluation of physical fitness are reviewed, along with the specific stresses the human organism is exposed to by flying and the major factors that tend to impair or improve physical fitness. (M.V.E.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

283. KONDRAKOV, V. M. Hegglin's syndrome in flight personnel with atherosclerotic coronary cardiosclerosis and its clinical evaluation. Kosmicheskaia Biologiia i Aviakosmicheskaia Meditsina, vol. 10, July-Aug. 1976, p. 75-78. In Russian; Aug. 1976 9 Refs. Note: Language: Russian Document Type: JOURNAL ARTICLE Journal Announcement: IAA7701. Documents available from AIAA Technical Library.

284. Kraft, Virginia. Flying in the face of age. Sports Illustrated, Jan 13, 1975, p28.

285. Kramer, Arthur F.; Sirevaag, Erik J.; Braune, Rolf (U Illinois, Champaign). A psychophysiological assessment of operator workload during simulated flight missions. Special Issue: Cognitive psychophysiology. Human Factors; 1987 Apr Vol 29(2) 145-160; 1987; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Seven male student pilots (aged 20-26 yrs) flew a series of instrument flight rule missions in a single-engine, fixed-based simulator. In dual-task conditions, Ss were also required to discriminate between 2 tones differing in frequency and to make an occasional overt response. Event-related potentials (ERPs) time-locked to the tones, subjective effort ratings, and overt performance measures were collected. A difficult flight was associated with high subjective effort ratings, as well as increased deviations from the command altitude, heading, and glideslope. The P300 component of the ERP discriminated among levels of task difficulty, decreasing in amplitude with increased task demands. Within-flight demands were examined by dividing each flight into 4 segments. The amplitude of the P300 was negatively correlated with deviations from command headings across the flight segments. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

286. Kriegel, D.A (Performer: Naval Postgraduate School, Monterey, CA). Examination and Comparison of Airline and Navy Pilot Career Earnings. Master's thesis.. 019895000, 251450; Mar 86. 147p 1986. Note: UNITED-STATES PC A07/MF A01. This thesis compares lifetime incomes of Navy and major airline pilots. Regression analysis of actual 1983 pilot wages predicts average wages as a function of pilot seniority. Regression results adjusted for post-1983 wage changes are used to forecast thirty-year pilot earnings. The average military benefit of tax-free income and allowances are computed. Three Navy salaries are compared against a weighted-average airline salary. Comparisons are made of earnings and retirement benefits, using a discount rate of five percent. Two Navy pilot career choices at age thirty are assumed: (1) The pilot remains in the Navy, retires at age forty-two, then joins an airline, retiring at age sixty; (2) The pilot joins an airline and retires at age sixty. My finding is that a Navy pilot will maximize his income by remaining in the military until retirement, and then flying with an airline. The present value of Navy pay exceeds airline earnings by three to six percent.

287. KRONOVETER, K. J. /BUREAU OF OCCUPATIONAL SAFETY AND HEALTH, SALT LAKECITY, UTAH/. Airplane cockpit noise levels and pilot hearing sensitivity (Inflight aircraft cockpit noise levels effect on pilot hearing sensitivity). ARCHIVES OF ENVIRONMENTAL HEALTH, VOL. 20, P. 495-499; Apr. 1970 10 Refs. Note: /AMERICAN INDUSTRIAL HYGIENE CONFERENCE, DENVER, COLO., MAY 12-16, 1969./ Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE; CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA7011 Source of Abstract/Subfile: AIAA/TIS. Presentation.

288. Kuehn, L.; Plogmann, H.; Schliephake, R.W.; Wolff, Fischer E.; Holberg, A. (Performer: Bergbau-Forschung G.m.b.H., Essen (Germany, F.R.). Punder: National Aeronautics and Space Administration, Washington, DC. Performer: Naval Health Research Center, San Diego, CA). Systematic Studies on Coals of Different Deposits, Including Their Mineral Matter. Final Report, Mar. 1982. Cardiovascular Disease among U.S. Navy Pilots. Interim rept. 056812000, BN004007; 055017000, 391642; Apr 83. 84p 1983 Jul 84. 17p 1984. Note: In German; English Summary. Sponsored by Bundesministerium fuer Forschung und Technologie. GERMANY-FR PC A05/MF A01 UNITED-STATES PC A02/MF A01. Coal petrology and mineralogy of coal samples from various deposits of different geological age are discussed. Degree of reflexion and maceral group composition, content of macerals and maceral-types of the vitrinite and inertinite group (coking and hydrogenation); degree of bituminization of vitrinites (coking

and hydrogenation); and intergrowth of macerals in coal-grains (coking and gasification) were studied. Methods of determining mineral matter of coal were improved, especially for clay minerals. An illite from the productive carboniferous of the Ruhr region was chemically characterized. The behavior of mineral matter during hydrogenation and allothermal gasification with water vapor was investigated on residues of pilot plants. This study's objectives were: (1) to determine the influence of age on cardiovascular disease (CVD) incidence among U.S. Navy pilots diagnosed with CVD during a 12.5-year time period (n = 150); (2) to examine pilots' occupational variables as risk factors of CVD, and (3) to identify precursory diseases associated with CVD incidence. Results showed a direct relationship between CVD incidence and the risk factor of age. Also, pilots on the average were more than three years younger at the time of CVD onset than other Navy officers. None of the occupational factors was associated with CVD incidence although fighter pilots had the highest rates of acute myocardial infarction and chronic ischemic heart disease. Angina pectoris was most frequently observed as a precursory disease of chronic ischemic heart disease, and several behaviorally related disorders (e.g., alcoholism) occurred most frequently with hypertension. Subsequent research should include all U.S. military pilots to provide a larger population in which to examine the influence on CVD incidence of such occupational factors as high performance aircraft. Also recommended was the implementation of an intervention program designed to modify the life styles of pilots who had been hospitalized for hypertension or such behaviorally related disorders as obesity and alcoholism. (Author).

289. KULDIP, RAI, MR. (Indian Air Force, New Delhi, India); RAO, P. L. N. (Indian, Air Force, Institute of Aviation Medicine, Bangalore, India). Positive G tolerance of Indian subjects - Effects of age and flying experience. Aviation Medicine, vol. 26, Dec. 1982, p. 100-104; Dec. 1982 5 Refs. Note: Language: English Country of Origin: India Document Type: JOURNAL ARTICLE Journal Announcement: IAA8309 The average tolerance values of +Gz in Indian subjects were studied based on results of over 500 male volunteers who had undergone tests on a centrifuge. The subjects were subdivided into different groups according to age and flying experience. Results show that fighter pilots have a higher tolerance than other groups and that this tolerance is higher for senior fighter pilots than for junior and younger fighter pilots. However, an opposite trend of reduced tolerance with increasing age is found in all other groups of subjects. Norms of tolerance values for Indian subjects in all age groups are presented. (N.B.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

290. Kunlin, T. [Physical fitness of commercial airline pilots]. Sotilaslaak-Aikak ; 1971; 46(3): 88-94; ISSN: 0800-8797. UUR. Note: FI.

291. KURIHARA, Y. (Japan Air Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). Statistical studies on blood pressure of JASDF pilots. III - Relationship between physical constitution and blood pressure. Japan Air Self Defence Force, Aeromedical Laboratory, Reports, vol. 21, June 1980, p. 103-114. In Japanese, with abstract in English; Jun. 1980 65 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA8108. Documents available from AIAA Technical Library.

292. KURIHARA, Y.; MATSUBA, Y.; SAITO, I. (Japan Air Self-Defense Force, Aeromedical, Laboratory, Tachikawa, Tokyo, Japan). Statistical studies on blood pressure of JASDF pilots - Comparison with Japanese adult males. Japan Air Self Defence Force, Aeromedical Laboratory, Reports, vol. 20, Dec. 1979, p. 141-151. In Japanese, with abstract in English; Dec. 1979 35 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA8015 A comparison of the blood pressure level of the JASDF pilots with Japanese males in general was made. The blood pressure of pilots from their periodic health examinations and those of adult males were calculated from the blood pressure distribution tables of the Japanese nutrition survey. The age of both groups ranged from 20 to 49 in 1975-1976. The results showed that: (1) systolic and diastolic blood pressure distribution curves of the pilots were lower by about 10 mm of Hg synthetically than those of adult males; (2) each dispersion of systolic and diastolic blood pressure curves of the pilots was smaller than those of adult males; (3) the lower blood pressure of the pilots was recognized in each group with systolic and diastolic pressures; (4) the correlation between the age and the diastolic blood pressure was statistically significant for both groups, but that of the systolic blood pressure was only significant for adult males. It was concluded that pilots' blood pressures correspond to those of younger men; specifically, the blood pressures of men in the 40-49 age group are almost equivalent to those of men under 30 years old. (A.T.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

293. KURIHARA, Y.; MIZUMOTO, C.; YAGURA, S. (Japan Air Self-Defense Force, Aeromedical, Laboratory, Tachikawa, Tokyo, Japan). Statistical studies on the physical performance of JASDF pilots.

Japan Air Self Defence Force, Aeromedical Laboratory, Reports, vol. 23, June 1982, p. 29-40. In Japanese, with abstract in English; Jun. 1982 12 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA8304 A statistical analysis is presented for the physical performance of Japan Air Self Defence Force pilots and the results are compared to the physical fitness and physical performance of normal Japanese males. The tests were conducted for approximately 1300 pilots in 1980. Among other results, it was found that the physical performance of the pilots was far superior to that of the normal males, with great differences exhibited in the dynamic muscular endurance, aerobic capacity, power, agility, and coordination for the two groups. The standard deviation of each test score for the pilots was smaller than that for the males of the same age group. The peak scores of the males were determined to occur at approximately 16-18 years of age, while for the pilots the peak scores occurred at the ages of 20-22. The performance of the pilots was found to decrease more rapidly with age than the performance of the males, although the pilots at the age of 39 scored higher on the physical performance tests than did the males at the age of 29. In aerobic capacity, agility, and coordination, the individual differences of the pilots became larger with increasing age, while the scores of some tests such as pull-ups and standing trunk flexion were influenced not only by aging but also by the physique of the pilots, such as the height and body weight. (N.B.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

294. KURIHARA, Y. /JAPAN AIR SELF-DEFENCE FORCE, AEROMEDICAL LAB., TACHIKAWA, JAPAN/.; NAKAHARA, K.; SAITO, I.; WATANABE, T.; YAMAZAKI, Y. The survey on the physiological function of the aged pilots of JASDF. (Physiological functions of aged Japanese pilots, discussing height, weight, Rohler index, obesity, vision deterioration and hearing disturbances). JAPAN AIR SELF-DEFENCE FORCE, AEROMEDICAL LABORATORY, REPORTS, VOL. 8, P. 189-194. 11 REFS; Mar. 1968. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA6906 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

295. KURIHARA, Y.; YAGURA, S. /JAPAN AIR SELF-DEFENSE FORCE, AEROMEDICAL LAB., TACHIKAWA, JAPAN/. The results of physical examination on pilots. II (Aircraft pilot physical examination for regression curves on near vision and eye accommodation, noting age effect). JAPAN AIR SELF DEFENCE FORCE, AEROMEDICAL LAB., REPORTS, VOL. 11, P. 172 /18/-180 /26/; Dec. 1970. Note: Language: Japanese; IN JAPANESE, WITH ABSTRACT IN ENGLISH. Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA7117 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

296. KURIHARA, YOSHINORI. Age related changes in physical performance and physiological functions of JASDF pilots. Japan Air Self Defense Force, Aeromedical Laboratory, Reports (ISSN 0023-2858), vol. 30, Sept. 1989, p. 45-64. In Japanese, with abstract in English; Sep. 1989 33 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA9019 A study of age-related changes in the physical functions of JASDF pilots using such variables as visual acuity and hearing threshold level, blood pressure, and physical performance is presented. Some of the general results obtained include: (1) physical performance levels of the pilots were gradually deteriorated with increasing age; (2) systolic blood pressure was maintained relatively low up to 40 years of age, and then increased with age, while diastolic pressure was elevated progressively with age; (3) visual accommodation showed a constant reduction with age; and (4) deterioration of hearing ability and increase in individual differences at 4000 Hz or higher frequencies were typical. (R.E.P.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

297. KURIHARA, YOSHINORI; KIKUKAWA, AZUSA. A statistical analysis of blood pressure changes during the period of 23 years on JASDF pilots. Japan Air Self Defence Force, Aeromedical Laboratory, Reports (ISSN 0023-2858), vol. 27, Sept. 1986, p. 79-90. In Japanese, with abstract in English; Sep. 1986 36 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA8719 A retrospective survey of blood pressure changes over 23 years in aircraft pilots was conducted in order to investigate the relationship between blood pressure changes and various physical indices and blood chemistry values, and a similar cross sectional analysis was performed on a group of normotensive and nonnormotensive pilots. The retrospective survey showed that the muscular strength and respiratory function were better, and the blood free fatty acid, glucose, and gamma-GTP were lower in pilots whose blood pressure did not change than in those whose blood pressure increased over time. Similar advantages were seen in the normotensive group as compared to the nonnormotensive group in the cross-sectional survey. (C.D.) Source of Abstract/Subfile:

AIAA/TIS. Documents available from AIAA Technical Library.

298. Laboda, Amy. Hire education: FAPA helps piloting careers get off the ground. (Future Aviation Professionals of America). Flying (FLYGA), volume 116, issue n3, March, 1989, p70(3).

299. Landstrom, Ulf; Lofstedt, Per (National Board of Occupational Safety & Health, Umea, Sweden). Noise, vibration and changes in wakefulness during helicopter flight. Aviation, Space, and Environmental Medicine; 1987 Feb Vol 58(2) 109-118; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Correlated noise and vibration exposures to helicopter main rotor energy andfrequency to investigate their effect on 12 pilots (aged 28-41 yrs) during long- and short-term flights. Analyses of wakefulness during long flights (4 hrs) and short flights (2 hrs) were based on EEG and EKG recordings. It was found that the level of wakefulness was influenced by stress on the pilots. Takeoffs, landings, and unexpected events during the flight were correlated to an increased level of wakefulness. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

300. Lane, J. C. Risk of in-flight incapacitation of airline pilots. Aerosp-Med ; 1971 Dec; 42(12): 1319-21; ISSN: 0001-9402. 2RQ. Note: EN.

301. LANZA, F.; ROCCO, P.; VAN, RUTTEN, F. (EURATOM and Comitato Nazionale peri'Energia, Nucleare, Centro Comune di Recerche, Ispra, Italy). A system for the control of tritium losses in primary and steam circuits of a fusion power plant. In: Fusion technology 1978; Proceedings of the Tenth Symposium, Padua, Italy, September 4-9, 1978. Volume 2. (A80-19581 06-75) Oxford and New York, Pergamon Press, 1979, p. 691-695; 1979 10 Refs.

302. Lategola, M. T. Changes in cardiovascular health parameters over an eight-year interval in an ATC population segment. Note: FAA Civil Aeromedical Institute, Oklahoma City, OK. Apr 1971. (23p.). AVAILABILITY: SCAN Microfiche No. CCF 000922.

303. Lategola, M. T. The use of simple indicators for detecting potential coronary heart disease susceptibility in the air traffic controller population. Note: US Department of Transportation, Federal Aviation Administration, Civil Aeromedical Institute, Oklahoma City, OK. May 1972. (15p.). AVAILABILITY: SCAN Microfiche No. CCF 000921; US Department of Transportation, Federal Aviation Administration, Office of Aviation Medicine, Washington, DC.

304. Lategola, M. T.; Flux, M.; Lyne, P. J. (Fla Civil Aeromedical Institute, Aeronautical Center, Oklahoma City, Oklahoma). Spirometric assessment of potential respiratory impairment in general aviation airmen. Aviat-Space-Environ-Med ; 1977 Jun; 48(6): 508-11; ISSN: 0095-6562. 9JA. Note: EN. Chronic obstructive pulmonary disease continues to manifest an increasing prevalence in male Americans. A recent study of commercial airline pilots revealed a 12% prevalence of more-than-minor spirometric impairment. Because commensurate data were not available for general aviation pilots, in whom such impairment could also compromise flight safety, a parallel study was made. The BMRC and smoking questionnaires, chest expansion, and spirometric measurements of FEV1, FVC, FEV1%, MVV, and FFF 25-75% were assessed in 181 male general aviation pilots. All showed a general relationship to increasing age and smoking amount. Based on FEV1% and FEF 25-75% combined, minor or more-than-minor degrees of spirometric impairment were manifested by 25.4% of the pilots and moderate degrees by 12.7%. Very little impairment was reflected in the remaining spirometric parameters. Subsequent testing of such spirometrically impaired pilots for altitude, fatigue, and orthostatic tolerances related to general aviation flight safety is planned. Author-abstract.

305. Latessa, Edward J.; Travis, Lawrence F.; Cullen, Francis T. (U Cincinnati, OH, US). Public support for mandatory drug alcohol testing in the workplace. Crime and Delinquency; 1988 Oct Vol 34(4) 379-391; 1988; ISSN: 00111287. Note: Human. Surveyed 166 metropolitan residents to assess the extent to which citizensendorse mandatory employee testing for substance abuse. Data suggest that Ss supported the policy of testing. Support is strongest when programs are proposed for workers whose impairment would jeopardize public safety (e.g., airline pilots). In contrast, more dissensus was evident when the policy proposal was to bring all workers under the purview of mandatory drug-alcohol testing. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

306. LAVERNHE, J.; MATHIVAT, A. /COMPAGNIE NATIONALE AIR FRANCE, SERVICEMEDICAL, PARIS, FRANCE/.; PASQUET, J. Incidence of cardiovascular illnesses among flight personnel of an airline (Cardiovascular illnesses incidence among airline flight personnel, discussing coronary insufficiency detection). REVUE DE MEDECINE AERONAUTIQUE ET SPATIALE, VOL. 8, P. 19-21;

Mar. 1969 9 Refs. Note: Language: French Country of Origin: France Document Type: JOURNAL ARTICLE Journal Announcement: IAA6921 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

307. Lavin. Carl H. Captains of age 30 seen as airlines face shortage. (of pilots). The New York Times (NYTIA), volume 138, Jan 11, 1989, Wed edition, pA1(N) pA1(L), col 3.

308. Lavin, Carl H. F.A.A. to keep rule barring pilots over 60. (Federal Aviation Administration) (Washington Talk Pages). The New York Times (NYTIA), volume 138, May 26, 1989, Fri edition, pA9(N) pA19(L), col 1.

309. Lavin, Carl H. Older pilots challenge a rule that clips their wings at 60. (age rule for airline pilots). The New York Times (NYTIA), volume 138, April 4, 1989, Tue edition, pA1(N) pA1(L), col 4.

310. Lavin, Carl H. Retiring of airline pilots at 60 is under fire again; does gray hair bring wisdom, slower reflexes or both? The New York Times (NYTIA), volume 139, Dec 3, 1989, Sun edition, section 1, p21(N) p47(L), col 3.

311. Leedy, Mitzi G.; Wilson, Morgan S. (Ohio Wesleyan U). Testosterone and cortisol levels in crewmen of U.S. Air Force fighter and cargo planes. Psychosomatic Medicine; 1985 Jul-Aug Vol 47(4) 333-338; 1985; CODEN: PSMEAP; ISSN: 00333174. Note: Human. Measured serum levels of cortisol and testosterone in 39 male US Air Forcepersonnel (aged 20-45 yrs) on active duty flying status. Ss were either pilots of a fighter-type aircraft, nonpilots on a fighter plane, pilots of a cargo-type aircraft, or nonpilots on a cargo plane. Blood samples were taken prior to and after a routine flying mission. Results show that cortisol levels prior to the flight did not differ across groups. However, postflight samples of cortisol were elevated in the nonpilots, in comparison with the pilots, regardless of aircraft type. While testosterone levels were unaffected by crew position, Ss flying on fighter-type planes had lower serum levels than did those on cargo planes. Results suggest that hormone levels may be differentially affected by the stressors of routine military flight. (17 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

312. Lehto, Mark R.; Buck, James R. (Purdue U, School of Industrial Engineering, West Lafayette, IN, US). Status reporting of "eyes on" and peripheral displays during tracking. Perceptual and Motor Skills; 1988 Dec Vol 67(3) 719-733; 1988; CODEN: PMOSAZ; ISSN: 00315125. Note: Human. Investigated the effect of status reporting (R. Geiselhart et al, 1976) on aconcurrently performed control task by 24 adults (aged 19-34 yrs). The control task involved an abstract aircraft environment. It was found that the mean and standard deviation of performance times remained constant across a number of experimental conditions. Results suggest that during the performance of concurrent status reporting and tracking tasks, rational changes occurred in tracking behavior as an adaptation to reduced sensory, mediational, and motor reaources available for tracking. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

313. Leimann, Patt, Hugo O.; Baistrocchi, Roberto L.; Moia, Patricia I. (National Inst of Aviation & Space Medicine, Buenos Aires, Argentina). Neuropsychiatric observations of proprioceptive sensitivity in motion sickness susceptibility. Aviation, Space, and Environmental Medicine; 1988 Nov Vol 59(11, Sect 1)1083-1088; 1988; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined 16 referred patients and 4 pilots (aged 26-39 yrs) suffering from"idiopathic motion sickness." All clinical and neurological tests proved negative, including EEG, electronystagmograms, Doppler studies, and computerized tomography (CT) of the brain. Cervical spine X-rays and personality characteristics were also assessed. 35 healthy males (aged 18-40 yrs) served as controls. Both groups were exposed to cross-coupled accelerations along with head flexions. The pathological group showed a straightened cervical curvature as well as a significantly higher degree of malaise. Their personalities were highly alexithymic or obsessive compared with controls. It is suggested that alexithymic and obsessive personalities may express their stress reactions and psychic conflicts through somatic signs (e.g., cervical muscle contractures); consequently, straightening the cervical spine (with the subsequent alteration of proprioceptive inputs) may increase motion sickness susceptibility. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

314. Leirer, V. O.; Yesavage, J. A.; Morrow, D. G. (Decision Systems, Stanford, CA 94305). Marijuana, aging, and task difficulty effects on pilot performance. Aviat-Space-Environ-Med ; 1989 Dec; 60(12): 1145-52; ISSN: 0095-6562. 9JA. Note: EN. This study provides evidence that diverse factors can cumulatively contribute to human/machine performance decrements. In separate sessions, young and old pilots smoked

one of three cigarettes containing either 0 mg, 10 mg, or 20 mg of the active ingredient, delta 9 THC. They flew a calm and a turbulent flight in a light aircraft simulator at 1, 4, 8, 24, and 48 hour (h) delay after smoking. Effects were found at 1 and 4 h after smoking in the turbulent flight conditions when 20 mg cigarettes were smoked. Drug dose level, age, weather conditions (i.e., task difficulty), and delay period all affected pilot performance. Most important, these variables produced cumulative performance decrements. Author-abstract.

315. Leirer, Von O.; Yesavage, Jerome A.; Morrow, Daniel G. (Decision Systems, Stanford, CA, US). Marijuana, aging, and task difficulty effects on pilot performance. Aviation, Space, and Environmental Medicine; 1989 Dec Vol 60(12) 1145-1152; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined cumulative impairment of pilot performance when combiningincreased age, marijuana drug dose, and task difficulty. In separate sessions, young (18-29 yrs) and old (aged 30-48 yrs) pilots smoked 1 of 3 marijuana cigarettes containing either 0, 10, or 20 mg of the active ingredient, delta 9 THC. They flew a calm and a turbulent flight in a light aircraft simulator at 1-48 hr delay after smoking. Effects existed at 1 and 4 hrs after smoking in the turbulent flight conditions when 20-mg cigarettes were smoked. Drug dose level, weather conditions (i.e., task difficulty), and delay period all affected pilot performance, and these variables produced cumulative performance decrements. Age was also a significant factor in some complex man-machine interactions, with older Ss performing less well. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

316. LEMESH, V. V. Hemodynamic indicators in air personnel of varying ages. Voenno-Meditsinskii Zhurnal, Aug. 1975, p. 70, 71. In Russian; Aug. 1975. Note: Language: Russian Document Type: JOURNAL ARTICLE Journal Announcement: IAA7602 The age characteristics of hemodynamic indicators were investigated in four groups of aircraft personnel: groups 1 and 2 (mean ages 29.1 and 39.3 years) made up of healthy men; groups 3 and 4 (mean ages 30.6 and 39.3) composed of men suffering from hypertonic neurocirculatory dystonia. Spirograms, combined electrocardiograms, and arterial pressure were recorded over a 5 minute period during which subjects breathed either pure oxygen or 9.5% oxygen, 90.5% nitrogen. For the healthy men, the changes in the hemodynamic indicators due to hypoxia were smaller in the older men, while in the other groups the reaction to hypoxia was not age dependent. In healthy men breathing pure oxygen, all indicators studied increased with increasing age, with the exception of peripheral resistance which showed age-dependent decrease.- (C.K.D.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

317. Lert, Peter. The computer air age is here. Air Progress (AIRPB), volume 46, May, 1984, p22(4).

318. Levin, T.; Wilson, O. (Performer: Foersvarets Forskningsanstalt, Stockholm (Sweden). Funder: National Aeronautics and Space Administration, Washington, DC.). Anthropometric Measurements Forecast on Swedish Pilots in the Year 2001 Prognos Foer Antropometriska Maatt Hos Svenska Flygfoerare Aar 2001.. 063330000, RR628060; Apr 82. 192p 1982. Note: Text in Swedish. SWEDEN PC A09/MF A01. Body height increase of Swedish men and changes in body dimensions of applicants for aircraft pilot training are reported; body height, weight, and dimensions in sitting position of pilot candidates and of regular pilots are compared with the measurements of other inductees and draftees of the same age. Maximum and minimum values for body height were selected as a limiting variable, and height in the sitting position as the decision variable. The selected values were studied on applicants for pilot training and the exclusion of candidates was analyzed. Forecasting on other body dimensions was also carried out. Threshold values for the body dimensions of future pilot candidates are presented. Available room in the aircraft and admittance stipulations are considered.

319. Lewin, Tamar. A court test for age rules. (regulation that pilots must stop flying at age 60). New York Times (NYTIA), Oct 23, 1984, Tue edition, p33(N) pD1(L), col 3.

320. Lewin, Tamar. Lawsuits knock holes in forced retirement. New York Times (NYTIA), Jan 13, 1985, Sun edition, section 4, pE8(N) pE8(L), col 1.

321. LIENHART, H. (Hopitaux des Armees; Centre, Principal d'Expertise Medicaledu, Personnel Navigant, Paris, France); NATHIE, J. (Centre d'Etudes et d.eRecherches, de Medecine Aerospatiale, Paris, France). Pilot deafness - Statistical study of military pilot hearing. Medecine Aeronautique et Spatiale, vol. 21, 3rd Quarter, 1982, p. 170-174. In French; Sep. 1982. Note: Language: French Country of Origin: France Document Type: JOURNAL ARTICLE Journal Announcement: IAA8306 The results of a statistical study of hearing loss in military pilots are presented, with attention given to age, length of exposure, professional rating, flight hours, and bilaterality of the loss. A total of 1992 pilot ears and 1732 reference

ears formed the data base, with all subjects exhibiting some deafness from purely neuro-sensorial sources. The tests comprised tonal audiometry, yielding 42 responses per subject for a total of 78,200 data points. A median population value was derived, revealing that the hearing loss occurred independently of the side of the head. Personnel of age 45 yr. experienced a loss centered around 4000 Hz, while overall the susceptibility was found to be highly individualized. It is noted that over 42.14 percent of French air force pilots can claim hearing loss indemnities. (M.S.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

322. Lindholm, Ernest; Koriath, John J. (Arizona State U, Tempe). Analysis of multiple event related potential components in a tone discrimination task. International Journal of Psychophysiology; 1985 Nov Vol 3(2) 121-129; 1985; CODEN: IJPSEE; ISSN: 01678760. Note: Human. Conducted a psychophysical tone discrimination experiment with 6 male US AirForce Reserve officer trainees and 10 Air Force pilot trainees (aged 20-22 yrs) to examine interrelationships of multiple event-related potential (ERP) components. Ss performed in a tone discrimination task at 2 levels of difficulty, and a reaction time (RT) response was required on half of the trials. Four prominent components of the ERP waveform (N1, P2, N2, and P3) were analyzed. Results suggest that P2 represents the beginning of a central process responsible for stimulus identification and the initiation of decision making, while N2 and possibly P3 represent the end of this process. The notion that the P3 component is an unusually important sign of central processing is questioned, along with the notion that P3 represents a central process of memorial update. Findings suggest that stimulus evaluation can occur as early as 165-200 msec following stimulus presentation. Complex interdependencies among components were indicated by correlational analysis, suggesting the necessity to consider the brain wave as a whole rather than as a series of isolated components representing specific central functions. (23 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

323. Lindqvist, A.; Et, Al (U Turku, Cardiorespiratory Research Unit, Finland). Heart rate variability, cardiac mechanics, and subjectively evaluated stressduring simulator flight. Aviation, Space, and Environmental Medicine; 1983 Aug Vol 54(8) 685-690; 1983; CODEN: AEMEA.; ISSN: 00956562. Note: Human. Studied the effects of a simulator flight task on the heart rate variation (HRV) and hemodynamic variables in 9 pilots (aged 27-59 yrs) with instrument flight ratings. The repeats of the flight task decreased HR, cardiac output, and cardiac index. Phases of the flight altered the HR, total HRV, and periodic HRV. Subjectively, Ss felt only moderate stress. Moderate informative stress in the flight simulator affected chronotropic parameters of the heart. The inotropic state of the heart was affected, not by the phases of the flight, but possibly by the diminishing sympathetic drive with accommodation during the repeats. (23 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

324. LOEPPKY, J. A.; LUFT, U. C. (Lovelace Medical Foundation, Albuquerque, NM). Work capacity, exercise responses and body composition of professional pilots in relation to age. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 60, Nov. 1989, p. 1077-1084; Nov. 1989 35 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA9003 The relationships between the work capacity of a pilot and his age and body composition were investigated in 410 professional male pilots divided into age groups of 30, 39, 49, and 59 years and subjected to a progressive upright bicycle ergometer test. It was found that, while the amount of fat tissue increased linearly with age, the fat-free weight was not significantly different between groups. Aerobic work capacity fell at a rate of 0.25 ml/min per kg per year. A reversal of the age-related work-capacity decline was demonstrated for a subgroup or 10 pilots tested annually from age 31 to 47, which was attributed to regular physical exercising and changes in personal health habits motivated by medical prevention programs which incorporated self-assessment tests. (I.S.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

325. Loeppky, J. A.; Luft, U. C. (Research Division, Lovelace Medical Foundation, Albuquerque, NM 87108). Work capacity, exercise responses and body composition of professional pilots in relation to age. Aviat-Space-Environ-Med ; 1989 Nov; 60(11): 1077-84; ISSN: 0095-6562. 9JA. Note: EN. Body composition and submaximal and maximal cardiorespiratory responses during a progressive upright bicycle ergometer test were measured in 410 professional male pilots, aged 20 to 68 years, and divided into four groups (30, 39, 49, and 59 years). Fat-free weight by hydrostatic weighing was not significantly different between groups and fat increased linearly with age, while height was lower and weight levelled off in the oldest group. Aerobic work capacity (VO2max) fell at a rate of 0.25 mL.min-1.kg-1 per year in this unique population of healthy, but generally sedentary men. A subgroup of 10 pilots, tested annually from age 31 to 47, demonstrated a reversal of the age-related decline in VO2max. This was attributable to regular

physical activity, short of athletic training, and changes in personal health habits stimulated by self-assessment available from the repeated tests incorporated into the medical prevention program. These data considered in relation to more recent reports of stroke volume during similar maximal exercise protocols suggest that VO2max is limited during aging by a reduction in tissue diffusing capacity or increased maldistribution of perfusion in relation to O2 uptake in muscle and this can be partially prevented by training. Reference standards for heart rate, blood pressure and ventilation during submaximal and maximal exercise levels are presented in relation to energy requirements and work intensity at various ages. Author-abstract.

326. Lukianiuk, Vlu. [Tolerance of +G2 gravitation overload in persons aged 41-58 years]. Kosm-Biol-Aviakosm-Med ; 1984 Sep-Oct; 18(5): 18-23; ISSN: 0321-5040. KXC. Note: RS. Forty-five men (non-pilots) aged 41-58 were used in 186 experimental runs to study their tolerance to +GZ acceleration. The test subjects were either healthy people or showed atherosclerotic symptoms (the number of which varied from 1-2 to 5 and more). During centrifugation the test subjects had no anti-G suits on. Healthy test subjects exhibited high tolerance to +Gz acceleration of up to 5 g in most centrifugal runs (90.3%). The test subjects with early atherosclerotic changes showed a significantly lower tolerance as compared to the matched controls. It was found that in the atherosclerotic subjects tolerance to +Gz acceleration decreased as its value increased and as the number of atherosclerotic symptoms grew. The major symptoms that limited tolerance to +Gz acceleration in all the test subjects were cardiac arrhythmias and in the atherosclerotic subjects they were also eye disorders and autonomic-vascular reactions during recovery. The data obtained show that it is important to measure individual tolerance to acceleration in people aged 41-58 years old. Author-abstract.

327. Maciejczyk, Janina; Terelak, Jan (Military Inst of Aviation Medicine, Warsaw, Poland). Sleep deprivation and the psychophysiological cost of decision making. Polish Psychological Bulletin; 1985 Vol 16(4) 293-299; 1985; CODEN: PPBUDY; ISSN: 00792993. Note: Human. Investigated relations between decision making and cardiac arrhythmia atdifferent times of day, including a sleepless night, in 16 clinically healthy pilots (age 24-39 yrs). Six equal situational tests requiring decision making in simulated flight emergencies were performed at 6 different times of day. Cardiac arrhythmia factors were calculated on the basis of the EKG. It was found that the greatest psychophysiological cost (decrease of physiological function and some psychological decrement) occurred in the early morning, which indirectly suggests that sleep deprivation is a stressor. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

328. Majors, James S. (US Air Force Medical Ctr, Mental Hygiene Clinic, Lackland Air Force Base, TX). Human factors survey: C-5 pilots. USAF School of Aerospace Medicine Technical Report. 1984 Sep TR 84-26 15 p. Note: English (EN). Surveyed 34 US Air Force C-5 pilots (aged 26.5-42.5 yrs) to assess human factors possibly involved in 2 near-mishaps in the air. Potential human-factors problem areas were inferred from Ss' reports of moderate-to-extreme fatigue level during strategic airlift missions, problems with various cognitive skills or information processing, significant anomalies of attention, significant changes in moods/emotions, dissatisfaction with career choice and progression, and significant life events/changes. 17.6% of Ss reported a personal history of significant changes or problems with behavior, cognitive processes, feelings/emotions, or interpersonal relationships. (15 ref) (PsycINFO Database Copyright 1985 American Psychological Assn, all rights reserved).

329. Malnic, Eric. Boeing must prove validity of age limit. (Boeing Co.'s policy of grounding airline pilots at age 60). Los Angeles Times, volume 107, April 7, 1988, Thu edition, section I, p32, col 2.

330. Mandatory retirement rule found to be discriminatory. Aviation Week & Space Technology (AWSTA), volume 114, June 22, 1981, p41(1).

331. MANNING, CAROL A.; ROCCO, PAMELA S.; BRYANT, KEVIN D. Prediction of success in FAA (Federal Aviation Administration) air traffic control field training as a function of selection and screening test performance. Federal Aviation Administration, Washington, DC. Office of Aviation Medicine; May 1989 35P. Note: Report No.: AD-A209327; DOT/FAA/AM-89/6.

332. Marks, E.; Zuzhevich, V.; Dvoretski, E.; Mazhentski, M. [Age-related changes in the electroencephalograms of pilots]. Kosm-Biol-Aviakosm-Med ; 1985 Sep-Oct; 19(5): 85-6; ISSN: 0321-5040. KXC. Note: RS.

333. MARKS, E.; ZUZEVIC, W.; DWOREZKI, E.; MAZENZKI, M. Age-related changes in electroencephalograms of pilots. Joint Publications Research Service, Arlington, Va; Nov. 1985. Note:

Transl. into ENGLISH from Kosmicheskaya Biologiya i Aviakosmicheskaya Meditsina (Moscow), v. 19, no. 5, Sep. - Oct. 1985 p 85-86 Language: English Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE; TRANSLATION Documents available from AIAA Technical Library Other Availability: NTIS HC A07 Journal Announcement: STAR8605 An age related changes in electroencephalograms of pilots study was conducted in two stages. At the first stage a visual and statistical analysis of 343 EEG of 125 pilots; at the second, pilots of two age groups were screened: the average age of individuals in the first group was 24.7 years and in the 2d group, 43.8 years. Evoked potentials (EP) matched in response to photic stimuli was used. The average age at the start of EEG observation was 25.1 + or - 5.5 years and at the end, 43.6 + or - 4.6 years. Regularity of alpha rhythm on the EEG, mean frequency of basic rhythm, mean amplitude, reaction delay, activation of EEG by hyperventilation and light flashes (stroboscope) correlation between slow waves, frequency and amplitude of basic rhythm, correlation between EEG and clinical parameters are analyzed. A specially developed chart to analyze the EEG and the criteria of Student, Shapiro-Wilke and X2 in statistical processing are used. (R.A.K.) Source of Abstract/Subfile: NASA STIF. In its USSR Report: Space Biology and Aerospace Medicine, Volume 19, No. 5, September - October 1985 (JPRS-USB-85-007) p 120-122 (SEE N86-14848 05-51) Translation.

334. MARSHALL, M. F. P. The problem of early presbyopia in aircrew. (Academie Internationale de Medecine Aeronautique et Spatiale and Societe Francaise de Physiologie et de Medecine Aeronautiques et Cosmonautiques, Congres International de Medecine Aeronautique et Spatiale, 20th, Nice, France, Sept. 18-21, 1972.) Revue de Medecine Aeronautique et Spatiale, vol. 12, 1st Quarter, 1973, p. 102-104; Mar. 1973. Note: Language: English Document Type: JOURNAL ARTICLE Journal Announcement: IAA7318 The onset of presbyopia is gradual and varies considerably from pilot to pilot. Most pilots have very little error in refraction and few have to wear distance correction. It was noticed in tests that there are variations from 18 to 30 cm in the same age group, all with normal refraction. This, however, does not take into account the varying stages of fatigue at the time of the test. It is important to remember this fact in assessing accommodative power from a single reading, particularly when this may entail endorsing the pilot's license. There is a need to educate pilots in the reasons for wearing reading correction, and a realization on the part of aircraft designers of the necessity to provide clear instrument marking of a reasonable size and to arrange sufficient space to allow the pilot to read at 30 cm. (F.R.L.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

335. Mason, J. K. (University of Edinburgh, Edinburgh, Scotland). Joint Committee of Aviation Pathology: X. Previous disease in aircrew killed in flying accidents. Aviat-Space-Environ-Med ; 1977 Oct; 48(10): 944-8; ISSN: 0095-6562. 9JA. Note: EN. This review article discusses the role of previous disease in military, private, and commercial pilots under the headings of occurrence, accident causation, and accident prevention. The importance of minor disease in military flying is stressed as are psychiatric disorders and alcoholism in general aviation. Disease of the coronary arteries is considered with special reference to commercial operations, where the importance of double crewing is emphasized. While symptomatic disease must always be significant, some of the problems associated with increasingly severe selection on the basis of asymptomatic disease are discussed. Author-abstract.

336. Mayer, K.S (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Bibliography of Scientific Publications 1981 1987. Interim rept. 1 Jan 81 31 Dec 87.. 065612000, 406061; Jul 88. 24p 1988. Note: UNITED-STATES PC A03/MF A01. This report lists citations of all unclassified research reports, special reports, monographs, journal articles, and proceedings that were published by the Naval Aerospace Medical Research Laboratory during calendar years 1981 through 1987. Keywords: Bibliographies, Medical research, Naval research laboratories, Motion sickness, Scopolamine, Ephedrine, Electrocardiograph, Electrocardiogram, Exercise, Aviator, Speech, Phonological, Microwave, Nystagmic, Flight, Vestibular, Fibroplasia, Rhesus, Macaca mulatta, Acoustic, Primate, Monkey, Noise, Lung, Voice, Model, Operational environment, Vestibular, Vestibulo ocular, Gravitoinertial force, Horizon, Temperature, Insect, Dosimetric, Absorption, Electromagnetic, Auditory, Landing signal officer, Sounds, Mammal, Thermal, Motor activity, Circadian rhythm, Human, Man, Pressure, Rat, Electric fields, Magnetic fields, Electromagnetic fields, Age, Nonionizing radiation, Hazard, Sensory, Naval flight officer, Brain, Rewarming, Waveguide, Hypothermia, Hyperthermia, Cardiopulmonary, Fitness, Flight performance, Acceleration, Microwave irradiation, G-tolerance, Aviation selection, Operant behavior, Retention, Selection, Psychological tests. (sdw).

337. McArthur, W. J.; Haakonson, N. H. (Canadian Forces Environmental Medicine Establishment, Downsview, Ontario). Joint Committee on Aviation Pathology: II. Epidemiology of military air display

accidents. Aviat-Space-Environ-Med ; 1977 Oct; 48(10): 911-5; ISSN: 0095-6562. 9JA. Note: EN. The paper examines fatal Canadian military air display accidents occurring between March 1, 1956, and March 1, 1974. They are discussed in detail from a human factors point of view. It was found that single and separated pilots tended to be at high risk compared with their married counterparts and most of the fatally injured pilots had less than 2,000 h total flying time. Time on type was shown to be less important than total flight time, and age in itself was unrelated to the incidence of fatal accidents. Spontaneity and deviation from prearranged plans was featured in many of the accidents. Human failure in the cockpit appears to be less frequent in air display fatalities than in fatal accidents occurring in routine operations; however, human failure in supervision accounted for 30% of the display accident cause factors, a figure much higher than in nonaerobatic fatal accidents. Finally, evidence indicates that it is possible to select and operate an aerobatic team in which the risk of a fatality is low, provided a few simple guidelines are observed by the team selectors and the team members. Author-abstract.

338. McCracken, A.P (Performer: Air Command and Staff Coll., Maxwell AFB, AL). Cost of Officer Retention Versus Replacement. Student rept. 029160000, 405502; Apr 84. 31p 1984. Note: UNITED-STATES PC A03/MF A01. Presents an analysis of the costs involved in retaining an officer through retirement. These findings are compared to the cost of replacing the same officer if he were to leave the service at some career point short of retirement. The analysis is made for four Air Force officer career fields: pilot, navigator, engineer, and maintenance officer. The information is used to draw conclusions concerning present policy and to make recommendations for the future. The analysis heavily favors retention of pilots and navigators when cost is the only consideration. The results for engineers and maintenance officers was relatively neutral. It also becomes important to take a new look at extending the continuation policy due to the significant savings which can be realized through program expansion.

339. MCFARLAND, R. A. Medical fitness for flying in middle-aged pilots. (Middle aged pilot medical fitness for flying, noting age-accident statistics, changes in skill, performance, senses and responses). IN- SOME PROBLEMS OF AVIATION AND SPACE MEDICINE. EDITED BY P. LEVIT. PRAGUE, KARLOVA UNIVERSITA, 1967, P. 43-53. 15 REFS; 1967. Note: Language: English Document Type: ANALYTIC OF COLLECTED WORK Journal Announcement: IAA6722 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

340. Medical panel on pilot age formed. Aviation Week & Space Technology (AWSTA), volume 111, Aug 13, 1979, p31(1).

341. MELTON, C. E., JR.; WICKS, M. Pilot vision considerations - The effect of age on binocular fusion time (Pilot age factor influencing binocular fusion time). Federal Aviation Agency, Oklahoma City, Okla; Oct. 1966. Note: Report No.: AM-66-35 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Journal Announcement: STAR6705. OCT. 1966 9 P REFS.

342. MENGHETTI, E. /AERONAUTICA MILITARE, DIREZIONE DI SANITA, ITALY/.; SCANO, A. Adaptation to night vision in homogeneous groups of multiengine aircraft pilots and nonpilots (Aircraft pilot and nonpilot night vision adaptation comparison, using Goldmann-Weekers adaptometer). RIVISTA DI MEDICINA AERONAUTICA E SPAZIALE, VOL. 33, P. 168-174; Mar. 1970. Note: Language: Italian Country of Origin: Italy Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA7017. Documents available from AIAA Technical Library.

343. Menu, Jean Pierre R. (Ctr d'Etudes et de Recherches de Medecine Aerospatiale, Paris, France). Head up/head down transition: Measurement of transition times. Aviation, Space, and Environmental Medicine; 1986 Mar Vol 57(3) 218-222; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Developed a method to measure transition times between a head-up signal anda response given to a head-down display (HDD). Various arrangements of motor response (vocal, hand) and HDD images were used. In the 1st experiment, conducted with 10 pilots (mean age 40 yrs) and 21 nonpilots (aged 20-36 yrs), vocal and manual response times were recorded in a current fighter aircraft mock-up situation. The shortest times were obtained for voice responses. In the 2nd experiment, conducted with 25 nonpilots (aged 20-35 yrs), images were displayed on the HDD. Perception time was significantly shorter for the positive contrast. This method permits the evaluation in a dynamic aeronautical environment of the acquisition and processing of information. (8 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

344. Mertens, H.W.; Higgins, E.A.; McKenzie, J.M (Performer: Federal Aviation Administration, Washington,

DC. Office of Aviation Medicine.). Age, Altitude, and Workload Effects on Complex Performance. 009020006, 264320; Sep 83. 18p 1983. Note: UNITED-STATES PC A02/MF A01. Fifteen healthy men in each of three age groups, 20-29 yrs, 40-49 yrs, and 60-69 yrs, were evaluated regarding complex performance in two altitude conditions (ground level vs. 3,810 m) which were administered during performance testing. Performance was measured during a 3-h test session with the Multiple Task Performance Battery (MTPB) which involved time-shared performance of several flight-related tasks presented in different combinations to vary workload. MTPB tasks consisted of monitoring of warning lights and meters, mental arithmetic, problem solving, visual target identification, and tracking. Heart rate decreased slightly at the 3,810 m altitude in the 60-69 yr group, but increased significantly at altitude in the two younger groups. Both epinephrine and norepinephrine excretion rates were highest in the 20-29 yr group and lowest in the 40-49 yr group. Age related decrements occurred in monitoring tasks, information-processing tasks, and a tracking task involving psychomotor-coordination. Performance differences occurring as a function of age were evident predominantly at moderate and high workload levels. There were no important effects of altitude on performance. Physiological and biochemical responses had little relation to performance. Implications of these findings for future research relating age to pilot performance are discussed. .

345. MERTENS, HENRY W.; COLLINS, WILLIAM E. (FAA, Civil Aeromedical Institute, Oklahoma, City, OK). The effects of age, sleep deprivation, and altitude on complex performance. Human Factors (ISSN 0018-7208), vol. 28, Oct. 1986, p. 541-551; Oct. 1986 16 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8714 The performances of men ranging in age from 30-39 and 60-69 years at different altitudes (ground and 3810 m) and under various sleep conditions (sleep permitted and sleep deprived) are investigated. The multiple task performance battery consisted of: the monitoring of warning lights and meters, mental arithmetic, problem solving, target identification, and tracking. It is observed that there was a significant interaction between sleep deprivation and altitude that was enhanced by increasing work load. The performance of subjects sleep deprived was lower and the greatest decrease occurred at 3810 m. The data reveal that the performance of the 60-69 year old subjects was lower and more affected by an increase in work load than that of the younger subjects; however, sleep deprivation and altitude effects were not influenced by age. (I.F.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

346. Mertens, Henry W.; Lewis, Mark F. (FAA Civil Aeromedical Inst, Oklahoma City, OK). Effects of approach lighting and variation in visible runway length on perception of approach angle in simulated night landings. Aviation, Space, and Environmental Medicine; 1983 Jun Vol 54(6) 500-506; 1983; CODEN: AEMEAY; ISSN: 00956562. Note: Human. In Exp I, 40 pilots (aged 25-60 yrs) made simulated visual approaches to arunway with and without an approach light system. Ss controlled a moving runway model to produce a constant "normal" angle of approach. In Exp II, 24 Ss made simulated approaches to a runway that was either fully visible or had the lights of the upwind half occluded. In addition, an abbreviated approach light system was used at 3 intensities. Decreasing the visible length of the runway by occulting lights of the far half increased mean generated approach angles from 2.2 to 2.7Deg.. Neither the presence of equal intensity approach lights nor uncomfortable glare from approach lights 20 times brighter than runway lights had an effect of practical significance on responses. Findings reinforce previous experimental demonstrations of the importance of runway size cues related to varying runway length and also show that potential size cues provided by approach lights do not prevent illusions due to variations in runway size. (9 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

347. Miller, A. J. Letter: Exercise tests for pilots. JAMA ; 1974 Jan 7; 227(1): 77; ISSN: 0098-7484. KFR. Note: EN.

348. MITCHELL, R. E. The thousand aviators: Aging and the blood pressure (active flying status after age 60). Naval Aerospace Medical Research Lab., Pensacola, Fla; Oct. 1973. Note: Language: English Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR7405 Blood pressure patterns are discussed for the members of a research group over a 32 year period and the implications of the patterns. In contrast to what was previously thought to be the case, namely, that blood pressure levels not rise with increasing age, the latest survey indicates that there are many and important exceptions to this generality after 45 years of age. Since this is the period when most naval aviators enter the administrative phase of their careers, the finding has less significance than if it occured at an earlier age but has greater operational significance in the case of commercial airline pilots inasmuch as these men continue to fly at age 60. It would appear that this late onset of increased

blood pressure justifies the more liberal standards for admission to flight training. At the same time personnel in an active flight status can be allowed to continue active flying if no complications are noted and treatment is not indicated. (Author). In AGARD Pathophysiol. Conditions Compatible with Flying 3 p (SEE N74-13784 05-04) Country of Origin: United States.

349. MOHLER, S. R. (Wright State University, Dayton, OH). Age and space flight. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, July 1985, p. 714-717; Jul. 1985 14 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8521 Criteria for space flight crew and passenger selection should be based on the following three considerations: (1) freedom from impairing disease, (2) ability to perform mission requirements and (3) motivation to undertake the mission. Chronologic age of itself is not a valid criterion. Forecast life expectancy and vitality relative to mission duration are valid criteria and can be applied on an individual basis using modern assessment techniques. The good health and vitality characterizing the upper ages of today's population widens the opportunity to utilize increasingly broad fields of experience and skills in future space flights, further enhancing the odds for total mission accomplishment. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

350. Mohler, S. R. Age is a state, as are sex and race. Note: Aging and Work. Summer 1979. Vol. 2, No. 3. p. 192-201. (10p.). Testimony before the House Select Committee on Aging, March 21, 1979, is presented. The focus is on mandatory retirement at 60 for airline pilots, as stipulated by the Federal Aviation Administration (FAA). The FAA does not take into account recent medical advances such as the "Bruce protocol" that permits accurate definition of an individual's cardiovascular state. FAA medical evaluation does not investigate known risk factors, such as lipid analysis, smoking, and obesity that may be present in younger pilots. The FAA has modified certain pilot certification policies in response to improved risk assessment procedures, but only for pilots under 60. Evidence indicates that age is not necessarily associated with decline and that older pilots may indeed be the most skilled and experienced. Action and determination by the FAA are suggested to update retirement policies so that healthy pilots may prolong their productive years. Regarding ageism, a distinction is made between the aging process and the acquisition of disease. (BF).

351. Mohler, S. R. Aircraft accidents and age. Note: Aging and Work. Winter 1981. Vol. 4, No. 1. p. 54-57. (4p.). Information is presented regarding airline pilot age data versus airline pilot accident and incapacitation rates at different ages. The data show that pilots in the older age brackets are involved in fewer accidents, as shown by National Transportation Safety Board investigations. In-flight deaths of airline pilots peak in the mid-40 age range, declining thereafter. Such data may reflect the removal from flight duties of many of the more disease-susceptible pilots as chronological age advances. Analysis of median ages of captains in regard to type of aircraft flown reveals that the larger aircraft are commanded by more senior individuals. Such a relationship reflects the direct correlation between air safety and the increasing judgment and experience that accompany normal healthy aging. As the aircraft increase in size, captain median age increases significantly, and this correlates with the seniority bidding system and with significant salary increases in relation to increasing aircraft size. National Transportation Safety Board data for airline accidents (1973-1978) attributed to the captain demonstrates that the captains' ages for accidents steadily declined after age 50. The findings corresponds with the safety record for widebody jet aircraft, virtually all of the latter flown by captains over age 50. The larger and more densely loaded passenger airline aircraft are flown by the older and more experienced and capable captains. This is a major factor in low accident rates. It is concluded that age 60 rule is prematurely removing the safest pilots from air space. (EZ).

352. MOHLER, S. R. (FAA, Aeromedical Applications Div., Washington, D.C.). Functional aging - Present status of assessments regarding airline pilot retirement. Aerospace Medicine, vol. 44, Sept. 1973, p. 1062-1066; Sep. 1973 12 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7321 Assessment of the progress made in gerontology during the past 10 years in regard to 'functional' aging, and evaluation of the justification for any revision of the current airline pilot age limit regulations. It is found that no significant progress has been accomplished and no information generated that could justify a revision of the present mandatory airline pilot retirement age of 60. (M.V.E.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

353. Mohler, S. R. (Wright State University School of Medicine, Dayton, Ohio). Reasons for eliminating the "age 60" regulation for airline pilots. Aviat-Space-Environ-Med ; 1981 Aug; 52(8): 445-54; ISSN:

0095-6562. 9JA. Note: EN. The calendar age of 60 is no longer medically justifiable as an upper age limit for airline pilots. Advances in gerontologic studies, clinical medicine, and operational flight proficiency evaluations, now allow individual pilot assessments for health status and performance capability. Individualizing the career duration of pilots by eliminating the present age 60 upper limitation will enhance flight safety and efficiency as healthy pilots continue their productive careers. Author-abstract.

354. Mohler, Stanley R. (Wright State U School of Medicine). Reasons for eliminating the ""age 60'' regulation for airline pilots. Aviation, Space, & Environmental Medicine. 1981 Aug Vol 52(8) 445-454; CODEN: AEMEAY; ISSN: 0095-6562. Note: English (EN). Suggests that the calendar age of 60 is no longer medically justifiable as an upper age limit for airline pilots. Advances in gerontologic studies, clinical medicine, and operational flight proficiency evaluations now allow individual pilot assessments for health status and performance capability. Individualizing the career duration of pilots by eliminating the age 60 limitation would enhance flight safety and efficiency as the highly qualified, experienced, and proficient older healthy pilots continue their productive careers. Aircraft simulators and flight performance can provide detailed information on an individual's cognitive and perceptual flight skills and overall capabilities. (80 ref) (PsycINFO Database Copyright 1981 American Psychological Assn, all rights reserved).

355. Moline, M.L.; Monk, T.H (Performer: Cornell Univ. Medical Coll., New York. Inst. of Chronobiology. Funder: National Aeronautics and Space Administration, Washington, DC.). Effectiveness of Circadian Countermeasures in Simulated Transmeridian Flight Schedules. Final Technical Report.. 052832004, C5735642; 1989. 24p 1989. Note: UNITED-STATES PC A03/MF A01 Contract: NCC2253. The symptoms of jet-lag commonly afflict travelers who cross time zones. Insomnia during the new night, daytime fatigue, malaise, sleepiness, and gastrointestinal disturbances can occur for as long as 3 weeks after jet travel across even a few time zones. These symptoms are largely due to the slow rate of adjustment of the internal circadian timing system to the new time zone. Since business (or pleasure) can be seriously interrupted by such symptoms, it is important to determine ways to speed up the adjustment process to ameliorate the symptoms. Airline pilots have reported that they frequently nap to counter jet lag symptoms, and that they view this as a useful technique. Napping as a countermeasure would be attractive since it is practical and would take advantage of a naturally occurring phase of sleepiness after lunch. Napping also makes sense since insomnia is a common jet lag symptom. Thus, a laboratory simulation of jet lag was designed to test the ability of napping to increase the rate of adjustment following a time zone shift in a population of middle-aged men.

356. Morain, Dan. Airline's rule on grounding pilots voided. Los Angeles Times, volume 102, June 29, 1983, Wed edition, section I, p3, col 1.

357. Morgan, Len. Getting older, or getting better? (mandatory retirement of commercial pilots) (column). Flying (FLYGA), volume 116, issue n11, Nov, 1989, p132(3).

358. Morgan, Len. Nice to meet you again, fat Al. (Boeing 747 flight simulator) (column). Flying (FLYGA), volume 115, issue n3, March, 1988, p10(2).

359. Morgan, Len. No ties; retired, yes. Ready for "The Autumn Years"? No sir. Flying (FLYGA), volume 113, March, 1986, p8(2).

360. Morgan, Len. Old dogs, new tricks. (column). Flying (FLYGA), volume 114, Oct, 1987, p10(2).

361. Morgan, Len. Sidelines; a volatile career like flying needs a backup. (column). Flying (FLYGA), volume 1, June, 1984, p24(2).

362. Morgan, Len. The silver eagles. (Braniff International Silver Eagles retired pilot association) (column). Flying (FLYGA), volume 115, issue n4, April, 1988, p16(2).

363. Morgan, Len. Vectors thanks. Flying (FLYGA), May, 1982, p65(1).

364. Morris, A.; Hamilton, P.V (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Visual Acuity and Reaction Time in Navy Fighter Pilots. 065612000, 406061; Dec 86. 32p 1986. Note: UNITED-STATES PC A03/MF A01. This report summarizes data on selected visual measures for Navy fighter pilots. The vision of 163 pilots was measured using an Automated Vision Test Battery housed in a Mobile Field Laboratory. All pilots were involved in training at the Tactical Air Combat Training System (TACTS) range, NAS Oceana, VA. Data on simple visual reaction time, spot detection ability, static

visual acuity under several conditions are reported, and the influences of age and spectacles on vision are examined. The average high contrast acuity score was 0.40 minutes of visual angle, or 20/8 Snellen; no pilot had worse than 20/15 acuity. These findings, together with other data, suggest that Navy fighter pilots have better vision than non-aviators of the same age, and possibly better vision than Student Naval Aviators. Correlational analyses suggest that acuity threshold, simple visual reaction time, and threshold stressed reaction time, are independent measures of visual functioning. Spectacled pilots had poorer vision than non-spectacled pilots, and older pilots tended to have poorer vision than younger pilots.

365. Morris, A.; Temme, L.A (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Time Required for U.S. Navy Fighter Pilots to Shift Gaze and Identify Near and Far Targets.. 065612000, 406061; Nov 89. 7p 1989. Note: Pub. in Aviation, Space, and Environmental Medicine, v60 p1085-1089 Nov 89. UNITED-STATES PC A02/MF A01. The speed with which 163 U.S. Navy fighter pilots can shift their line of sight and discriminate high contrast targets was measured. The targets were simultaneously projected onto two screens; one at 18 ft and one at 18 inches in front of the subject's eyes. Subjects were required to fixate first one screen and then as rapidly as possible, shift gaze to the other screen. The minimum exposure duration required to correctly resolve both targets was measured. For 65 subjects, the test target was 1.0 min of visual angle (mva); for 98 subjects the target was 2.0 mva. The major findings are: 1) both Far-to Near and Near-to-Far mean times significantly slowed with age; 2) there was no significant difference between the Far-to-Near and Near-to-Far mean times with the oldest subject (44 years of age) excluded; 3) the within-subject standard deviation Far-to-Near increased with age and was significantly greater than the Near-to-Far standard deviation, which did not increase with age; 4) there was a significant correlation between the mean Near-to-Far speeds and the night carrier landing performance of the aviators. Keywords: Accommodation; Vision; Accommodative flexibility; Pilots; Performance human; Age; Reprints. (KT).

366. Morris, Aileen; Temme, Leonard A. (US Naval Aerospace Medical Research Lab, Naval Air Station, Pensacola, FL,US). The time required for U.S. Navy fighter pilots to shift gaze and identify near and far targets. Aviation, Space, and Environmental Medicine; 1989 Nov Vol 60(11) 1085-1089; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Measured the speed with which 163 US Navy fighter pilots (aged 24-44 yrs)shifted their line of sight and discriminated high contrast acuity targets. The targets were simultaneously projected onto 2 screens (1 at 18 feet and 1 at 18 inches in front of the S's eyes) and Ss were required to fixate 1st 1 screen and then as rapidly as possible shift gaze to the other screen. Far-to-near (FTN) and near-to-far (NTF) mean times significantly slowed with age, and the within-S standard deviation FTN increased with age and was significantly greater than the NTF standard deviation, which did not increase with age. There was also a significant correlation between the mean NTF speeds and the night carrier landing performance of Ss. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

367. Morrow, D.; Leirer, V.; Yesavage, J. (Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, CA 94305). The influence of alcohol and aging on radio communication during flight. Aviat-Space-Environ-Med ; 1990 Jan; 61(1): 12-20; ISSN: 0095-6562. 9JA. Note: EN. This study finds that alcohol and pilot age impair radio communication during simulated flight. Young (mean age 25 years) and older (mean age 42 years) pilots flew in a light aircraft simulator during alcohol and placebo conditions. In the alcohol condition, pilots drank alcohol and flew after reaching 0.04% BAC, after reaching 0.10% BAC, and then 2, 4, 8, 24, and 48 h after they stopped drinking at 0.10% BAC. They flew at the same times in the placebo condition. Alcohol and age impaired communication-based and overall flying performance during and immediately after drinking. Most important, alcohol and age cumulatively impaired performance, since older pilots were more impaired by alcohol. Notably, performance was as impaired 2 h after reaching 0.10% BAC as it was at 0.10% BAC. Moreover, overall performance was impaired for 8 h after reaching 0.10% BAC. Author-abstract.

368. Morrow, Daniel; Leiber, Von O.; Yesavage, Jerome (Stanford U School of Medicine, CA, US). The influence of alcohol and aging on radio communication during flight. Aviation, Space, and Environmental Medicine; 1990 Jan Vol 61(1) 12-20; 1990; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined the impact of alcohol intoxication and pilot age on how well pilotsfollowed air traffic controller instructions during simulated flight. Seven young (mean age 25 yrs) and 7 older (mean age 42 yrs) male pilots flew in a light aircraft simulator during alcohol and placebo conditions. In the alcohol condition, Ss drank alcohol and flew after reaching 0.04% blood alcohol content (BAC); after reaching 0.10% BAC; and then 2, 4, 8, 24, and 48 hrs after they stopped drinking at 0.10% BAC. Ss flew at the same times in the placebo condition. Alcohol and age impaired communication-based and overall flying performance during

and immediately after drinking. Alcohol and age cumulatively impaired performance, since older Ss were more impaired by alcohol. Performance was as impaired 2 hrs after reaching 0.10% BAC as it was at 0.10% BAC. Performance was impaired for 8 hrs after reaching 0.10% BAC. (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

369. MOSER, M. H.; RANACHER, G. R. (Graz, Universitaets-Hals-Nasen-undOhren-Klinik, Graz, Austria). Medical fitness examination of commercial pilots - New criteria for evaluation of vestibular tests. Aviation, Space, and Environmental Medicine, vol. 53, Dec. 1982, p. 1215-1219; Dec. 1982 21 Refs. Note: Language: English Country of Origin: Austria Document Type: JOURNAL ARTICLE Journal Announcement: IAA8304 The use of extensive vestibular investigations in medical fitness examinations of commercial pilots is evaluated. It is found that the pendular test, as a weak rotational stimulation method, can disclose central vestibular disorders. It is shown that the central nystagmus tracing can be considered as a sign of irritation of vestibular centers, most frequently as a consequence of head trauma. However, a small nystagmus amplitude tracing is observed in cases of insufficient blood supply, particularly in elderly individuals. Cervical-nystagmus that is elicited by neck-torsion while keeping the laytinth fixed at rest is an objective demonstration of a cervical-spine-syndrome. Chiropractic manipulation may help the pilot to become fit to fly again. Further processing of the data from vestibular investigations using a computer and plotting is proposed in order to provide the cumulative eye position, which allows the evaluation of the compensation capacity, important in the assesment of normality of function of the vestibular system. (N.B.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

370. NAGATSUKA, KYOICHI; TAKEUCHI, YOSHINORI; NAGASAWA, YUKO. Age-related changes in performance of pilots. Japan Air Self Defense Force, Aeromedical Laboratory, Reports (ISSN 0023-2858), vol. 30, Sept. 1989, p. 35-44. In Japanese, with abstract in English; Sep. 1989 20 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA9019 Three performance tests, measuring fundamental aspects of piloting were imposed to 147 JASDF pilots in order to see the effects of aging. The tests were an attention distribution test to measure concentration and distribution of attention, a sensori-motor coordination test to measure tracking performance, and a short term-memory test to measure memory-span. Pilots in their 40s showed significant decreases of performance in the attention distribution test, and in the short-term memory test, as compared with those pilots who were in their 20s and 30s. No aging effect was seen in the sensori-motor coordination test which required the quick sensori-motor functions. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

371. National, Academy of Sciences -. National Research Council, Washington, D. C. Div. of Health Sciences Policy. Airline pilot age, health, and performance: Scientific and medical considerations; Jul. 1981 170P. Note: Report No.: PB82-161506; ISBN-0-309-03176-1; LC-81-82029 Contract No.: N01-AG-0-2112 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A08/MF A01 Journal Announcement: STAR8220 A comprehensive review is presented of current knowledge about biomedical and behavioral factors that might influence the ability of airline pilots to carry out their job safety as they advance in age. (GRA) COSATI Code: 5I Personnel Selection, Training, & Evaluation.

372. NAYAR, G. S. (Indian Air Force, Institute of Aviation Medicine, Bangalore, India). Analysis of case of diabetes mellitus amongst commercial civil aircrew. Aviation Medicine, vol. 28, June 1984, p. 72-78; Jun. 1984 17 Refs. Note: Language: English Country of Origin: India Document Type: JOURNAL ARTICLE Journal Announcement: IAA8508 The problem of carbohydrate intolerance among members of civilian aircrews in India is examined. The data used in the analysis include medical records of all civil flying license holders in India between 1969 and 1983. Records of aircrew members which showed evidence of impaired glucose tolerance (IGT) were analyzed with respect to: the success of treatments for the disorder; and the compatibility of the diagnosis with WHO diagnostic criteria. It is found that 145 aircrew in India were diagnosed as having glucose intolerance at least once. At least 27 percent of this group were permanently withdrawn from active duty due to diabetes mellitus. In 42 percent of the cases, related conditions such as CAD, hypertension, and lenticular opacities were also found. On the basis of the analyzed data, recommendations are offered with respect to education programs for those aircrew members currently under self-treatment regimens. (I.H.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

373. Neye, W. (Performer: Deutsche Forschungs- und Versuchsanstalt fuer Luft- und Raumfahrt e.V., Bonn-Bad Godesberg (Germany, F.R.). Inst. fuer Flugmedizin.). Hearing Loss Associated with Helicopter

Flight. 031010000, 415089; Apr 84. 9p 1984. Note: This article is from 'Aeromedical Support in Military Helicopter Operations: Lecture Series Held at Soesterberg, The Netherlands on 4-5 June 1984, Fuerstenfeldbruck, Germany on 7-8 June 1984 and Oslo, Norway on 12-13 June 1984,' AD-A145 809, p6-1-6-9. GERMANY-FR PC A02/MF A01. The present comparative examination revealed indeed, that greater hearing losses can be observed in helicopter pilots of the Army versus pilots of the other services. With a high degree of probability they are the result of the special training requirements of Army pilots and the aircraft-type-specific noise intensity associated with helicopter flying. Nevertheless, these hearing losses in Army pilots with few exceptions lie clearly within the qualification limits promuglated for military flying duty in the German Federal Armed Forces. Provided applicable ear protection regulations are observed even long-term aircraft noise exposure will not cause above average hearing losses in helicopter pilots which might considerably impair the earning capacity or quality of life in older age. All helicopters employed by the German Federal Armed Forces are flown by pilots wearing flying helmets. Noise attenuation characteristics of these helmets protect effectively against the damaging noise intensities. Critical noise levels may, however, be experienced during external work on aircraft or during flight line operation near the runway. In those cases further measures have to be initiated, which bring about a reduction of noise caused by aircraft in flying operation as well as measures to improve ear protectors for pilots and nose-exposed maintenance personnel. To illustrate, the use of a soft plastic earplug standardized within the German Federal Armed Forces to be worn under the steel helmet or flying helmet is urgently demanded for reasons of hearing loss prevention.

374. Nicholson, Anthony N.; Pascoe, Peta A.; Spencer, Michael B. Stone, Barbara M.; Et, Al (Royal Air Force Inst of Aviation Medicine, Farnborough, England). Nocturnal sleep and daytime alertness of aircrew after transmeridian flights. Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect II)43-52; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Studied the nocturnal sleep and daytime alertness of 13 aircrew members (aged 31-54 yrs), using EEG and the multiple sleep latency test (MSLT). After a transmeridian flight from London to San Francisco, sleep onset was faster and, although there was increased wakefulness during the 2nd half of the night, sleep duration and efficiency over the whole night were not changed. The progressive decrease in sleep latencies observed normally in the MSLT during the morning continued throughout the day after arrival. 12 Ss took a nap of around 1-hr duration in the afternoon preceding the return flight. These naps would have been encouraged by the drowsiness at this time and facilitated by the departure of the aircraft being scheduled during the early evening. (16 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

375. Nipper, R.M (Performer: Air War Coll., Maxwell AFB, AL). Leo Marquez: Air Force Logistician. Research rept. 001030000, 014550; May 88. 40p 1988. Note: UNITED-STATES PC A03/MF A01. Remarks on the career of Lieutenant General Leo Marquez identify some techniques of effective leadership which he used and lessons learned from his experiences. The paper is based on an oral interview with General Marquez which was conducted in January 1988, six months after his retirement. The paper traces his career chronologically from his early childhood in New Mexico, his training as a fighter pilot, his logistics leadership positions, and his final position as the Air Force Deputy Chief of Staff for Logistics and Engineering. It concludes with a short summary of some of the lessons learned. (adw).

376. North, David M. Pilots again attack age 60 retirement. Aviation Week & Space Technology (AWSTA), volume 110, March 26, 1979, p31(1).

377. NUNNELEY, S. A.; FINKELSTEIN, S.; LUFT, U. C. (Lovelace Foundation forMedical, Education and Research, Albuquerque, N. Mex.). Longitudinal study on physical performance of ten pilots over a ten-year period. (Annual clinical and physiological evaluation of test pilots physical performance over ten year period from body composition, pulmonary function and work capacity measurements). Aerospace Medicine, vol. 43, May 1972, p. 541-544; May 1972 13 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7214 A longitudinal study is under way on a group of test pilots who report annually for comprehensive clinical and physiological evaluation at the Lovelace Foundation. Results are reported for 10 of these pilots who were measured for body composition, pulmonary function and work capacity repeatedly over a 10-year period. Mean age on initial evaluation was 31.6 years (range 28-38). During the 10 years these men showed changes usually associated with aging, such as greater fat content and increased ratio of residual volume to total lung capacity. However, aerobic work capacity increased significantly as revealed by a larger maximal oxygen consumption. It is noteworthy that several of the pilots in the study undertook voluntary physical fitness programs, probably motivated in part by the annual tests. ((Author)).

Documents available from AIAA Technical Library.

378. NWA funds training center for zero-time pilot candidates. (Northwest Airlines). Aviation Week & Space Technology, volume 127, July 6, 1987, p69(2).

379. OBDERKAMP, K. U.; LEHWESS-LITZMANN, I. (Ministerium fuer Verkehrswesen, Berlin, East Germany). The behavior of the retina vessels under hypoxy conditions. Technisch-oekonomische Information der zivilen Luftfahrt, vol. 12, no. 2, 1976, p. 100-103. In German; 1976 11 Refs. Note: Language: German Country of Origin: Germany, Peoples Democratic Republic of Document Type: JOURNAL ARTICLE Journal Announcement: IAA7617 An investigation was conducted concerning the effect which a decrease in oxygen concentration from 21% at the ground to 11% at an altitude of 5000 m will produce on the retinal vessels. Photographs of the retina of 60 persons were obtained, taking into account the condition of the retina at the ground, after a subjection to the conditions at an altitude of 5000 m for a time of 5 minutes, and again after a subjection to hypoxy conditions for 25 minutes. Measurements of vessel dimensions were conducted with the aid of the photographs, giving attention to seven parameters. The effect of the hypoxy conditions on the parameters is discussed. It is pointed out that the age of the person had no effect on the results obtained for the seven retina parameters. (G.R.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

380. OBriant, C. R.; Tredici, T. J.; Culver, J. F. Aeromedical evaluation of topical 2 percent levo-epinephrine on normal subjects. Note: USAF School of Aerospace Medicine, Aerospace Medical Division (AFSC), Brooks Air Force Base, TX. Nov 1967. (8p.). NOTES: Reprinted from Aerospace Medicine, vol. 38, no. 11, November 1967, pp. 1171-1174. AVAILABILITY: SCAN Microfiche No. CCF 002482.

381. (Performer: Bureau of Labor Statistics, Washington, DC). Occupational Injuries and Illnesses, Idaho, 1981. Final rept. 004961000; 1982. 1595p 1982. Note: See also PB82-100041. UNITED-STATES MF A01 Microfiche copies only (Eight sheets of 42X reduction). Microfiche of Standard Tabulations produced by the Supplementary Data System (SDS). These microfiche contain 78 tabulations of occupational injury and illness data classified and provided to BLS by the Idaho Industrial Commission. Included are data on the characteristics of the injury or illness (i.e., Nature, Part, Source, and Type), industry, occupation, age, and sex of the injured or ill employee, month and day of the injury or illness, and weekly wage of the employee, and the extent of disability, indemnity compensation, and medical payments associated with the injury or illness. Data represent a universe of cases which occurred during 1981 involving death, 1 or more lost workdays, or medical treatment even if no lost workdays are involved, and cases closed during 1981 involving death, permanent disability, 6 or more days of disability, or medical treatment even if no days of disability are involved. Data include cases arising in private employments, except for employees covered by Federal workers' compensation or employers' liability acts, casual employees, household workers, certain corporate officers, sole proprietors and partners, outworkers, pilots of agricultural spraying or dusting planes covered by insurance, certain real estate brokers and sales agents, farm workers, and employees of nonprofit or charitable institutions, and in public employments, except Federal employees. Some excepted employments may appear in the data due to voluntary coverage provisions of the law.

382. OKAUE, M.; ARUGA, H. The relationship between emotional tension scale and psychological uneasiness of JASDF pilots in flying situations. Japanese Air Self-Defense Force, Tokyo. Aeromedical Lab; Jun. 1984. Note: Language: MULTIPLE; In JAPANESE; ENGLISH summary Country of Origin: Japan Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Other Availability: NTIS HC A05/MF A01 Journal Announcement: STAR8501 A questionnaire to survey JASDF pilot's emotional experiences through flying duty assessment and the Emotional Tension Scale was administered to 173 JASDF pilots. The Emotional Tension Scale is a questionaire to evaluate emotional tensions or anxieties which are supposed to effect behaviors in frustrating situations. The questions about fiting situations consisted of multiple choice and sentence completion type. Answers given by the pilots were converted to Z scores, and Pearson's product moment correlation coefficients were computed. Results suggest that: (1) younger pilots tend to be less stable psychologically; (2) the Emotional Tension Scale cannot be used to project pilot psychological uneasinesses in actual flying; (3) the Emotional Tension Scale score is related to the frequency of reluctancy to fly and the uneasiness before flying; (4) question items inquiring of phobic tendencies and physical complaints in the Scale have significant correlation with the frequency of reluctancy to fly; and those of obsessive tendencies and of social phobic tendencies slightly correlate with the psychological uneasiness before flying; and (5) phobic experiences during flying have no relations with any other item, therefore every pilot has the possibility to have such experiences, regardless of his age, flight hours, or psychological traits. (R.S.F.) Source of

Abstract/Subfile: NASA STIF. In its The Repts. of Aeromedical Lab., Vol. 25, No. 1/2 p 31-46 (SEE N85-10605 01-51).

383. Okaue, Miyako; Aruga, Hisao (Japanese Air Self-Defense Force, Aeromedical Lab, Tokyo). / Psychological states (mood, affect or emotion) experienced by JASDF pilotsthrough flying duties: I. General feelings in daily flying. Reports of Aeromedical Laboratory; 1983 Jun Vol 24(2) 87-103; 1983; CODEN: KJNNA.; ISSN: 00232858. Note: Human. Administered a questionnaire in the form of a sentence completion test toJapanese Air Self-Defense Force (JASDF) pilots over 40 yrs of age in a pilot study investigating psychological states that pilots experience while flying. Most of the Ss were not assigned to flying duties but were under an obligation to fly for a given amount of hours per year. The questionnaire was revised and administered to 173 active duty pilots belonging to flight squadrons. 37 of them were jet aircraft instructor pilots, 51 were fighter pilots, 52 were rescue helicopter pilots and 33 were rescue search aircraft pilots. Results indicate that many Ss experienced agreeable affects such as joy and pleasure during their flights. Many Ss also felt that the more difficult missions were the most inspiring. Some problems cited by Ss included lost confidence in flying skill, anxiety due to an aircraft accident or an emergency, undesirable assignments, poor relations with a superior, a family problem, and a physical problem. About half of the Ss said they felt reluctant to fly occasionally because of physical problems. Bad weather, unstable mental states, and lack of confidence were reasons Ss gave for being unwilling to fly. A few pilots did not feel their lives as pilots were worthwhile, possibly because they were not satisfied with their current assignments or assigned aircraft. (8 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

384. Okaue, Miyako; Aruga, Hisao (Japanese Air Self-Defense Force Aeromedical Lab, Tokyo). / Psychological states (mood, affect or emotion) experienced by JASDF pilotsthrough flying duties: III. Flying conditions causing pilots psychological disturbances. Reports of Aeromedical Laboratory; 1984 Jul Vol 25(1-2) 1-14; 1984; CODEN: KJNNA.; ISSN: 00232858. Note: Human. Administered a questionnaire containing open-ended questions and sentencecompletion forms to 173 JASDF (Japanese Air Self-Defense Force) duty pilots (DPs) who were 40 yrs old or older, and 109 administrative pilots (APs), who were under 40 yrs old, to identify flying situations that induce emotional disturbances (e.g., anxiety, tension, irritation). 37 DPs were assigned to a jet trainer, 51 to a 1-seat fighter, 52 to a rescue helicopter, and 33 to a rescue search aircraft with turboprop engines. All APs had been fighter pilots. Findings indicate that more Ss felt anxiety, rather than tension, under conditions of aircraft troubles, bad weather, lack of experience, or insufficient preparation for flight; however, they felt tension, rather than anxiety, during normal mission flights. Many Ss felt tension during take-off or landing. Irritation during flight was experienced more by jet pilots, including instructors and fighters, than by rescue pilots. (7 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

385. Okaue, Miyako; Aruga, Hisao (Japanese Air Self-Defense Force Aeromedical Lab, Tokyo). / The relationship between "Emotional Tension Scale" and psychologicaluneasiness of JASDF in flying situations. Reports of Aeromedical Laboratory; 1984 Jul Vol 25(1-2) 31-85; 1984; CODEN: KJNNA.; ISSN: 00232858. Note: Human. Surveyed JASDF (Japanese Air Self-Defense Force) flying squadron pilots todetermine their emotional experiences during flying duties (as assessed by a questionnaire). 51 1-seat-fighter pilots, 37 jet instructor pilots, 52 rescue helicopter pilots, and 33 rescue search aircraft pilots also completed a 60-item emotional tension scale (ETS). Relationships between the responses to the survey and scores on the ETS were analyzed. Results indicate that younger Ss tended to be less stable psychologically. The ETS correlated with the frequency of reluctance to fly and with uneasiness before flying. Items regarding phobic tendencies and physical complaints had significant correlations with the frequency of reluctance to fly; obsessive and social phobic tendencies were only slightly correlated with psychological uneasiness before flying. Phobic experiences during flight had no relation to any other item. It is concluded that regardless of age, flight hours, or psychological traits, all pilots could experience phobic experiences during flight. (9 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

386. OKAUE, MIYAKO; TAKASHIMA, ZENJI. Pilots' learning abilities and their ages in aircraft transition trainings. I - Analysis of final grades in transition trainings. Japan Air Self Defense Force, Aeromedical Laboratory, Reports (ISSN 0023-2858), vol. 30, Sept. 1989, p. 65-76. In Japanese, with abstract in English; Sep. 1989 8 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA9019 Test results of pilots in transition courses are analyzed to determine which effect is greatest on pilot's learning, the decline of abilities with aging or the transfer of flying experience from previous aircraft assignments. When a pilot's

total flight hours were correlated with his age, the ratings of the experienced older pilots were usually higher than those of the younger less experienced pilots. Where flight experience before the transition was about the same but ages were different, ratings and ages were not correlated, and older pilots did not show higher ratings. Where flight missions were different for new aircraft types, the learning abilities of pilots in mission flight training were inferior to those of pilots whose flight missions were almost the same between the new and prior assignments. (R.E.P.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

387. Old age of Air Force fleet complicates modernization. (Canadian defense). Aviation Week & Space Technology, volume 127, Sept 21, 1987, p69(4).

388. Old, bold pilots; men called back into Vietnam service. C. Brownlow. Aviation Week & Space Technology, Jan 13, 1969, p11.

389. Olferev, A. M.; Kudinova, A. O.; Zaikin, E. V.; Dvorkin, V. I.; Gelman, B. L. [Characteristics of the blood lipoprotein spectrum in commercial aviation pilots]. Kosm-Biol-Aviakosm-Med ; 1988 May-Jun; 22(3): 27-31; ISSN: 0321-5040. KXC. Note: RS. The study of lipids of civil pilots, aged 30-59 years, showed that their average levels of cholesterol and triglycerides were higher than those in a random sample of the male population of Moscow. The average level of HDL cholesterol in pilots was lower than in the sample. The prevalence of dislipoproteinemias in pilots was significantly higher than in the sample. The above lipoprotein changes in pilots versus nonpilots and the prevalence of hyperlipidemias suggest that they are "aterogenic" and produced by the flying profession. These observations also indicate that civil pilots should be regarded as a risk group in terms of atherosclerosis and concomitant cardiovascular diseases. Author-abstract.

390. OLLIVIER, J. P.; DRONIOU, J. (Hopital d'Instruction des ArmeesVal-de-Grace, Paris, France); LEGUAY, G.; SEIGNEURIC, A. (Hopitald'Instruction, des Armees Dominique Larrey, Versailles, France). Complete right branch blocking and the flight fitness of pilots. Medecine Aeronautique et Spatiale, vol. 24, 3rd Quarter, 1985, p. 143-147. In French; 1985 19 Refs. Note: Language: French Country of Origin: France Document Type: JOURNAL ARTICLE Journal Announcement: IAA8603 The rates, ages of occurrences and noninvasive means of detecting complete right branch blocking (CBB) in pilots is examined, together with the implications of CBB for flight fitness certification. A study was performed of 25 middle-aged humans with CBB and no previous history of cardiac problems or symptoms. The subjects submitted to ECG, echocardiography, myocardial scintography, angiography, coronography and catheterization. No correlation was found between risk factors, e.g., smoking, cholesterol intake and high blood pressure, and CBB. A series of tests were developed for identifying asymptomatic CBB. The onset of symptoms is considered sufficient reason to perform a catheterization. It is concluded that although there is only a 15 percent chance of detecting CBB, the seriousness of the condition is sufficient reason for conducting a series of tests on middle-aged pilots, who cannot be certified as flight-fit if CBB is found. (M.S.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

391. OSADA, H.; SAKURAI, I.; SAKAGUCHI, T.; SAKAGUCHI, E.; YURUGI, R. (JapanAir, Self-Defense Force, Aeromedical Laboratory, Tachikawa, Japan). Total cholesterol and high density lipoprotein cholesterol /H.D.L.-ch./ in serum of aged pilots for predicting atherosclerotic diseases. Japan Air Self Defence Force, Aeromedical Laboratory, Reports, vol. 18, Dec. 1977, p. 119-125. In Japanese, with abstract in English; Dec. 1977 8 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE Journal Announcement: IAA7819. Documents available from AIAA Technical Library.

392. Ott, James. Solving pilot attrition, training problems seen as key to easing safety concerns. (Regional Airlines: Age of Consolidation). Aviation Week & Space Technology, volume 132, issue n26, June 25, 1990, p41(2).

393. Pan Am retirement suit settled. (Pan American World Airways Inc.). Reuters, Feb 4, 1988, R020320221.

394. Pan Am unit settles age-discrimination suit for $17.2 million. Wall Street Journal (WSJOAF), Feb 4, 1988, Thu edition, p31(W) p32(E), col 4.

395. Parfit, Michael; McClellan, J. Mac. Ice station; set your watch back to the ICe Age and fly with the U.S. Navy to planet Antartica. Flying (FLYGA), volume 1, Dec, 1985, p64(7).

396. PBGC to terminate and assume trusteeship of Eastern pension plans. (United States Pension Benefit

Guaranty Corp., Eastern Air Lines Inc.). PR Newswire, Sept 18, 1990, 0918DC036.

397. Pereira, Joseph. To some top guns, sorties and dogfights are weekend fare; pilots fly aging warplanes, a few from crash sites; for sale: B-25, no bombs. The Wall Street Journal (WSJOAF), July 28, 1988, Thu edition, p1(W) p1(E), col 4.

398. Peterson, Chester Jr. Ride of a lifetime! From a middle-age Mooney 21 to Supersonic F-4 phantom. Air Progress (AIRPB), March, 1985, p28(3).

399. Peterson, Jonathan. Group challenges rule forcing pilots to retire at age 60. Los Angeles Times, volume 105, June 6, 1986, Fri edition, section IV, p1, col 6.

400. Peterson, Jonathan. Retirement age: an idea in retreat; 'public safety' jobs. Los Angeles Times, Dec 23, 1985, Mon edition, section I, p1, col 1.

401. Phillips, Don. Study has good and bad news for airline pilots over 60. (Office of Technology Assessment report on accident rates for older pilots). The Washington Post, volume 113, Sept 18, 1990, Tue edition, pA2, col 5.

402. Pilot killed in Pacoima plane crash was retired Lockheed executive. (Samuel D. Wright). Los Angeles Times, volume 1, Jan 15, 1987, Thuedition, section I, p32, col 5.

403. A pilot's bravery and skill prevent a holocaust on his last flight before retirement. People, March 20, 1978, p94(2).

404. Pilots seek injunction to block FAA-imposed retirement ruling. Aviation Week & Space Technology, Feb 1, 1960, p33.

405. Pincus, Walter. Pentagon's 'contracting out' brings retired officers back in; inspector general probing propriety of new 'revolving door.'. Washington Post, March 2, 1985, Sat edition, pA4, col 1.

406. PODOLAK, E. /FEDERAL AVIATION ADMINISTRATION WASHINGTON, D.C./SCARBOROUGH, W. R. /U.S. PUBLIC HEALTH SERVICE, NTAL. INSTITUTES OF HEALTH, BETHESDA, MD./; WESTURA, E. E. /FEDERAL AVIATION ADMINISTRATION, WASHINGTON, D.C./.. Studies on a small group of normal test pilots with special reference to quantitative relationships of age with the ULF ballistocardiogram and other cardiovascular measurements (Age correlations with ballistocardiogram amplitudes and waveform grades in test pilots). Place of Publication: BASEL, SWITZERLAND; 1969 9P. 6 Refs. Note: IN- BALLISTOCARDIOGRAPHY AND CARDIOVASCULAR PERFORMANCE, BALLISTOCARDIOGRAPH RESEARCH SOCIETY, ANNUAL MEETING, 13TH, ATLANTIC CITY, N.J., MAY 4, 1968, PROCEEDINGS. P. 66-74. /A70-12675 02-04/ Language: English Country of Origin: United States Document Type: CONFERENCE PROCEEDINGS Documents available from AIAA Technical Library Journal Announcement: IAA7002 Source of Abstract/Subfile: AIAA/TIS. Presentation.

407. Poesnp, K. (Performer: Technische Univ. Muenchen (Germany, F.R.). Fakultaet fuer Medizin.). Beeinflusst Dihydroergotamin in therapeutisch gebraeuchlichen Dosen die physische und psychomotorische Leistungsfaehigkeit zur Hypotonie neigender jugendlicher Piloten oder sonstiger Verkehrsteilnehmer. (Does dihydroergotamine in normal therapeutic doses affect the physical and psychomotor abilities of youthful pilots and other participants in traffic tending to hypertension.,. Diss. (Dr.med.).. 082849003; 14 May 86. 60p 1986. Note: In German, GERMANY-FR PC L09. The medicine DETMS retard was dispensed in therapeutic doses in a three week long study to a group of 23 male volunteers for the experiment from the Fuerstenfeldbruck airforce station and the Technical University of Munich with orthostatic disregulation. 23 other human guinea-pigs also suffering from faulty orthostatic regulation, acted as a control group. The average age of both groups was 25 +or- 5 years. Of interest above all were the effect and the side effects of the medicine with regard to the ability to fly aircraft. The proof of its effects was provided by the tilt table test, the ergometer, the LANSBERG rotation test, the test of reactions, the d sub 2 test and the measurement of subjective complaints (anamnesis, final examination). In the context of this study, DETMS proved to stabilise the circulation and to have a positive effect on physical ability. The preparation had no effect on pyschomotor performance. The psychomotor test of both experimental groups showed nearly the same results. Finally, one should note that DETMS retard can improve physical ability without having a negative effect on psychomotor performance. The medicine is therefore also suitable for use by pilots and those involved in road traffic. (orig.). (Copyright (c) 1988 by FIZ. Citation no. 88:081523.).

408. POKINKO, P. (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). Experimental investigation of pilot perception/decision processes under conditions of stress induced by lack of time. (Polskie Towarzystwo Astronautyczne, Konferencja Naukowa Poswiecona Wspolczesnym Zagadnieniom Astronautyki, Augustow, Poland, Sept. 27-29, 1973.) Postepy Astronautyki, vol. 7, no. 2-3, 1974, p. 33-47. In Polish; 1974 22 Refs. Note: Language: Polish Country of Origin: Poland Document Type: JOURNAL ARTICLE Journal Announcement: IAA7503 Empirical and semiempirical methods are described which proved to be effective in testing and predicting the air fitness of pilot applicants. Data obtained by these methods indicate that decision taking and perception is an intrinsic characteristic that is independent of experience and to some degree of age. In general, however, a trend of declining fitness with increasing age is to be observed. (V.P.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

409. POKINKO, P.; TERELAK, J. (Wojskowy Instytut Medycyny Lotniczej, Warsaw, Poland). Methods and results of research on perceptual and decision-making processes in pilots under laboratory conditions. In: Ergonomics in aviation; National Scientific-Technological Conference, 1st, Warsaw, Poland, March 17-19, 1975, Proceedings. (A76-28526 12-01) Warsaw, Instytut Lotnictwa, 1975, p. 108-124. In Polish; 1975. Note: Language: Polish Country of Origin: Poland Document Type: CONFERENCE PAPER Journal Announcement: IAA7612 Feedback between perceptions and decisions by pilots and executive processes carried out in acting on those decisions and perceptions was studied in a laboratory wetting using electronic display and test equipment. Silhouette, photographic, audiovisual, and instrument-reading displays were presented to pilot-subjects. Test results were analyzed statistically. Pilots' perceptual and decision-making responses were found to be highly individual, even independent of experience, training, and age. Responses within a specified short time interval were found to deterioriate with age. (R.D.V.) Source of Abstract/Subfile: AIAA/TIS.

410. POPE, A.T.; HAUGH, L. D., EDS. Human Factors Society, Annual Meeting, 27th, Norfolk, VA, October 10-14, 1983, Proceedings. Volumes 1 & 2. Meeting sponsored by the Human Factors Society and Institute of Electrical and Electronics Engineers. Santa Monica, CA, Human Factors Society, 1983, Vol. 1, 626 p.; vol. 2, 475 p; 1983. Note: Language: English Document Type: CONFERENCE PROCEEDINGS Journal Announcement: IAA8406 Topics discussed are related to aviation training, nuclear power plant human factors, display quality and visual performance, noise, human factors perspectives, nuclear power plant ergonomics, voice control and voice input techniques, human factors and aging, the vibroacoustic habitability of space stations, workload, training research and issues, and data entry. Other subjects considered are concerned with human performance related to nucler power plant safety, lifting, human factors modifications, pilot workload assesment, transportation safety, visual information processing, physiology and sports, robotics and the automated factory, training methodology, pilot peformance and crew system assessment, behavioral decision making, and work structure and design. Attention is also given to industrial occupational safety, training effectiveness, human problem solving in complex environments, ergonomic safety, computerized research methods, human factors in aviation safety, visual perception and pilot performance, and maintenance training. For individual items see A84-19277 to A84-19334 (G.R.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-).

411. Powell, Stewart. A 'sick and tired' pilot who had enough. (Ray Davidson) (The Air Traffic Mess). U.S. News & World Report (XNWRA), volume 101, Dec 22, 1986, p18(2).

412. Preble, Cecilia. Eastern begins replacing hundreds of pilots who quit in midst of dispute. (Eastern Airlines). Aviation Week & Space Technology, volume 127, Aug 10, 1987, p36(1).

413. PRESTON, F. S. (Air Corporations Joint Medical Service, London, England). Further sleep problems in airline pilots on world-wide schedules. (International Congress of Aviation and Space Medicine, 20th, Nice, France, Sept. 18-21, 1972.) Aerospace Medicine, vol. 44, July 1973, Section 1, p. 775-782; Jul. 1973 18 Refs. Note: Language: English Country of Origin: United Kingdom Document Type: JOURNAL ARTICLE Journal Announcement: IAA7318 This study follows previous work carried out on airline pilots operating long-haul transmeridian routes with particular respect to the sleep patterns obtained at slip stations en route. The author accompanied a B-707 crew on a long transmeridian tour when all members kept careful sleep logs for a period of 1 month and the data obtained show clear evidence of sleep deficit occurring in tours of this nature with some evidence of age variation in individuals. The practical problems in scheduling crews in such operations are discussed in some detail in relation to performance, the use of hypnotics, and difficulties surrounding pilots in bidding for successive tours which may result in sleep deprivation. ((Author)). Documents available from AIAA Technical Library.

414. Preston, F. S. Twelve year survey of airline pilots. Aerosp-Med ; 1968 Mar; 39(3): 312-4; ISSN: 0001-9402. 2RQ. Note: EN.

415. PRESTON, F. S. (British Europera Airways Corp.; British, Overseas AirwaysCorp., London, England). Further sleep patterns of airline pilots on world-wide schedules. (Academie Internationale de Medecine Aeronautique et Spatiale and Societe Francaise de Physiologie et de Medecine Aeronautiques et Cosmonautiques, Congres International de Medecine Aeronautique et Spatiale, 20th, Nice, France, Sept. 18-21, 1972.) Revue de Medecine Aeronautique et Spatiale, vol. 12, 2nd Quarter, 1973, p. 344-349; Jun. 1973 18 Refs. Note: Language: English Country of Origin: United Kingdom Document Type: JOURNAL ARTICLE Journal Announcement: IAA7403 Sleep pattern data are given for the flight deck crew of a B 707-436 aircraft covering eleven flight legs, from July 13 through July 28, on a Far East schedule. The crew kept careful sleep logs over the entire month during which the flight took place. All five subjects showed varying degrees of sleep deprivation on arrival in Hong Kong after dead head flight. Some indication of an increase in cumulative sleep loss with the age of crew members is pointed out. It is urged that all arrangements for adequate sleep at all sleep stations be made and attention be given to immediate previous duties of crew members to normalize their sleep patterns on world-wide schedules. (V.Z.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

416. Proper, R. Age-related changes in professional pilots as defined by the Klensch-Schwarzer ultra-low frequency ballistocardiogram. Bibl-Cardiol. 20; 1968: 50-6; ISSN: 0067-7906. 9S0. Note: EN.

417. Proper, R. Preliminary impressions of cardiovascular function in the study of physiologic and psychologic aging in professional pilots. Aerosp-Med ; 1969 May; 40(5): 557-60; ISSN: 0001-9402. 2RQ. Note: EN.

418. Provines, W. F.; Woessner, W. M.; Rahe, A. J.; Tredici, T. J. (Ophthalmology Branch, Usaf School of Aerospace Medicine, Brooks Air Force Base, Texas). The incidence of refractive anomalies in the USAF rated population. Aviat-Space-Environ-Med ; 1983 Jul; 54(7): 622-7; ISSN: 0095-6562. 9JA. Note: EN. A field survey was conducted to determine the percentage of U.S. Air Force pilots and navigators required to wear corrective lenses. A random sample survey stratified by major air commands (MAJCOMS) was designed to retrieve the data. Data requested included initial (entry) visual acuity and refractive error, and current visual acuity and prescription if glasses were required. Of 2,383 forms sent, 2,183 were returned completed. Analysis indicated that almost 20% of pilots and 50% of navigators are required to wear corrective lenses while flying. The percentages are rather consistent among MAJCOMS. Aircrew members who enter undergraduate pilot training with minus or plano refractive values are much more susceptible to develop myopia during their flying careers than those with plus refractive values. Author-abstract.

419. Radomski, Leszek (Military Inst of Aviation Medicine, Warsaw, Poland). Need of stimulation and motivational determinants of job choice. Special Issue: Individual differences. Polish Psychological Bulletin; 1986 Vol 17(1) 27-38; 1986; CODEN: PPBUDY; ISSN: 00792993. Note: Human. Administered the Temperament Inventory, developed by J. Strelau (1983), anda questionnaire covering motivational premises of job choice to 3 groups of 100 candidates for positions as military aviation pilot trainees. Ss were elementary school graduates (aged 14-15 yrs) and secondary school graduates (aged 18-19 yrs). The level of knowledge concerning piloting and self-knowledge varied significantly across, but not within, groups. Each group included 70 low-reactive Ss and 30 medium- or high-reactive Ss. Results indicate that the formal trait of reactivity can influence the structure of the cognitive script "choice of pilot job." Low reactives more frequently gave salience to aspects of the course of study or the job that suggested ease or safety. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

420. RAO, T. V. S.; SHANKAR, VIJAYALAXMI; ASWATH, C. Human centrifuge controller. National Aeronautical Lab., Bangalore (India). Systems Engineering Div; Feb. 1989 24P. Note: Report No.: NAL-TM-SE-8901 ? type 7 6/5/7-8.

421. RATTAN, N. (Indian Air Force, Air Force Station, Halware, India). An analysis of non specific ECG abnormalities amongst Indian Air Force officers. Aviation Medicine, vol. 29, Dec. 1985, p. 90-99; Dec. 1985 18 Refs. Note: Language: English Country of Origin: India Document Type: JOURNAL ARTICLE Journal Announcement: IAA8717 A retrospective study of ECG abnormalities amonst IAF Officers was undertaken. A total of 403 cases were studied. T wave abnormalities were the most common findings, and they have a tendency to regress with exercise. Most of the abnormalities relate to inferior wall. T and ST abnormalities are statistically related to an increased risk to develop ischemic heart disease. Nonspecific

ECG abnormalities could be early indicators of myocardial ischemia. A systematic approach to cardiovascular evaluation of an individual with ECG abnormality is recommended. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

422. RAYMAN, R. B. (USAF, Air Force Inspection and Safety Center, North AFB, Calif.). Myocardial infarction - An in-flight problem (fatal aircraft accident investigation for USAF). Aerospace Medicine, vol. 45, Jan. 1974, p. 86-89; Jan. 1974. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7406 During the 10-year period Jan. 1, 1962 to Dec. 31, 1971, only two cases of confirmed and five cases of suspected in-flight myocardial infarction were reported in the United States Air Force (USAF). One might next inquire about those accidents in which the primary cause was undetermined. Could the pilot possibly have suffered a myocardial infarction and subsequent incapacitation resulting in a fatal crash. In an attempt to answer this question, all accidents during the above time period in which the primary cause was undetermined were reviewed. The aircraft type, phase of flight of the accident, pilot age, and autopsy report were considered. It was concluded that in-flight myocardial infarction has been a rare event in the USAF. ((Author)). Documents available from AIAA Technical Library.

423. REED, B. Age discrimination of airline pilots - Effects of the bona fide occupational qualification. Journal of Air Law and Commerce (ISSN 0021-8642), vol. 48, Winter 1983, p. 383-405; Feb. 1983 217 Refs. Note: Language: English Document Type: JOURNAL ARTICLE Journal Announcement: IAA8318 Since the persistent denial of certiorari by the United States Supreme Court in cases brought by airline pilots under the Age Discrimination in Employment Act (ADEA) has made it difficult to interpret the Supreme Court's inclinations, Courts of Appeals must continue rendering case-by-case determinations. Attention is presently given to whether the employer's refusal to employ persons aged 40 and over can be justified as a bona fide occupational qualification, and therefore as an exception to the ADEA, in the case of airlines' refusal to hire older pilots. The various tests currently being used by the circuit courts are described, and an attempt is made to justify decisions holding that the safety of passengers should be the primary bona fide occupational qualification consideration. (O.C.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

424. Rehmann, Jacqueline T.; Stein, Earl S.; Rosenberg, Bruce L. (FAA Technical Ctr, Advanced Air Traffic Control Systems Div, Atlantic City, NJ). Subjective pilot workload assessment. Human Factors; 1983 Jun Vol 25(3) 297-301; 1983; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Developed a workload measurement system that enabled participants to recordworkload responses at equal intervals during task execution. This alternative to traditional subjective pilot workload measures was evaluated in 2 experiments. In Exp I, 12 pilots (mean age 38.18 yrs) and 12 nonpilots (mean age 40.5 yrs) made workload evaluations each minute during a critical tracking task. Results indicate that their responses were directly related to the experimentally controlled difficulty level, whereas posttask questionnaire responses were much less accurate. In Exp II, the workload assessment device was introduced into the cockpit of a general aviation cockpit simulator, to determine if 12 pilots could differentiate among 3 flights in which the level of difficulty varied. It was found that pilot workload judgments and response latencies were related to the experimentally induced difficulty level. As hypothesized, the more difficult flights generated higher mean workload responses and longer latencies. (11 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

425. REICHENBACH-KLINKE, K.; KOCH, S.; BURCHARD, E. C. (Luftwaffe, Flugmedizinisches, Institut, Fuerstenfeldbruck, West Germany). HDL-cholesterol related to weight, smoking, and physical fitness in German Air Force pilots. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 56, July 1985, p. 709-713; Jul. 1985 11 Refs. Note: Language: English Country of Origin: Germany, Federal Republic of Document Type: JOURNAL ARTICLE Journal Announcement: IAA8521 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

426. Reinhold, Robert. National Airport had good record: but pilots and residents said that convenient field was aging and too crowded. New York Times (NYTIA), Jan 14, 1982, Thu edition, p11(N), col 6.

427. Report of the National Institute on Aging Panel on the Experienced Pilots Study. Note: National Institute on Aging, Panel on the Experienced Pilots Study, Bethesda, MD. 1981. This panel study was congressionally legislated to examine the desirability of a mandatory age requirement for certain pilots. Specifically, the investigation was to explore whether the existing age limitation of 60 years for all pilots is medically warranted; whether any age limitation is medically warranted; whether rules governing certifying medical examinations are adequate; and what the effect of aging is on the ability of pilots to

perform with the highest level of safety. The investigating panel found that age 60 has no special medical significance for retirement of airline pilots; however, age-related changes in health and performance do adversely influence the ability of increasing numbers of individuals to perform with the highest level of safety. The panel could not identify a medical or performance appraisal system that would single out specific individuals who might pose the greatest safety hazards. Panel recommendations were that the present age limit of 60 be retained for air carrier pilots-in-command and first officers; that an appropriate government agency collect the necessary data for considering a relaxation of the age 60 rule; and that the present age limit be extended to cover all pilots engaged in carrying passengers for hire. Four appendixes contain study-related materials. Chapter references and a glossary are included. (MNE).

428. (Performer: Japanese Air Self-Defense Force, Tokyo. Funder: National Aeronautics and Space Administration, Washington, DC.). Reports of Aeromedical Laboratory, Volume 25, No. 1/2. 014809000, JG893604; Jun 84. 85p 1984. Note: In English and Japanese. JAPAN PC A05/MF A01. No abstract available.

429. Retired FAA official claims safety report altered. (Harry A. Langdon on Continental Airlines' pilot inspection). Aviation Week & Space Technology (AWSTA), volume 122, April 1, 1985, p30(1).

430. Retirement of old transports is not likely to cut demand for commercial pilots. (Special Report: the World Airline Fleet Grows Older). Aviation Week & Space Technology, volume 131, issue n4, July 24, 1989, p86(1).

431. Retzlaff, Paul D.; Gibertini, Michael (Veterans Administration Medical Ctr, Psychology Service, Waco, TX, US). Air Force pilot personality: Hard data on the "right stuff.". Multivariate Behavioral Research; 1987 Oct Vol 22(4) 383-399; 1987; CODEN: MVBRAV; ISSN: 00273171. Note: Human. 355 White male Air Force pilots (aged 22-27 yrs) undergoing undergraduatepilot training were administered the Personality Research Form (PRF) developed by D. N. Jackson (1984) and the Millon Clinical Multiaxial Inventory (MCMI) within the 1st 4 wks of training. PRF scale scores were compared with traditional male college norms obtained by Jackson, using 1,350 Ss. Pilots were significantly different from nonflying college students in that they were more concerned with presenting themselves in a favorable light and tended to be more affiliative and to seek recognition and approval from their peers. Cluster analyses indicated that 3 very distinct personality types exist in the data (e.g., Cluster 1 Ss (21%) tended to be highly aggressive, dominant, exhibitionistic, impulsive, playful). These types were supported through multiple cross-validations. Descriptions of pilot personality types are given in terms of PRF and MCMI personality variables. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

432. RICCHENA, R.; ROCCO, P. Nuclear safety for transport flask in ESSOR irradiated feeding fuel elements (Criticality and nuclear safety calculations for transport container of irradiated feeding fuel elements). European Atomic Energy Community, Ispra (Italy). REACTOR PHYSICS DEPT; Sep. 1969 34P. Note: Report No.: EUR-4382-F.

433. Robbins, William. Pilot in '85 hijacking rules out politics for now. (John Testrake retires from TWA). New York Times (NYTIA), volume 137, Dec 3, 1987, Thu edition, p15(N) pA28(L), col 1.

434. RORBEK-MADSEN, P. E.; BUCH, J. (Rigshospitalet, Copenhagen, Denmark). Long-term prognosis of transient hypertension in young male adults. (Long term prognosis of transient hypertension in young male adults, evaluating importance in pilot selection). Aerospace Medicine, vol. 42, July 1971, p. 752-755; Jul. 1971 16 Refs. Note: Language: English Country of Origin: Denmark Document Type: JOURNAL ARTICLE Journal Announcement: IAA7201 Sixty-nine young men with transient hypertension when accepted as pilot aspirants have been controlled 17 to 20 years later. In this group with primary transient hypertension the frequency of later problems of high blood pressure has been found to be significantly higher than in a control group of 216 pilots with normal blood pressure when accepted as pilot aspirants (11.6% vs. 2.3%). This is in accordance with the results of earlier investigations. On account of too short a period of observation and few individuals controlled we find it necessary to stress the still existing uncertainty of the ultimate importance of transient hypertension. Even though we do not consider it justified to assign to transient hypertension so great importance that this should in itself imply elimination of applicants for pilot education - it should always be taken into account as a negative factor where other partly disqualifying qualities are manifest. ((Author)). Documents available from AIAA Technical Library.

435. Roscoe, Stanley N.; Hull, J. C. (Illiana Aviation Sciences Ltd, Las Cruces, NM). Cockpit visibility and

contrail detection. Human Factors; 1982 Dec Vol 24(6) 659-672; 1982; CODEN: HUFAA6; ISSN: 00187208. Note: Human. As part of an investigation of a midair aircraft collision, a series of rooftop and laboratory experiments was conducted to investigate the effects of aircraft cockpit window posts on eye accommodation and the detection of simulated contrails. Ss were 10 male volunteers (aged 16-32 yrs), 10 private pilots (aged 22-45 yrs), and 3 older pilots (aged 45-55 yrs). A window post equal in width to the interocular distance of 6.35 cm and one approximately 5 cm wider had comparable effects on accommodation, pulling focus inward from its empty-field resting distance in each case. However, the wider post seriously derogated the probability of detecting portions of contrails that appeared in the sectors of monocular visibility on either side, relative to the near-perfect single-look detectability with the nominal standard post width. (5 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

436. Rosenblum, Marc. Age discrimination in employment and the permissibility of occupational age restrictions. Note: Hastings Law Journal. May 1981. Vol. 32, No. 5. p. 1261-1283. (23p.). The effectiveness of the Age Discrimination in Employment Act (ADEA) in reducing the incidence of age discrimination is assessed. The evolution of the 1978 amendments is traced. The major statutory exceptions to the ADEA are analyzed, with emphasis on the judical interpretation of the bona fide occupational qualification regarding police, firefighters, and airline pilots. The standard of review of age discrimination claims raised under the equal protection clause of the constitution and ADEA is discussed. The amendments are viewed as having some positive impact on the job status of older workers. It is concluded, however, that the dual protection provided by both the ADEA and the federal constitution to older workers is largely illusory because of the scope of exemptions and the lenient standard of judicial review accorded age-based classification under equal protection analysis. (CM/LH).

437. Rosenblum, Marc. The role and influence of technology on enforcement of the Age Discrimination in Employment Act of 1967. Note: Aging and Work. 1983. Vol. 6, No. 4. p. 303-311. (9p.).

438. Ross, Leonard E.; Mundt, James C. (U Wisconsin, Aviation Safety Lab, Madison, US). Multiattribute modeling analysis of the effects of a low blood alcohol level on pilot performance. Human Factors; 1988 Jun Vol 30(3) 293-304; 1988; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Used multiattribute modeling procedures to evaluate the flight performance of 12 male pilots (aged 19-39 yrs) who completed a simulator flight under 0 and 0.04% blood alcohol concentration (BAC) conditions. The flight involved tracking, vectoring, traffic avoidance, and descent. Flight instructors' judgments were used to develop a multiattribute model of flight performance that permitted evaluation of the effects of alcohol on overall flight performance, as well as on task segment and performance aspect components of the flight. Alcohol was found to have a significant deleterious effect on overall pilot performance and on some of the task segments. The multiattribute modeling approach was useful in providing a task analysis function. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

439. ROSSANIGO, F. (Aeronautica Militare, Centro di Studi e. Ricerche d.iMedicina, Aeronautica e. Spaziale, Italy); RUGGIERI, G. The importance of electrocardiograms recorded during hypoxia for determining piloting aptitude (Piloting aptitude evaluation from ECG during hypoxia, considering right intraventricular conduction and ventricular repolarization anomalies). Rivista di Medicina Aeronautica e Spaziale, vol. 24, Oct.-Dec. 1971, p. 283-288. In Italian; Dec. 1971. Note: Language: Italian Country of Origin: Italy Document Type: JOURNAL ARTICLE Journal Announcement: IAA7213 Results of an examination of a large number (1543) of electrocardiograms of healthy subjects under normoxia and hypoxia conditions. A study was made of the behavior, with respect to age group, of disturbances of the right intraventricular conduction, excitation disturbances, and minor anomalies of the ventricular repolarization. In addition, the importance of these factors in determining piloting aptitude is evaluated. The subjects examined were divided into two age groups - one ranging from 17 to 22, and the other from 18 to 62. During hypoxia tests no qualitative or numerical increase in disturbances of intraventricular conduction were noted, but a significant increase in disturbances of ventricular repolarization occurred. In the subjects examined both disturbances of right intraventricular conduction and disturbances of ventricular repolarization occur more frequently, whether in normoxia or hypoxia, in the younger age group. (A.B.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

440. Ruben, George. Court rules on mandatory retirement in airlines. (Supreme Court). Monthly Labor Review (MLARA), (MLARA), volume 1, issue n8, Aug, 1985, 51(1).

441. Rubin, D.; Van, Duzee R. (Performer: COMSIS Corp., Wheaton, MD. Funder: Federal Aviation

Administration, Washington, DC. Office of Aviation Policy and Plans.). Demand for Single Engine Piston Aircraft. 060316000, 418442; Aug 87. 150p 1987. Note: UNITED-STATES PC A07/MF A01 Contract: DTFA0186Y01038. The general aviation manufacturing industry has experienced a continuous decline for the last six years, particularly in single engine piston aircraft, which dropped from 13,266 units shipped in 1979 to 985 in 1986. This decline has resulted from increasing costs, soaring product liability costs, over production in the peak years, and reduction in the number of student pilots, private pilots and flight schools. The Federal Aviation Administration (FAA) is interested in the future of general aviation activity because it would impact workload and facilities needs. This report specifically addresses future impacts on Flight Service Stations. The study includes a historical review of the industry, a survey of its current status, and an assessment of its future direction. It concludes that techniques for forecasting future activity must be adapted to the changing environment. With the reversal of past trends, traditional methods no longer produce valid results. Sales of single engine piston aircraft will increase only when the current surplus of low-time used aircraft is absorbed or becomes technologically obsolete. They are not expected to return to previous peaks due to an aging population, changing life styles, increasing urbanization, and the availability of commercial aviation. Flight Service Station (FSS) workloads are changing due to the changing nature of general aviation activity, as well as automation, consolidation, and changing responsibilities. New FSS workload measures are necessary to reflect these changes.

442. RYAN, L. C. (FAA, Office of Aviation Medicine, Washington, D.C.); MOHLER, S. R. (Wright State University, Dayton, Ohio). Current role of alcohol as a factor in civil aircraft accidents. (Aerospace Medical Association, Annual Meeting, New Orleans, La., May 8-11, 1978.) Aviation, Space, and Environmental Medicine, vol. 50, Mar. 1979, p. 275-279; Mar. 1979 11 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE; CONFERENCE PAPER Journal Announcement: IAA7910 Ethyl alcohol continues as a serious adverse factor in general aviation flight safety. According to FAA figures, the level of alcohol-associated general aviation fatal accidents has remained relatively static at a 16% general level since 1969. A recent survey of the attitudes of pilots toward alcohol and flying reveals a lack of appreciation among one-third of the pilots concerning the adverse effects of alcohol on safe flight. A renewed pilot education program on alcohol and flight safety appears indicated. ((Author)). Documents available from AIAA Technical Library.

443. Salpukas, Agis. A 'silk-scarf' pilot begins retirement. (Robert F. Six). The New York Times (NYTIA), volume 131, March 31, 1982, Wed edition, p32(N) pD2(LC), col 5.

444. Salpukas, Agis. Exodus of pilots is causing Eastern to cancel flights; permanent cuts feared; passengers are defecting to rival lines as complaints about service increase. New York Times (NYTIA), volume 137, April 23, 1988, Sat edition, p1(N) p1(L), col 6.

445. Salpukas, Agis. Machinists ask inquiry on UAL deal; U.S. study is sought after the pilots vote to commit pension funds. (Labor Department inquiry; UAL Corp. buyout). The New York Times (NYTIA), volume 139, Oct 12, 1989, Thu edition, pC5(N), col 4.

446. Sasaki, Mitsuo; Kurosaki, Yuko; Mori, Atsuyoshi; Endo, Shiro (Japan Air Lines, Flight Crew Medical Service Dept, Tokyo). Patterns of sleep wakefulness before and after transmeridian flight incommercial airline pilots. Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect II)29-42; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined changes in sleep-wake rhythms due to time zone changes in 12 maleairline cockpit crewmembers (aged 37-54 yrs) on active duty who spent their baseline nights in a sleep facility in Tokyo. After flying from Tokyo to San Francisco, they underwent 2 consecutive nights of sleep polysomnography and daytime sleep latency tests (MSLTs). During the San Francisco layover, REM sleep was decreased, while slow wave sleep tended to increase during the major sleeps. Subjective sleep quality assessments also exhibited a decrease in comparison to the baseline values. Daytime sleepiness as measured by MSLTs was generally greater in the latter half of the awake period during layover as compared with baseline. When the Ss were divided into morning or evening types, the daytime MSLTs of each type showed different patterns. (9 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

447. Sayen, Clarence N. Safety in the jet age; interview. por. U.S. New & World Report, Feb 22, 1960, p48.

448. Scarborough, W. R.; Westura, E. E.; Podolak, E. Studies on a small group of normal test pilots with special reference to quantitative relationships of age with the ULF ballistocardiogram and other cardiovascular measurements. Bibl-Cardiol. 24; 1969: 66-74; ISSN: 0067-7906. 9S0. Note: EN.

449. Schapiro, M. B.; Atack, J. R.; Hamin, I.; May, C.; Haxby, J. V.; Rapoport, S. I. (Laboratory of

Neurosciences, National Institute on Aging, National Institutes of Health, Bethesda, MD). Lumbar cerebrospinal fluid choline in healthy aging and in Down's syndrome. Arch-Neurol ; 1990 Sep; 47(9): 977-80. Note: EN. Choline concentrations were measured in lumbar cerebrospinal fluid (CSF) and plasma of 37 healthy normal subjects and 13 young (age range, 21 to 34 years) and 6 older (age, greater years) healthy ad ENTER DOCUMENT NUMBER OR COMMAND--> r * MESZ SCREEN 1 OF 1* MESZ 1966-DEC 1990 (90122) 1 AGE FACTORS OR AGING RESULT 212136 2 PILOTS RESULT 839 3 1 AND 2 RESULT 79 **** END OF DISPLAY ****.

450. Scheinman, H. Z. Coronary atherosclerosis in military pilots. I. Relationship to flying and aviation accidents. Aerosp-Med ; 1968 Dec; 39(12): 1348-51; ISSN: 0001-9402. 2RQ. Note: EN.

451. Scheinman, H. Z. Coronary atherosclerosis in military pilots: 1. Relationship to flying and aviation accidents. Note: Dr. Scheinman, Armed Forces Institute of Pathology, Washington, DC 20305. Clinical Aviation and Aerospace Medicine. Dec 1968. p. 1348-1351. (4p.). AVAILABILITY: SCAN Microfiche No. CCF 001576. The relationship between the occupation of flying and the integrity of coronary arteries was examined. The data were provided by 206 autopsied military flyers; 60 fixed gross heart sections were examined and classified according to degree of coronary atherosclerosis. For all cases, available autopsy, clinical, health, and electrocardiogram records were consulted. Examination of the grades of sclerosis, grouped by age, revealed an increase in degree of sclerosis with age. Pilots who had logged more flying time also displayed higher levels of sclerosis. The type of plane flown did not affect the level of sclerosis. Results, however, reflect the method of selecting the cases. It is concluded that there is no relationship between flying time and extent of coronary atherosclerosis if age is fully considered. It is noted that the present medical screening measures for aircrews were highly effective in eliminating overt coronary disease. Reducing the number of older crew members because of over advance coronary atherosclerosis would not reduce the number of airplane accidents. (JRA).

452. Scherer, H.; Frohlich, G. Reactions to coriolis stimulations and postrotatory ENG-response. A study on pilot-candidates and pilots. Acta-Otolaryngol (Stockh) ; 1972 Jul-Aug; 74(1): 113-7; ISSN: 0001-6489. 1HA. Note: EN.

453. Schulthess, G. von. Statistical evaluation of hearing losses in military pilots. Acta-Otolaryngol (Stockh) ; 1969 Sep; 68(3): 250-6; ISSN: 0001-6489. 1HA. Note: EN.

454. Schulthess, G. von; Huelsen, E. Statistical evaluation of hearing losses in military pilots. Acta-Otolaryngol (Stockh) ; 1968 Jan-Feb; 65(1): 137-45; ISSN: 0001-6489. 1HA. Note: EN.

455. SCHUR, W. Pilots: Middle age; physical fitness. Joint Publications Research Service, Arlington, Va; May 1974. Note: Transl. into ENGLISH from Z. Militaermed. (East Berlin), Nov. 1973 p 325-329 Language: English Country of Origin: Germany, Peoples Democratic Republic of Document Type: REPORT; TRANSLATION Documents available from AIAA Technical Library Journal Announcement: STAR7414 Middle aged pilots evidence age-related decrease in fitness which is of special concern in relation to their competence. These factors of biological age are discussed in terms of flight fitness: chronologic age; physical or physiological age; mental age; and emotional age. The age related changes of the cardiovascular system, visual and auditory organs, as well as mental acuity and psychonervous stresses are discussed. Conditioning and acceptance of a well planned flight training program can contribute significantly to the maintenance of professional fitness of pilots after the age of 40. (K.M.M.) Source of Abstract/Subfile: NASA STIF. In its Trans. on Eastern Europe: Sci. Affairs No. 409 (JPRS-61905) p 28-36 (SEE N74-22724 14-04) Translation.

456. Schwarz, U.; Henn, V. (University Hosp, Dept of Neurology, Zurich, Switzerland). Vestibular habituation in student pilots. Aviation, Space, and Environmental Medicine; 1989 Aug Vol 60(8) 755-761; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Measured the dynamics of vestibular nystagmus in 42 19-21 yr old militarystudent pilots. Their responses were compared with 40 nonflying Ss of similar age. The following differences emerged: The time constant of the nystagmus response after vestibular stimulation was shorter in student pilots, whereas the gain tended to be higher. These changes in the response dynamics are attributed to habituation. Student pilots were additionally tested with conflicting visual-vestibular stimulation. Nystagmus response was delayed and attenuated when compared with stimulation in darkness. Under these conditions motion sickness occurred in one third of the Ss. No relation was found between the occurrence of motion sickness and the value of the time constant or gain of vestibular nystagmus. Results show that there is no single "normal" value of vestibular nystagmus. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

analysis used to generate weights, and weights used to generate scores. Analyses were based on 442 male commercial pilots' (aged 21-60 yrs) responses to the measure. While the split-half reliability of the measure was low, tests of construct validity indicated that the concept of self-reported pilot performance does exist and that the test appears to measure at least part of it. The measure is appended. (8 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

468. Smith, Gene. Gullwing!: recalling an age of aeronautical elegance. (airplanes). Air Progress (AIRPB), volume 50, issue n10, Oct, 1988, p12(4).

469. Smith, Gene. Risk coverage; the future of general aviation is hidden in uncertainty. (insurance rates and pilots' age cited) (column). Air Progress (AIRPB), Feb, 1986, p26(1).

470. Smith, R. (Toplis & Harding, International Adjusters, Gravesend, England). Psychiatric disorders as they relate to aviation: The problem in perspective. Aviation, Space, and Environmental Medicine; 1983 Jul Vol 54(7) 586-587; 1983; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Analyzed 1965-1981 insurance data on reasons for license loss by 1,052professional civil aircrew in the UK. Mental disorders comprised the 2nd highest cause of license loss among pilots during 1965-1977 (13%) and remained at a high level during 1977-1981 (14.7%). Age-related incidences of alcoholism, psychoses and neuroses, and idiopathic and reactive flight phobia are detailed. (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

471. Smith, R. (Toplis and Harding, Gravesend, Kent, Uk). Psychiatric disorders as they relate to aviation: the problem in perspective. Aviat-Space-Environ-Med : 1983 Jul; 54(7): 586-7; ISSN: 0095-6562. 9JA. Note: EN. The major causes of licence loss among pilots during 1965-81 are discussed in relation to the effect of recent changes in licensing practices, such as permission to use beta-blockers. Mental disorders comprised the second highest cause of licence loss during 1965-77 (13.0%) and remained at a high level during 1977-81 (14.7%). The age-related incidences of alcoholism, psychoses and neuroses, and idiopathic and reactive flight phobia are detailed. Author-abstract.

472. Son will succeed Meyer when De Paul pilot retires. (Ray and Joey Meyer). New York Times (NYTIA), April 20, 1980, Sun edition, section 5, pS9, col 6.

473. Sorkin, Robert D.; Wightman, Frederic L.; Kistler, Doris S.; Elvers, Greg C. (U Florida, Gainesville, US). An exploratory study of the use of movement correlated cues in an auditoryhead up display. Human Factors; 1989 Apr Vol 31(2) 161-166; 1989; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Tested the ability of 6 observers (aged 21-39 yrs) to localize targets with an auditory head-up display (AHUD) under different movement conditions. After listening to a sequence of 3 signals, Ss had to indicate the target's location. Three different conditions relating the observer's head movement to the target's spatial position were tested: (a) target fixed in physical space (normal AHUD mode), (b) no head movement allowed, and (c) target fixed in position relative to the observer's head. Azimuthal localization was much better when the position of the stimulus was veridically correlated with head movement, demonstrating the contribution of visual, kinesthetic, and vestibular cues to sound localization. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

474. SPARVIERI, F. (Aeronautica Militare, Istituto Medico Legale, Rome, Italy). Intellectual-perceptual mental activity in pilots over 60 years old. Rivista di Medicina Aeronautica e Spaziale, vol. 42, Jan.-June 1979, p. 69-75. In Italian; Jun. 1979. Note: Language: Italian Country of Origin: Italy Document Type: JOURNAL ARTICLE Journal Announcement: IAA8024. Documents available from AIAA Technical Library.

475. Sparvieri, F. [Mental intellectual and perceptual activity in pilots over 60]. Riv-Med-Aeronaut-Spaz ; 1979 Jan-Jun; 42(1-2): 69-75; ISSN: 0035-631X. TNL. Note: IT.

476. SPARVIERI, F. (Aeronautica Militare, Istituto Medico Legale, Rome, Italy). Study of age-dependent intellectual-perceptual mental factors and their theoretical and practical implications for in-flight errors. Rivista di Medicina Aeronautica e Spaziale, vol. 42, Jan.-June 1979, p. 58-68. In Italian; Jun. 1979 8 Refs. Note: Language: Italian Country of Origin: Italy Document Type: JOURNAL ARTICLE Journal Announcement: IAA8024. Documents available from AIAA Technical Library.

477. STEINBACHER, C. B.; PERRY, C. J. G. (USAF, School of Aerospace Medicine, Brooks, AFB, Tex.). Psychotherapy and return to flying duties. Aviation, Space, and Environmental Medicine, vol. 47, July 1976, p. 770-772; Jul. 1976 10 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7619 A study was made of 112 cases

referred to the USAF School of Aeronautical Medicine for psychiatric consultation. In 58 cases the patient was disqualified from flight duty on psychiatric grounds. Of the 49 cases for which follow-up information was available, 38 received treatment; 18 of these eventually returned to flight duty, along with six who did not receive treatment. The high percentage of salvaged flight personnel (49%) indicates that current psychiatric illness or a history of psychiatric illness is not sufficient reason, in and of itself, to permanently disqualify trained personnel from flight duties (C.K.D.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

478. Still there for the axing at age 60. (airline pilots over the age of 60 must stop flying) (column). Flying (FLYGA), volume 116, issue n9, Sept, 1989, p26(1).

479. Stodden, John R.; Stodden, Valerie A. People needs: work trends and shortages. (Human Resources Aerospace Careers: the 1990s and Beyond market supplement). Aviation Week & Space Technology, volume 131, issue n21, Nov 20, 1989, pS5(7).

480. Stohl, F.V.; Stephens, H.P (Performer: Sandia National Labs., Albuquerque, NM. Funder: Department of Energy, Washington, DC. Performer: Catalytic, Inc., Wilsonville, AL. Funder: Department of Energy, Washington, DC.). Deactivation of Direct Coal Liquefaction Catalysts Operation of the Wilsonville Advanced Coal Liquefaction R and D Facility, Wilsonville, Alabama. Annual Technical Report, January December 1981 (Runs 222 Through 235).. 068123000, 9511100; 058905000, 9503118; 1984. 25p 1984 Apr 83. 194p 1983. Note: Direct coal liquefaction contractors review meeting, Albuquerque, NM, USA, 17 Oct 1984. UNITED-STATES PC A02/MF A01 Portions are illegible in microfiche products. Contract: AC0476DP00789 UNITED-STATES PC A09/MF A01 Portions are illegible in microfiche products. Original copy available until stock is exhausted. Contract: AC2276ET10154. An extensive set of analytical and experimental techniques has been employed to delineate the degree and modes of deactivation of catalysts from Wilsonville runs 242 and 246. Concentrations and distributions of active metals and contaminants within catalyst extrudates have been determined by chemical, electron microprobe and Scanning Auger Microprobe (SAM) analyses. The catalytic properties of the aged catalysts have been studied using both gas-phase atmospheric pressure and liquid-phase high pressure reactions of model compounds. Gas-phase hydrodesulfurization (HDS) of thiophene has established relative HDS activities for the catalysts. Catalyst intrinsic activity, extrudate activity and effective diffusivity have been determined for the liquid-phase hydrogenation of pyrene. Modeling of the kinetic results for the pyrene experiments has also conclusively identified the modes of deactivation for the catalysts - rapid homogeneous deactivation by carbonaceous material and a simultaneous slower shell-progressive deactivation by contaminant metals. The major difference between catalysts from run 242 and run 246, with respect to hydrogenation, was a slower deactivation rate due to contaminant metals. The HDS activities of run 246 catalysts were significantly higher than those of run 242 catalysts. 2 references and 15 figures. (ERA citation 10:001743) This report summarizes the 1981 operating and test data obtained at the six ton per day Advanced Coal Liquefaction Research and Development Facility in Wilsonville, Alabama. Special emphasis is placed on data accumulated during the fourth quarter of 1981. The Wilsonville R and D Facility was in operation 71% of 1981 (70% of the fourth quarter) with scheduled shutdowns accounting for 23% of the downtime (28% during the fourth quarter). Kentucky 9 coal from the Fies mine was processed in all runs conducted during 1981 (Runs 222 through 235). The hydrotreater (HTR) unit was brought on stream successfully in May 1981. The three process units of the Wilsonville faciuity were operated in a non-integrated mode during the second half of 1981. Significant data was obtained in the following areas in the SRC Unit: operation at low- and high-severity reaction conditions for single stage liquefaction, process solvent quality, demonstration plant process simulation, and operation of lower-residence-time high-pressure separator. In the CSD Unit: modifications to the first-stage ash-removal system, unit performance at increased feed rates, and deashed SRC viscosity on storage at 525 exp 0 F. In the HTR Unit (brought on-line 23 May) unit performance at several reaction conditions, product yield and qualities, and catalyst aging and recovery studies. (ERA citation 08:035003).

481. STOOP, D. R.; STANTON, K. C.; BROWN, D. D. Elevated blood pressure in aircrew. Naval Aerospace Medical Research Lab., Pensacola, Fla; Oct. 1973. Note: Language: English Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR7405 The evaluation, management, and disposition of the aircrew with elevated blood pressure are frequently difficult problems. Analysis of evaluations reveals an obvious reluctance on the part of the physician to establish a diagnosis of hypertension and a tendency to avoid drug therapy in spite of accepted evidence that early treatment reduces morbidity. The implications and potential problems in this approach have been discussed, and current practices and policies regarding the aircrew with hypertension

have been presented and defended. (Author). In AGARD Pathophysiol. Conditions Compatible with Flying 5 p (SEE N74-13784 05-04) Country of Origin: United States.

482. Sutherland, H. C.; Endicott, J. E.; Collins, F. G. Hearing of flying personnel: 1962 to 1965. Note: USAF School of Aerospace Medicine, Aerospace Medical Division (AFSC), Brooks Air Force Base, TX. Jun 1967. (22p.). AVAILABILITY: SCAN Microfiche No. CCF 001486. In response to the concern that the noise associated with flying duties may result in decreased hearing acuity, the hearing of flyers was compared with the hearing of two other populations. Audiograms on 2,246 flying personnel tested at the United States Air Force School of Aerospace Medicine from 1962 to 1965 were drawn from clinic files and arranged in 6 age groups of 5 years each. Only persons who were in the age range of 20 to 49 years at the time of testing were included. The 25th, 50th, and 75th percentile hearing levels were computed for each age group at eight audiometric frequencies and for the right and left ear separately. These hearing levels were then compared with those of an earlier group of Air Force pilots and to those of the adult, male population of the United States. The hearing levels of flying personnel tested during the 1962 through 1965 period showed no gross orderly differences from the hearing levels of pilots tested over the 1955-1962 period at the same facility. The 1962-1965 flying personnel appeared to demonstrate better hearing at the 75th percentile than did the 1955-1962 Air Force pilots. Flying personnel in the 25 to 44 year age range reflected generally better hearing than that reported for the United States male population in the same group, but greater differences appeared between the hearing levels of the 25- to 34-year age group and the 35to 44-year age group for flyers than for the general population. (EZ).

483. SUVOROV, P. M. Effect of age, occupation, and physical training on human tolerance to long-term accelerations. (Human acceleration tolerance dependence on age, profession and physical training from investigation of reactions to repeated centrifugal accelerations). ENVIRONMENTAL SPACE SCIENCES, VOL. 2, P. 458-461; Dec. 1968 28 Refs. Note: Language: English Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE; TRANSLATION Documents available from AIAA Technical Library Journal Announcement: IAA6920 Source of Abstract/Subfile: AIAA/TIS. Translation Note: /KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL. 2, NOV.-DEC. 1968, P. 62-66./ Announcements: /FOR ABSTRACT SEE ISSUE 07, PAGE 1065, ACCESSION NO. A69-18980/.

484. Suvorov, P.M (Performer: Foreign Technology Div., Wright-Patterson AFB, OH). Effect of Age, Occupation, and Physical Training on Human Tolerance to Long Term Acceleration. 000550000, 141600; 16 Aug 89. 11p 1989. Note: Trans. of Komischeskaya Biologiya i Meditsina, (USSR) n2 p62-66 1968, by Marilyn Olsechea. UNITED-STATES PC A03/MF A01. The effect of the age, occupation and physical training on the human tolerance to long term accelerations was investigated. 427 test subjects - fighter pilots, engineers, physicians and research workers were used in the experiments. The lowest tolerance was found in the test subjects of the age range of 20-24 while the highest in those of 30-34. The test subject of 40-49 showed a decreased tolerance to accelerations. Certain differences in the acceleration tolerance and pattern of physiological reactions were found between pilots and representatives of other professions. As to the sportsmen, gymnasts, weight-lifters and acrobats they exhibited a better tolerance as compared to long-distance runners, football players and skiers who showed the tolerance level similar to that of people who did not go in for sports regularly. Keywords: Aviation medicine; Acceleration tolerance; Astronauts. (kt).

485. SUVOROV, P. M. Influence of age, profession, and physical training on the tolerance of man to prolonged accelerations (Human acceleration tolerance dependence on age, profession and physical training from investigation of reactions to repeated centrifugal accelerations). KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL. 2, P. 62-66. 28 REFS; Dec. 1968. Note: Language: Russian Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE Journal Announcement: IAA6907 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

486. Svensson, E.; Thanderz, M. A.; Sjoberg, L.; Gillberg, M. (National Defence Research Establishment, Department of Human Studies, Stockholm, Sweden). Military flight experience and sympatho-adrenal activity. Aviat-Space-Environ-Med ; 1988 May; 59(5): 411-6; ISSN: 0095-6562. 9JA. Note: EN. Urine excretion levels of adrenaline (A) and noradrenaline (NA) were determined, and achievement, commitment to the task, difficulty, risk, activation, and tension were rated after the preparation or planning and after the performance of 245 missions by 21 attack pilots. The catecholamine excretion levels increased and the ratio NA/A decreased as a function of condition (lesson, preparation, and mission). From a confirmatory factor analysis it was found that the catecholamine reactivity during preparation (values corrected for basal activity) was affected by the perceived challenge potential of the mission. The reference A activity covaried with the total A reactivity during the missions, i.e., the higher

the basal excretion levels the higher the reactions to the missions. A positive relationship was found between former flight experience (hours) and mean activity of A. The rate of increase of A was potentiated by nicotine. Potential explanations of the increase of A are discussed. Author-abstract.

487. SZAFRAN, J. /LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, DEPT. OF EXPERIMENTAL PSYCHOLOGY, NEW MEXICO, U., ALBUQUERQUE, N. MEX./. Age differences in sequential decisions and cardiovascular status among pilots. (Age dependence of pilot response in signal sequence identification by appropriate control operation at maximum speed and minimum error). /AEROSPACE MEDICAL ASSN., ANNUAL MEETING, MIAMI, FLA., MAY 13, 1964./ AEROSPACE MEDICINE, VOL. 36, APR. 1965, P. 303-310. 28 REFS; Apr. 1965. Note: Contract No.: PHS-G-HD-0518 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA6512 Source of Abstract/Subfile: AIAA/TIS.

488. Szafran, J. Age differences in the rate of gain of information, signal detection strategy and cardiovascular status among pilots. Gerontologia ; 1966; 12(1): 6-17; ISSN: 0016-898X. FOV. Note: EN.

489. SZAFRAN, J. /LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, DEPT. OF EXPERIMENTAL PSYCHOLOGY, ALBUQUERQUE, N.MEX./. Age, cardiac output and choice reaction time. (Age, cardiac output and choice reaction time of airline, military and test pilots, attempting resolution of data discrepancy). NATURE, VOL. 209, FEB. 19, 1966, P. 836. 8 REFS; Feb. 1966. Note: Contract No.: NIH G-HD-0518 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA6612 Source of Abstract/Subfile: AIAA/TIS.

490. Szafran, J. Psychological studies of aging in pilots. Aerosp-Med ; 1969 May; 40(5): 543-53; ISSN: 0001-9402. 2RQ. Note: EN.

491. Szafran, Jacek (U. Southern California, Gerontology Center). The effects of ageing on professional pilots. Note: English (EN). Administered a series of tasks measuring visual and hearing perception, signal detection, high-speed sequential decision ability, and cardiopulmonary functioning to airplane pilots aged 20 yr to over 60 yr. Results indicate that the functioning and skill of pilots are more dependent on the efficiency of the lung-heart system than upon age per se. (54 ref.) (PsycINFO Database Copyright 1974 American Psychological Assn, all rights reserved).

492. Tagliabue, John. Feat of teen-age pilot delights West Germans. (Mathias Rust). New York Times (NYTIA), volume 136, May 31, 1987, Sun edition, section 1, p9(N), col 1.

493. TANGAEV, N. V.; RUBIN, E. B.; KHINSKAIA, B. S.; TANGAEVA, S. I. Post-traumatic condition of the spine in middle-age pilots. Voenno-Meditsinskii Zhurnal, Feb. 1975, p. 67, 68. In Russian; Feb. 1975. Note: Language: Russian Document Type: JOURNAL ARTICLE Journal Announcement: IAA7514 Flying personnel aged 35 to 40 were submitted to clinical and X-ray examinations of the spine. Only X-ray investigation made it possible to reveal, in 75% of the cases studied, pathological changes in the spine, including spinal fractures which had occurred in the past. Most of the changes were localized in the lumbar and thoracid regions of the spine, in isolation or in combination with other regions. Spinal fractures were found to be associated with deformed spondylosis. Traumatic factors involved in spinal injury are indicated. It is concluded that X-ray examination of flying personnel and trainees is a prophylactic tool for the diagnosis of spinal injuries. (S.D.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

494. Tangaev, N. V.; Rubin, E. B.; Khinskaia, B. S.; Tangaeva, S. I. [Posttraumatic state of the spine in older pilots]. Voen-Med-Zh ; 1975 Feb; (2): 67-8; ISSN: 0300-9114. XGS. Note: RS.

495. Taylor, Henry L.; Hyman, Fred C.; Weller, Martha H.; Nagel, Robert J.; etal (U Illinois-Willard Airport, Inst of Aviation, Savoy, US). The effects on pilot performance of antiemetic drugs administered singly and in combination. USAF School of Aerospace Medicine Technical Report. 1987 Mar TR-85-99 93 p. Note: English (EN). Studied the effects of alcohol and antiemetic drugs on the performance of male general aviation pilots (aged 19-33 yrs) in 4 experiments. The primary aviation task consisted of 3 procedures: (1) a direct entry to a holding pattern, (2) execution of 3 holding patterns, and (3) a simulated instrument landing system approach for landing. The Sternberg Memory Search task was presented randomly as a secondary task during flight to increase Ss' workload. The results of each experiment are discussed. Significant S (group) effects were found in all 4 experiments, reinforcing the need to use a

within-S repeated measures design. (PsycINFO Database Copyright 1988 American Psychological Assn, all rights reserved).

496. Temme, L.A.; Morris, A. (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Speed of Accommodation and Age. 065612000, 406061; Feb 89. 9p 1989. Note: Pub. in Optometry and Vision Science, v66 n2 p106-112 Feb 89. UNITED-STATES PC A02/MF A01. The time needed to change accommodation from a near to a far target or from a far to a near target (0.457 and 5.486 m) was measured with a psychophysical threshold procedure in 65 U.S Navy fighter pilots. The age of the pilots ranged from 24 to 44 years. The speed of accommodative change, far-to-near (FN), slowed with age in a statistically significant fashion; however, near-to-far (NF) did not appreciable slow with age. The intrasubject variability was greater FN than NF but there was not a statistically significant dependence of variability upon age. Keywords: Performance human; Target detection; Vision. (KT).

497. Tenney, D. P. (USAir, Inc., Tulsa, Oklahoma). Age and airline accidents. J-Psychol ; 1988 Jan; 122(1): 15-20; ISSN: 0022-3980. JTZ. Note: EN. The issuance of a commercial pilot's license is contingent upon the fulfillment of stated minimum flight time. These requirements imply that total flight time and aircraft flight time can be equated with safety. For this reason, aircraft accidents involving licensed, professional pilots become difficult to explain. This study examined the relationship of pilot experience to accidents by comparing pilots' age and experience in 188 accidents involving corporate/executive pilots. The more severe accidents were expected to involve younger, less experienced pilots. The data in this study, however, refute this expectation. The age, aircraft time, or total time difference between groups was not significant. More research, both in the field and under controlled conditions, may bring in the psychological concept of cognitive dissonance. Author-abstract.

498. Tenney, Dudley P. (USAir Inc, Tulsa, OK, US). Age and airline accidents. Journal of Psychology; 1988 Jan Vol 122(1) 15-20; 1988; CODEN: JOPSAM; ISSN: 00223980. Note: Human. Examined the relationship of pilot experience to accidents by comparing pilots' age and experience in 188 accidents involving corporate/executive pilots. The age, aircraft time (hours of experience with aircraft in accident), or total aircraft flying time difference between groups was not significant. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

499. Tenny, Dudley P. Age and airline accidents. Note: Journal of Psychology. Jan 1988. Vol. 122, No. 1. p. 15-20. (6p.). Examined the relationship between the pilot's age and experience level and the severity of aircraft accidents. A total of 188 accidents that involved corporate/executive pilots in 1976 through 1978 were analyzed. Three variables were determined for each accident: age of the pilot, total aircraft flying time (amount of experience with aircraft in accident), and total hours of flying time. Severity of accident (fatal or nonfatal) also was considered. Viewing the data for the total sample, older pilots, with more aircraft and total time, seemed more apt to be involved in fatal accidents. Analysis of the same accidents for young (age 21 to 37) and older (age 39 to 62) pilots led to a different conclusion. Results are discussed in terms of the concept of cognitive dissonance. (LS).

500. Texas pilot project report: the next step after the area advisory council. Aging, Sep, 1975, p11.

501. Thomas, G.B.; Williams, C.E.; Raney, J.F (Performer: Naval Aerospace Medical Research Lab., Pensacola, FL). Development of Performance Based Auditory Aviation Classification Standards in the U.S. Navy.. 065612000, 406061; Dec 87. 31p 1987. Note: UNITED-STATES PC A03/MF A01. A series of studies was undertaken to develop a performance-based test battery to ascertain the auditory fitness of naval aviators. On the basis of literature reviews, interviews with experienced pilots, and published job analyses, several auditory abilities were identified. These included perception of degraded speech, response time to auditory signals, auditory short-term memory, and auditory selective attention. Tests to measure these abilities were developed and evaluated in terms of sensitivity and test-retest reliability (Experiments I and II; total N = 105). Sensitivity was sufficient to readily discriminate between pilots of disparate age groups, and test-retest reliabilities ranged from. 71 to. 88 for individual test battery elements. Experiment III sought to increase the validity of the test battery by incorporating major elements into a tape-recorded flight scenario. Keywords: Hearing, Pilot standards, Naval aviation. (aw).

502. Thomas, Gary S.; Miller, David C. (U Dayton Research Inst, OH, US). Performance measurement development for air combat. US AFHRL Technical Report. 1989 Oct Tech Rpt 89-21 19 p; CODEN: XLHTA8; ISSN: 0099-3239. Note: English (EN). Three experiments used linear regression analyses to describe how 35 mission-qualified and 3 retired fighter pilots rank ordered hypothetical air combat maneuvering (ACM) engagement outcomes. Inter-rater agreement among Ss in Exp 1 was high. The

regression equation in Exp 1 accounted for 95% of the variance in rankings, and the composite regression model calculated in Exp 2 accounted for more than 70% of the variance. Exp 3 validated the performance model devised from Exps 1 and 2. The performance model accounted for 99% of the variance in the predicted outcome data and for 94% of the variance in data obtained from a separate group of Ss. This performance measure will serve as a criterion for the development and validation of specific measures of ACM skill that will provide diagnostic performance feedback to pilots. (PsycINFO Database Copyright 1990 American Psychological Assn, all rights reserved).

503. Tipette, Giles. Vaulting for the sky and other not-fancy flights. (author soloed a plane at the age of 10). Sports Illustrated (SPILA), volume 67, Oct 12, 1987, p8(2).

504. Tobias, J. V. (FAA Civil Aeromedical Inst., Aviation Psychology Lab., Oklahoma City). Auditory effects of noise on air-crew personnel. FAA Office of Aviation Medicine Report. 1972 Nov No. 72-32 7 p. Note: English (EN). Obtained audiograms from 12 aerial application pilots, 15 flight instructors, 12 FAA flight inspectors, 16 private pilots, 10 stewardesses, and 45 age-matched controls. An additional group of 106 stewardesses was also examined. Flight inspectors showed a moderate average hearing loss, flight instructors and commerical pilots showed mild-to-moderate average loss, while agriculture pilots showed uniform hearing losses with worst thresholds ranging from 30-70 db, HTL, ISO. The group of 10 stewardesses differed significantly from control Ss but in ways that would have little or no effect on the hearing of speech. The group of 106 stewardesses was separated into several groups based upon hours of flight experience. Although none of the stewardesses could be classified as having suffered a hearing loss that could be considered a health hazard or social loss, a statistically significant increase in worst thresholds occurred after about 7,000 hours of flight experience. (PsycINFO Database Copyright 1973 American Psychological Assn, all rights reserved).

505. TOMA, J. Several aspects of laboratory psychophysiological activity in the flying personnel of various age.. (Laboratory psychophysiological efficiency in flying personnel of various ages covering pursuit reaction tests, serial motor activity and optico-acoustic signal analysis). IN- SOME PROBLEMS OF AVIATION AND SPACE MEDICINE. EDITED BY P. LEVIT. PRAGUE, KARLOVA UNIVERSITA, 1967, P. 133-139; 1967. Note: Language: English Country of Origin: Czechoslovakia Document Type: ANALYTIC OF COLLECTED WORK Journal Announcement: IAA6722 Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

506. Tsang, P. S. (U Illinois, Aviation Research Lab, Savoy). Can pilots time share better than non pilots? Special Issue: Ergonomics inaviation. Applied Ergonomics; 1986 Dec Vol 17(4) 284-290; 1986; CODEN: AERGBW; ISSN: 00036870. Note: Human. Compared time-sharing performance of 12 right-handed male pilots (averageage 28.8 yrs) with that of 12 right-handed male undergraduates. In a secondary task paradigm, Ss were required to perform 5 dual tasks with various degrees of structural similarity. A higher degree of task interference was observed for the structurally more similar task pairs. Although the pilots appeared to be more efficient in one of the dual task conditions, evidence for a general difference in time-sharing ability between the students and the pilots was not strong. Data are consistent with previous research and support the concept of multiple resources. It is concluded that the degree to which time-sharing performance is structure-dependent is not easily alterable by training and that laboratory findings on the structural determinants of time-sharing efficiency are generalizable to operational environments. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

507. Tunstall, Pedoe H. (Cardiovascular Epidemiology Unit, Ninewells Hospital and Medical School, Dundee). Risk of a coronary heart attack in the normal population and how it might be modified in flyers. Eur-Heart-J; 1984 Mar; 5 Suppl A. P 43-9(Review); ISSN: 0195-668X. EM8. Note: EN. Fatal accident rates in passenger aircraft can be compared directly with coronary heart attack rates in pilots. Although heart attacks are unpredictable in the short term and about 50% of them might cause immediate total incapacitation, rates are such that only a very small percentage of fatal accidents could come from this cause. Risk of attack is highly age- and sex-dependent but pilots should be at lower risk than the general population as half of the events in the latter are recurrences in those with manifest disease which would usually lead to permanent loss of licence. Identification of other markers for coronary heart disease and of coronary risk factors in pilots could lead to a further potential reduction in risk but the effect is small and could be brought about only by grounding a large proportion of existing pilots. Below the age of 50, risk in men is small but above this age special scrutiny may be justified for those involved in single-pilot operations. Better data on the actual risk of developing coronary heart disease in pilots should be provided by setting up a central recording system covering both active aircrew and those who retire for whatever reason. Author-abstract. 10 Refs.

508. Turlejski, Jan (Military Inst of Aviation Medicine, Warsaw, Poland). Time variability of reactivity: Problem and method. Polish Psychological Bulletin; 1982 Vol 13(4) 289-298; 1982; CODEN: PPBUDY; ISSN: 00792993. Note: Human. Proposes a new method for investigating the development of reactivity inhumans performing tasks in a stressful environment. The method was derived in 2 stages. In the 1st, starting from the concept of stimulation demand according to J. Strelau (1974), Pavlov's view of stable behavior trait development was reconstructed. From his assumptions, a logical consequence was derived as the hypothesis, namely, a long-term stimulation load induces a slow increase of reactivity, and a decrease of reactivity is possible only in the case of Ss with low reactivity before the onset of the load. The 2nd stage was devoted to studying the conditions for testing the hypothesis. As the measure of reactivity, a percentage increase index (Kraepelin test) was adopted, and length of professional activity of pilots was treated as the measure of stimulation load. Two age-differentiated groups of pilots (with 139 younger pilots aged 24-32 yrs and 171 older pilots aged 39-48 yrs) were set up, and a normal distribution of the above mentioned index was established. Standard deviations and mean values of group scores were compared as well as the probability densities for fractions of older and younger Ss with low reactivity. The results strongly support the empirical testability of the proposed hypothesis. (16 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

509. TWA agrees to reimburse pilots in age bias lawsuit. Wall Street Journal (WSJOAF), June 20, 1986, Pri edition, p2(W) p2(E), col 4.

510. TWA discriminated against older pilots. Monthly Labor Review (MLARA), volume 1, issue n3, March, 1985, p49(1).

511. U.S. court denies ALPA appeal on pilot age retirement ruling. Aviation Week & Space Technology, Mar 21, 1960, p37.

512. U.S. Supreme Court lets stand jet test pilot's age-discrimination suit. Retirement Living, May, 1978, p62(1).

513. Udalov, IuF; Ovsiannikov, I. F.; Deviatnikova, Z. I. [Characteristics of lipid metabolism depending on the nature of occupational activity]. Kardiologiia ; 1975 Jun; 15(6): 75-80; ISSN: 0022-9040. KU9. Note: RS. The examination was conducted on 630 normal males when at rest in a sanatorium, their permanent jobs being characterized by different nervous and emotional strain (pilots, ground aviation specialists). The lipid metabolism parameters of the pilots appeared to differ from the normal ones. The differences in the metabolic indices of the two profession groups are traced both in the younger, and in the older age-groups, which gives ground to believe that the typical peculiarities of the metabolism are formed in individuals with nervous-emotional jobs as early as in the young age under the effect of professional factors. This should be kept in mind when undertaking preventive measures against atherosclerosis in persons working under high nervous and emotional strain. Author-abstract.

514. Underwood, Ground K. E. (Raf Institute of Pathology and Tropical Medicine, Halton, Aylesbury, Bucks, United Kingdom). Prevalence of coronary atherosclerosis in healthy United Kingdom aviators. Aviat-Space-Environ-Med ; 1981 Nov; 52(11 Pt 1): 696-701; ISSN: 0095-6562. 9JA. Note: EN. The coronary arteries of 288 aircrew (135 military aircrew, 53 professional pilot , and 100 private pilots) killed in 210 aircraft accidents were examined to assess the prevalence of coronary artery disease (CAD). Included in the study were 132 controls of apparently healthy British males aged 18-62 years killed accidentally. The prevalence of significant CAD was found to be 17% in military aircrew with a mean age of 29.1 years, 24.5% in professional pilots with a mean age of 39.7 years and 22% in private pilots with a mean age of 37.2 years. In the control group, the prevalence was 18.2% with a mean age of 29.9 years. There was no evidence of a significant difference in CAD prevalence in the four groups (p greater than 0.1). The difficulties in grading CAD and comparing results with other published series is discussed. When taking the author's military aircrew and professional pilots as one group, so that the prevalence can be compared with previous UK series, it is found that prevalence of significant CAD (19%) is not significantly different from the prevalence reported two decades ago (p greater than 0.1). It is concluded that findings suggest that the prevalence of CAD is not declining in the United Kingdom. Author-abstract.

515. The union must pay, too. (back pay awards). Business Week (BUWEA), Aug 11, 1980, p64(1).

516. United Air age rule on new pilots illegal, Appeals Court rules. Wall Street Journal (WSJOAF), Sept 21, 1981, Mon edition, p10(W), col 2.

517. United Air loses suit in age discrimination; must pay $18 million. (United Airlines). Wall Street Journal

(WSJOAF), Sept 30, 1982, Thu edition, p23(W), col 3.

518. United Air will pay pilots to settle suit on age bias. Wall Street Journal (WSJOAF), July 2, 1986, Wed edition, p18(W) p10(E), col 3.

519. USSR engineers try tuned transmission lines. Science News Letter, Jan 2, 1960, p11.

520. VAIL, G.J. (St. Mary's Graduate Institute, Minneapolis, MN). The social-psychological aspects of pilot-error - Male vs female. IN: Symposium on Aviation Psychology, 3rd, Columbus, OH, April 22-25, 1985, Proceedings (A86-29851 13-53). Columbus, OH, Ohio State University, 1985, p. 309-319. Research supported by the Ninety Nines, Inc; 1985 10 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Journal Announcement: IAA8613 The National Transportation Safety Board data on pilot-error fatalities for general aviation, years 1977 through 1981, have been analyzed by gender differences. The analysis included following variables: (1) age of pilot, (2) certificate of pilot, (3) kind of flying, (4) type of aircraft, (5) type of power, (6) total time, by time in type of aircraft, (7) broad cause/factor, (8) specific cause/factor, (9) phase of operation, and (10) pilot's occupation. When compared to the total population of female and male pilots, the relative number of female pilot-error fatalities was significantly less than the number of male pilot-error fatalities. On the other hand, female pilots incur more of their fatalities when flying solo-instructional than male pilots (11.1 pct and 1.5 pct, respectively). Females also incurred relatively more of their fatalities during practice-noncommercial runs (9.3 pct compared to 2.4 pct for males). (I.S.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

521. Valente, Judith. Playing kingmaker: in the takeover age, pilots union forges new role for labor; as part of hardball strategy, it takes sides in buy-outs, but with mixed results; a long history of infighting. (Air Line Pilots Association). The Wall Street Journal (WSJOAF), June 30, 1989, Fri edition, pA1(W) pA1(E), col 6.

522. Valente, Judith. TWA expected to buy up to 40 Airbus jetliners; order's value could reach $3.5 billion; flap with pilots would be eased. (pressure to replace aging aircraft). The Wall Street Journal (WSJOAF), March 28, 1989, Tue edition, pA3(W) pA3(E), col 1.

523. Van, Dalen, J. T. (National Aerospace Medical Ctr, Soesterberg, Netherlands). Automated visual field screening in the flying Dutch population. Aviation, Space, and Environmental Medicine; 1982 Oct Vol 53(10) 1006-1010; 1982; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Presents results of automated perimetry in 1,000 military personnel, civilians, commercial aircrews, and pilots over 40 yrs of age. In 17 Ss, a serious field defect was found. In 9 Ss, aspecific defects were found. Computer-aided perimetry gave reliable results compared with kinetic perimetry. Since the visual field is of the utmost importance in aviation, and while mass conventional visual field screening is not possible, the use of automated perimetry testing is suggested. (12 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

524. Van, Dyne Larry; Pekkanen, John; Rapoport, Daniel. A false sense of security. (Air Florida Flight 90 crash). Washingtonian (WSHND5), Oct, 1982, p112(32).

525. Van, Gelder Lawrence. A seminar to combat fear of flying. (retired flight captain T.W. Cummings' Program for Fearful Flyers) (column). New York Times (NYTIA), Feb 20, 1983, Sun edition, section 10, pXX3(N) pXX3(L), col 3.

526. Vanderbeek, R.D (Performer: Air Force Inst. of Tech., Wright-Patterson AFB, OH). Period Prevalence of Acute Neck Injury in U.S. Air Force Pilots Exposed to High G Forces. Master's thesis.. 000805000, 012200; Jun 86. 39p 1986. Note: UNITED-STATES PC A03/MF A01. Neck injury and its sequelae associated with high G forces is an unquantified clinical and epidemiological problem in exposed pilots. There has been a paucity of research in this area. This proposal is a beginning, with a descriptive period prevalence study of acute neck injury in high performance aircraft pilots. A sample of pilots of five different aircraft with varying performance capabilities will be surveyed, utilizing an anonymous questionnaire. Stratified sample data will be analyzed to determine the strength of association of injury prevalence with pilot age, type of G-exposure, and type of aircraft flown. The long-term questions to be addressed are these: 1) For those pilots exposed and having acute injuries, what are the acute and chronic effects on the cervical spine. 2) Are repeated exposures cumulative. 3) Are there degenerative effects such as cervical arthritis. 4) Can the cervical spine tolerate ev n more high G without deleterious effects. Needed long-term prospective studies will address these questions. This proposal will qualify and quantify

the presence of the potential injurious exposure.

527. Vam, G.L (Performer: Air Command and Staff Coll., Maxwell AFB, AL). Will the USAF Need Ground Based Air Traffic Control Radar in the Year 2000. Student rept.. 029160000, 405502; Apr 86. 49p 1986. Note: UNITED-STATES PC A03/MF A01. Advanced technology in military aviation is developing rapidly. The Global Positioning System (GPS) and Microwave Landing System (MLS) will give the pilot precision navigation capability when fully deployed in the 1990s. The Joint Tactical Information Distribution System (JTIDS) will give the pilot the capability to display enemy and friendly aircraft in his area in his cockpit. At the same time, our mobile air traffic control (ATC) radars are aging and need to be replaced. But, with the new technology in the cockpit, it may be more feasible to eliminate ground-based ATC radar and let the pilot do his own ATC from the cockpit. This study examines the feasibility of a cockpit-based ATC system by looking at the requirement for military ATC, specific capabilities that new technologies give the pilot, and human considerations in a cockpit-based ATC system. The study concludes that a cockpit-based ATC system is not feasible and that there will be a need for ground-based ATC radar, at least through the year 2000. (Author).

528. VAVILOV, M. P.; UDALOV, D. IU. Preventing body mass elevation in aviators. Voenno-Meditsinskii Zhurnal, Jan. 1981, p. 53-55. In Russian; Jan. 1981. Note: Language: Russian Document Type: JOURNAL ARTICLE Journal Announcement: IAA8111 Results are presented of a study of the phenomenon of overweight in aviators, and possible means of its prevention are considered. A statistical study of pilots flying the same type of aircraft and receiving regular rations or eating at home and in public cafeterias and persons with ground-based duties reveals the aviators to have a greater tendency to excess body weight than non-flying personnel, with some exhibiting alimentary obesity. Overweight in aviators was also found to be correlated with accumulated flight time, age, and the stress levels encountered in flight duties. The state of lipid exchange and the generation of excess body mass in aviators are shown to depend on a variety of factors, including job stress levels, food choices and vitamin intake, which must be taken into account in the planning and performance of prophylactic measures, which may include the rationalization of eating patterns, vitamin supplements and increases in motor activity. (A.L.W.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

529. VENDERBEEK, RODGER D. Prevalence of G-induced cervical injury in US Air Force pilots. Air Force Medical Group (347th), Moody AFB, GA; In AGARD, Neck Injury in Advanced Military Aircraft Environments 7 p (SEE N90-25459 19-52) Feb. 1990. Note: Publication Note: Submitted for publication.

530. VERRA, G.; MARTIN, J.; CRANCE, J.-P.; BOULANGE, M. Motivation in light aviation pilots /results of an inquiry carried out on 600 subjects/. I - Nature of the motivation and causes of loss of motivation. Revue de Medecine Aeronautique et Spatiale, vol. 14, 2nd Quarter, 1975, p. 85-88. In French; Jun. 1975. Note: Language: French Document Type: JOURNAL ARTICLE Journal Announcement: IAA7714 Results of an inquiry addressed to 1283 pilots belonging to ten aviation clubs in the NE region of France are reported. Questionnaires dealt with motivations early and late in pilot careers, flight-related accidents and illnesses, pilots' views on intensification or reduction of flying activity, and secondary motivations for continuing interest in and practice of aviation. Distributions of subjects by age, flying time logged, and type of pilot are reported. Primary motivations are found highly diverse, while professional and financial considerations affect decisions to reduce or abandon piloting activity. (R.D.V.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

531. (Performer: National Technical Information Service, Springfield, VA). Visual Acuity. January 1972 August 1988 (Citations from the International Aerospace Abstracts Database). Rept. for Jan 72 Aug 88.. 055665000; Sep 88. 115p 1988. Note: Prepared in cooperation with National Aeronautics and Space Administration, Washington, DC. UNITED-STATES U.S. sales only. PC N01/MF N01. This bibliography contains citations concerning visual perception. Contrast sensitivity, peripheral acuity, visual perception of spacial patterns, and the effect of aging on vision are among the topics discussed. The effects of workspace layout, light, vibration, eye movement, eye diseases, and texture contours on visual acuity are examined. Visual acuity of pilots is highlighted. (Contains 257 citations fully indexed and including a title list.).

532. VIVILOV, P. Possibilities of forecasting hypercholesterinemia in pilots. National Aeronautics and Space Administration, Washington, D. C; Mar. 1980 9P. Note: Transl. into ENGLISH from Kazanskiy Meditsinskiy Zh. (USSR), v. 60, no. 3, May-Jun. 1979 p 18-20 Transl. by Kanner (Leo) Associates, Redwood City, Calif. Report No.: NASA-TM-76087 Contract No.: NASW-3199 Language: English

Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE; TRANSLATION Documents available from AIAA Technical Library Other Availability: NTIS HC A02/MF A01 Journal Announcement: STAR8014 The dependence of the frequency of hypercholesterinemia on the age, average annual flying time, functional category, qualification class, and flying specialty of 300 pilots was investigated. The [illegible] probability coefficient of hypercholesterinemia was computed. An evaluation table was developed which gives an 84% probability of forcasting risk of hypercholesterinemia. (R.E.S.) Source of Abstract/Subfile: NASA STIF COSATI Code: 6P Physiology. Translation Publication.

533. VLASOV, V. D.; KARNAUKHOV, Y. D.; DMITRIYEV, O. P. Changes in bioelectrical activity of the myocardium of flight personnel under the influence of their work load. Joint Publications Research Service, Arlington, Va; Jul. 1981. Note: Transl. into ENGLISH from Kosmicheskaya Biol. i Aviakosmicheskaya Med. (Moscow), v. 15, no. 3, May - Jun. 1981 p 84-85 Language: English Country of Origin: U.S.S.R. Document Type: JOURNAL ARTICLE; TRANSLATION Documents available from AIAA Technical Library Other Availability: NTIS HC A08/MF A01 Journal Announcement: STAR8120 The question of functional capacities of flight personnel as related to age is examined. The functional state of the cardiovascular system, which largely determines the pilot's reaction to flights, is emphasized. Postflight changes in electrocardiography and vectorcardiography parameters did not exceed the range of conventional norms and were of no pathological significance. Some decline of adaptive capabilities of the myocardium with age with regard to flight factors was indicated. (S.F.) Source of Abstract/Subfile: NASA STIF. In its USSR Rept.: Space Biol. and Aerospace Med., Vol. 15, No. 3, May - Jun. 1981 (JPRS-78499) p 130-132 (SEE N81-29736 20-51) Translation.

534. Vlasov, V. V.; Kopanev, V. I. [Effect of flying on the health status of pilots in the light of epidemiologic data]. Kosm-Biol-Aviakosm-Med . (Review); 1990 Jan-Feb; 24(1): 4-9; ISSN: 0321-5040. KXC. Note: RS. This paper gives an analytical review of epidemiological data about the morbidity and mortality rate of the flying personnel. It shows that the flying personnel differs from the general population in their better health condition which manifests as lower morbidity and mortality rates in every large group of disease. This better health status of the flying personnel may be a result of their adequate selection. The selection makes it difficult to identify relationships between disease and flight effects. Information about these relationships is contradictory and/or insufficient. Proper assessment of flight effects on the health condition of the flying personnel needs further controlled epidemiological investigations. Author-abstract. 56 Refs.

535. VOGE, V. M.; ANTHRACITE, R. (U.S. Navy, Naval Hospital, Corpus Christi, TX). Spontaneous pneumothorax in the USAF aircrew population - A retrospective study. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 57, Oct. 1986, p. 939-949; Oct. 1986 113 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8706 Spontaneous pneumothorax (SP) is infrequently diagnosed in aircrew personnel. However, once it is diagnosed, aircrew disposition becomes a serious concern. To evaluate this problem, a literature review was conducted to put the disease into proper perspective. A questionnaire was then sent to all aircrew in the United States Air Force waiver file who had suffered SP in order to gain a retrospective view of problems and situations encountered. The following areas were investigated: recurrences, height, weight, age, smoking history, initial medical management, symptomatology, activity at time of occurrence, relationship to flight duties, treatment given and personal/family history of lung disease. It is concluded that SP is an unrecognized hazard to aircrew personnel. Once an SP has been diagosed in an individual, he/she should be grounded from further flight duties until either 9 years have elapsed without a recurrence or there has been a bilateral parietal pleurectomy. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

536. Vola, J. L.; Cornu, L.; Carruel, C.; Gastaud, P.; Leid, J. [Age and photopic and mesopic visual acuity]. J-Fr-Ophtalmol ; 1983; 6(5): 473-9; ISSN: 0181-5512. IAE. Note: FR. Visual acuity at high luminance (100 cdm2) and at low luminance (0.8 cdm2) was measured in normal subjects aged between 20 and 50 years. A decrease of visual acuity at Low luminance was noted with increasing age whereas high luminance acuity remained unchanged (20/20). At thirty years of age, low luminance visual acuity was an average of 20/30 decreasing at 40 years to 20/40. Results were confirmed by statistical analysis. A short study with interference fringes, formed by a coherent light (neon-helium laser) produced directly on the retina and thus by-passing optical effects on the eye, suggested that the retina-brain system was responsible for decreased mesopic visual acuity, night myopia or right presbyopia not playing any part in this decrease as suggested by some authors. Consequences of these findings, concerning particularly workers at low luminance such as pilots or drivers, are discussed. Author-abstract.

537. Watkins, R. D. Flight-deck vision of professional pilots. Aerosp-Med ; 1970 Mar; 41(3): 337-42: ISSN: 0001-9402. 2RQ. Note: EN.

538. Weiner, Eric. Boeing pilot retirement age now 63. (National Pages). The New York Times (NYTIA), volume 139, April 20, 1990, Fri edition, pA11(N) pA13(L), col 1.

539. Welty, Gus. MoPac's scheduling system: on-line for pilot testing. (car utilization). Railway Age (RAAGA), Aug 28, 1978, p20(3).

540. WENSTROM, J. L.; CARLSON, O. G.; LILJEQUIST, C. (Flygvapnet, Stockholm, Sweden)Age, 21 to57, years. Data do not show any major differences between flying andnonflying, personnel, although a gradual deterioration of the dentition withincreasi. Periodontal disease in military aircrew members - A clinical and radiographical study. Source of Abstract/Subfile: AIAA/TIS.

541. Wermiel, Stephen. High court rules TWA discriminated against pilots on the basis of their age. (includes other Supreme Court decisions). The Wall Street Journal (WSJOAF), Jan 9, 1985, Wed edition, p5(W) p5(E), col 1.

542. Wermiel, Stephen. Justices agree to hear appeal by TWA in dispute over pilots' retirement age. (includes other Supreme Court news: Heublein takeover; Agent Orange; nuclear waste rules; private school aid). Wall Street Journal (WSJOAF), Feb 28, 1984, Tue edition, p10(W) p10(E), col 3.

543. Wetzler, Harry P.; Ursano, Robert J.; Cruess, David F. (Uniformed Services University of the Health Sciences). Psychological well being in United States Air Force fliers. Journal of Nervous and Mental Disease; 1983 Jun Vol 171(6) 342-347; 1983; CODEN: JNMDAN; ISSN: 00223018. Note: Human. Data were obtained from a cross-sectional health survey of 2,485 20-54 yr old male US Air Force fliers and nonfliers, and mental health was ascertained with an index of psychological well-being (PWB). Other data relevant to health status were collected. Results of P. L. Berkman's (1971) Alameda County, California, survey of PWB were used for comparison. Data were analyzed using ANCOVA and multiple linear regression. Fliers were found to have significantly better PWB than nonfliers; this finding is in accord with clinical folklore regarding differences between fliers and nonfliers. Both Air Force groups had better PWB than that reported for Alameda County. There were no significant differences between pilots and navigators and no differences between pilots of different types of aircraft, results that contradict previous anecdotal reports. Young (age 21-28 yrs) active pilots were a distinct group with significantly better PWB than any other group. The best correlates of PWB were better self-reported overall health, lack of perceived time pressure, more competitive behavior, and a positive attitude toward physical fitness. Results are discussed in terms of the flier selection process, the intrinsic differences in those who select flying as a vocation, and the interaction of the flier's developmental stage and his/her environment. (22 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

544. Whinnery, James E.; Parnell, Michael J. (US Air Force School of Aerospace Medicine, Aerospace Research Branch, BrooksAFB, TX). The effects of long term aerobic conditioning on +Gz tolerance. Aviation, Space, and Environmental Medicine; 1987 Mar Vol 58(3) 199-204; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. 27 long-term (2 yrs of running) aerobically conditioned men (mean age 29 yrs) were tested for gradual and rapid onset +Gz tolerance. Although specificity of aerobic and exercise training and the absence of exaggerated cardiovascular response to +Gz stress are viewed as critical to the performance of fighter aircraft pilots during aerial combat maneuvering, Ss were found to have a predisposition to centrifuge-induced motion sickness during exposure to +Gz stress. It is concluded that aerobic conditioning is an important part of any program to maintain physical and psychological fitness in aircrew members even though no improvement in acceleration tolerance was found in this highly conditioned group. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

545. WHITTON, R. C. (USAF, School of Aerospace Medicine, Brooks AFB, TX). Medical disqualification in USAF pilots and navigators. Aviation, Space, and Environmental Medicine (ISSN 0095-0562), vol. 55, April 1984, p. 332-336; Apr. 1984. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8412 The categories of medical condition which have most often been responsible for permanent disqualification of flying personnel have not been previously well documented. In this study, 304 USAF rated personnel were identified from the USAF Medical Waiver File. These pilots and navigators were grounded during 1980 and 1981 and have not been returned to flying duties after 1-2 years of follow-up. The disqualifying conditions were reviewed, listed individually, and grouped by major disease categories. Age factors related to these conditions were examined. Cardiovascular disease, as a category, was found to be the commonest cause (30 percent) of

disqualification in this group. Other internal medical and neurological diseases are frequent reasons for permanent disqualification. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

546. Wiley, R.W (Performer: Army Aeromedical Research Lab., Fort Rucker, AL). Dark Adaptation and Recovery from Light Adaptation: Smokers versus Nonsmokers.. 026909000, 404578; Sep 87. 29p 1987. Note: UNITED-STATES PC A03/MF A01. Since the published data concerning the effects of smoking on visual sensitivity at night are inconsistent, a new study was initiated to investigate this question. Thirty Army aviators between the ages of 19 and 39 volunteered to participate in this study. Of these subjects, 15 smoked and 15 were non-smokers. Each subject was seated in a light-controlled room and exposed to a standardized bright light for 5 minutes. Immediately after the bright light was extinguished, the subject's visual sensitivity was tested by gradually increasing the intensity of a test light until the subject could see it. This was continued over a period of 35 minutes by which time the subjects had reached their maximum light sensitivity. Each subject then wore a pair of AN/PVS-5 Night Vision Goggles for 5 minutes after which his visual sensitivity again was tested for 20 minutes. The data do not show any differences in visual sensitivity between aviators who smoke and those who do not smoke. Blood samples were analyzed to compare serum levels of nicotine, cotinine and carboxyhemoglobin with the visual data. Again, no correlation exists between sensitivity and blood measures related to smoking. Aviators who smoke reach the same level of sensitivity to light as non-smokers and they do so in the same amount of time. Visual recovery after wearing the Night Vision Goggles also followed the same time course regardless of smoking history.

547. Winslow, Ron. Pentagon sets up a pilot to conquer high costs. (Foundation Health Inc. sets up pilot program to reform health care management for military dependents, retirees in California, Hawaii) (column). The Wall Street Journal (WSJOAF), Feb 28, 1990, Wed edition, pB1(W) pB1(E), col 1.

548. Wolfson, S.L.; Kutzenco, P.D.; Preston, W.J.; Graham, S.W.; Brinen, J.S (Performer: American Cyanamid Co., Stamford, CT. Chemical Research Div. Funder: Department of Energy, Washington, DC.). Development of Significantly Improved Catalysts for Coal Liquefaction and Upgrading of Coal Extracts. Quarterly Progress Report No. 9, October 1 December 31, 1983.. 001448006, 9502006; 1984. 58p 1984. Note: UNITED-STATES PC A04/MF A01 Portions are illegible in microfiche products. Original copy available until stock is exhausted. Contract: AC2281PC40091. Previously reported batch test performance correlations have been extended to include extract upgrading results. A new series of experimental bead catalysts was tested. High temperature extract upgrading screens were completed. CSTR tests focused on establishing suitable aging test conditions. Results of thermal and catalytic baseline tests at 410 exp 0 C and 425 exp 0 C are given. An experimental bead test was completed. ESCA studies of baseline and experimental bead catalysts used in the CSTR unit are discussed. Results are compared to those for AMOCAT 1A used at the H-COAL Pilot Plant. 7 references, 5 figures, 19 tables. (ERA citation 09:042583).

549. Work capacity, exercise responses and body composition of professional pilots in relation to age.

550. WURSTER, W. H.; LANGHOFF, J.; BURCHARD, E. C. Neck injury prevention possibilities in a high-G-enviroment experience with high sustained +G(sub z) training of pilots in the GAF IAM human centrifuge. German Air Force, Fuerstenfeldbruk (Germany, F.R.). Inst. of Aerospace Medicine; In AGARD, Neck Injury in Advanced Military Aircraft Environments 6 p (SEE N90-25459 19-52) Feb. 1990.

551. Yesavage, Jerome A.; Leirer, Von O.; Denari, Mark; Hollister, Leo E. (Stanford U School of Medicine). Carry over effects of marijuana intoxication on aircraft pilot performance: A preliminary report. American Journal of Psychiatry; 1985 Nov Vol 142(11) 1325-1329; 1985; CODEN: AJPSAO; ISSN: 0002953X. Note: Human. Examined delta-9-tetrahydrocannabinol (THC) carry-over effects on theperformance of 10 experienced licensed private pilots (mean age 29 yrs). Ss were trained for 8 hrs on a flight simulator landing task. They each smoked a cigarette containing 19 mg of THC, and 24 hrs later their mean performance on the flight task showed trends toward impairment on all variables, with significant impairment in number and size of aileron changes, size of elevator changes, distance off center on landing, and vertical and lateral deviation on approach to landing. Despite these deficits, the pilots reported no awareness of impaired performance. Results suggest implications for performance of complex tasks the day after smoking maribuana. (12 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

552. Yesavage, Jerome A.; Leirer, Von O. (Stanford U School of Medicine). Hangover effects on aircraft pilots 14 hours after alcohol ingestion: Apreliminary report. American Journal of Psychiatry; 1986 Dec Vol 143(12) 1546-1550; 1986; CODEN: AJPSAO; ISSN: 0002953X. Note: Human. As part of a repeated-measures counterbalanced design, 10 Navy P3-C Orionpilots (under 32 yrs of age) flew 2 carefully designed simulated flights under no-hangover (control) and hangover conditions. For the control condition, Ss drank no alcohol within 48 hrs before the simulated flight. For the hangover condition, they flew 14 hrs after drinking enough ethanol mixed with diet soft drinks to attain a blood alcohol concentration of over 100 mg/dl. Ss' performance was worse in the hangover condition on virtually all measures but significantly worse on 3 of 6 variance measures and 1 of 6 performance measures. It is concluded that caution should be exercised when piloting an aircraft 14 hrs or less after ingesting similar quantities of alcohol. (30 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

553. YONETSU, NOBORU; KIKUKAWA, AZUSA; AKAMATSU, TOMOMITSU. The estimation of atherosclerosis in physical examination for flying duty - An examination about serum value of high density lipoprotein and atherogenic index. Japan Air Self Defence Force, Aeromedical Laboratory, Reports (ISSN 0023-2858), vol. 28, Dec. 1987, p. 165-178. In Japanese, with abstract in English; Dec. 1987 13 Refs. Note: Language: Japanese Country of Origin: Japan Document Type: JOURNAL ARTICLE; TRANSLATION Journal Announcement: IAA8906 The results of total-cholesterol and high-density-lipoprotein measurements in 809 Japanese military pilots are reported and analyzed statistically. The data are presented in extensive graphs and characterized in detail. About 10 percent of the pilots over 40 years old were found to have atherogenic index values (determined from the serum lipid measurements) indicative of atherosclerotic changes. Smoking and obesity were identified as risk factors for atherosclerosis, while exercise and moderate alcohol use were preventive factors. (T.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

554. York, E.; Mitchell, R. E.; Graybiel, A. (Naval Aerospace Medical Research Laboratory, Naval Air Station, Pensacola, Florida). Cardiovascular epidemiology, exercise, and health: 40-year followup of the U.S. Navy's "1000 aviators". Aviat-Space-Environ-Med ; 1986 Jun; 57(6): 597-9; ISSN: 0095-6562. 9JA. Note: EN. The interrelationship of aging, performance, and stress modification has been the subject of investigations in the U.S. Navy. Beginning in 1940, a study of 1,056 student and instructor pilots lowered previously high attrition rates in training by emphasizing both physical and psychological screening. After World War II, when 208 pilots in the group died, followup studies of the survivors were conducted in 1951, 1957, 1963, 1969-71, 1977, and 1980-81. In February 1981, 715 questionnaires were mailed to known survivors, with 500 replies subsequently analyzed. Additionally, 114 of the respondents who had previously been examined during 1969, were again examined in 1980-81; those individuals were markedly different in their lifestyle, particularly in exercising regularly, abstaining from cigarette smoking, and drinking alcoholic beverages moderately, as contrasted to 28 aviators also examined in 1969 who died in the interim. Healthy lifestyle may alter cardiovascular risk, preventing premature death. Author-abstract.

555. York, Elihu; Mitchell, Robert E.; Graybiel, Ashton (Hartford Hosp, CT). Cardiovascular epidemiology, exercise, and health: 40 year followup of the U.S. Navy's "1000 aviators.". Aviation, Space, and Environmental Medicine; 1986 Jun Vol 57(6) 597-599; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Investigated the interrelationship of aging, performance, and stress modification in follow-up studies of 1,056 student and instructor pilots first studied in 1940 on measures of blood pressure, stress, and EKG. In 1981, 500 replies to questionnaires were analyzed, and 114 of the Ss who had previously been examined during 1969 were again examined. Those Ss were markedly different in their lifestyle, particularly in exercising regularly, abstaining from cigarette smoking, and drinking alcoholic beverages moderately, as contrasted to 28 Ss also examined in 1969 who died in the interim. Results indicate that healthy lifestyle may alter cardiovascular risk, preventing premature death. (19 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

556. Zeiner, Arthur R.; Brecher, Gerhard A. (U. Oklahoma, Health Sciences Center). Effects of backscatter of brief high intensity light on physiological responses of instrument-rated pilots and non-pilots. FAA Office of Aviation Medicine Report. 1972 Mar No. 72-8 9 p. Note: English (EN). Recorded occipital EEG, heartrate, respiration, skin potentials, and eyeblinks from 39 men while a Grimes airplane anticollision light flashing at 1.27 Hz. provided repetitive backscatter light stimulation off a white wall or laboratory fog. In Exp. I, only skin potentials showed a response decrement to the flashing light over a 40-trial session. No S demonstrated nausea, photic driving, seizure activity, or theta waves. Most Ss reported the

light as noxious, but many eventually became drowsy. Several reported dark deadaptation from the flashing light. In Exp. II, eyeblinks and skin potentials differentiated between instrument-rated pilots and an age-matched control group of nonpilots. (21 ref.)

Part II
Authors Database

1. Ackerman, Phillip L.; Schneider, Walter; Wickens, Christopher D. (U Illinois, Champaign). Deciding the existence of a time sharing ability: A combined methodological and theoretical approach. Human Factors; 1984 Feb Vol 26(1) 71-82; 1984; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Contends that experimental and statistical methods for examining time-sharing ability in dual-task performance are inadequate. Unsophisticated use of correlational and factor analytic procedures has resulted in errors in the following areas: (1) derivation of simple structure and time-sharing ability, (2) number of factors, (3) lack of single tasks as marker variables, (4) orthogonality, (5) Ss and variables, (6) scoring techniques, (7) low reliability, and (8) practice effects. Based on a reanalysis of available data (the nature of task selection, scoring methods, and control of practice and reliability issues) in 4 previous studies, a time-sharing ability is not rejected. However, it is suggested that simulation, incorporation of theory in planning models, and crucial tests of hypotheses be incorporated into future methods for assessing the time-sharing ability. (20 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

2. ANDERSON, W. J. (Michigan, University, Ann Arbor, Mich.); WEENER, E. F. Human power production in a caged situation. AIAA, MIT, and SSA, International Symposium on the Technology and Science of Low Speed and Motorless Flight, 2nd, Cambridge, Mass., Sept. 11-13, 1974, AIAA 10 p; Sep. 1974. Note: Report No.: AIAA PAPER 74-1027 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA7421 Mechanical efficiencies are calculated for a human doing work in a standing and stooping cycle while enclosed in a cage. An unsteady force is generated which does useful work in oscillating the cage on its suspension system. Such a vertical pumping motion has been proposed for a man-powered ornithopter. Analog simulation reveals that square wave force excitation is more efficient than sinusoidal or triangular. Design curves show some unexpected requirements for matching man and machine, and very poor efficiency if care is not taken. Losses are due to gravity and human inability to store energy in unloading portions of the cycle. A spring-dashpot suspension allows efficiencies of up to 88% in cases involving sinusoidal excitation. A freely floating suspension (the flight situation) allows only 64% efficiency for harmonic excitation. ((Author)).

3. ATTWOOD, D. A. /DEFENCE RESEARCH BOARD, DEFENCE RESEARCH ESTABLISHMENT, TORONTO, CANADA; WIENER, E. L. /MIAMI, U., DEPT. OF INDUSTRIALENGINEERING, CORAL GABLES, FLA./. Automated instruction for vigilance training (Subjects trained in visual monitoring task with autoinstructional device, showing higher signal detection rate than group trained by practice alone). JOURNAL OF APPLIED PSYCHOLOGY, VOL. 53, PT. 1, P. 218-223; Jun. 1969 15 Refs. Note: Contract No.: PHS-UI-00014 Language: English Country of Origin: Canada Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7002 Source of Abstract/Subfile: AIAA/TIS.

4. ATTWOOD, D. A. /MIAMI, U., DEPT. OF INDUSTRIAL ENGINEERING, CORAL GABLES, FLA./.; WIENER, E. L. Training for vigilance - Combined cueing and knowledge of results. (Combined cueing and knowledge of results for transfer of training in visual monitoring). JOURNAL OF APPLIED PSYCHOLOGY, VOL. 52, NO. 6, P. 474-479; 1968 18 Refs. Note: Contract No.: PHS-UI-00014 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA6913 Source of Abstract/Subfile: AIAA/TIS.

5. Babladelis, Georgia; Deaux, Kay; Helmreich, Robert L.; Spence, Janet T. (California State U, Hayward). Sex related attitudes and personal characteristics in the United States. International Journal of Psychology; 1983 Apr Vol 18(1-2) 111-123; 1983; CODEN: IJPSBB; ISSN: 00207594. Note: Human. Investigated differences in attitudes and beliefs toward masculine and feminine roles as well as legal and social facts in the US. Despite women's and civil rights movements, inequalities and barriers for changing are still not overcome. Differences in temperament and motivation between men and women are assumed to be based

on biological and/or socializing factors. In the US sample, sex differences emerged on the following variables: marriage importance, masculinity score for self, femininity score for self, femininity score for ideal man, masculinity score for ideal women, and competitiveness. Academic orientation also influenced the educational aspirations and expectations and the masculinity score for the ideal woman. Future research should investigate techniques to decrease sex stereotypes, conditions responsible for the traditional masculine and feminine roles in American society, and how these roles no longer are appropriate. (18 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

6. Bakeman, Roger; Helmreich, Robert (Georgia State U). Cohesiveness and performance: Covariation and causality in an undersea environment. . Journal of Experimental Social Psychology; 1975 Sep Vol 11(5) 478-489; 1975. Note: Human. Studied the relationship between group cohesiveness and performance, usingdata from a field setting. Ss were 40 scientists and 8 engineers. An index of leisure time cohesion correlated highly with work performance, accounting for 42% of performance variance. Although many studies assume that cohesiveness causes performance, in many contexts the dominant direction of causality may be from performance to cohesiveness instead. Laboratory experimental studies impose a causal direction and thus cannot answer a question of this kind. It is concluded, at least in the context of this study, that cohesiveness was not an important determinant of performance, but that good performance may well have been a cause of cohesiveness. (23 ref) (PsycLIT Database Copyright 1976 American Psychological Assn, all rights reserved).

7. Barnett, Barbara J.; Wickens, Christopher D. (U Illinois, PhD Program in Engineering Psychology, Champaign, US). Display proximity in multicue information integration: The benefits of boxes. Human Factors; 1988 Feb Vol 30(1) 15-24; 1988; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Investigated the ability of 24 university students to integrate probabilistic information from a number of sources, focusing on the extent to which this integration was influenced by display proximity in space, time, and object configuration. Ss were asked to envision themselves as military aircraft pilots deciding in midflight whether to abort a mission. Data indicate that integration performance was clearly ordered according to the degree of display integrality: Those in the more integral rectangle conditions were significantly better at integration than those in the bar graph condition. Proximity of space had little effect, whereas proximity in time improved performance in all 3 format conditions. Speed stress hindered performance. Memory for isolated unintegrated attributes of a cue was not harmed by the increasing integrality of the rectangle formats. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

8. BOEHM-DAVIS, D. A.; CURRY, R. E.; HARRISON, R. L. (NASA, Ames ResearchCenter, Moffett Field, CA); WIENER, E. L. (Miami, University, Coral Gables, FL). Human factors of flight-deck automation - Report on a NASA-industry workshop. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Oct. 1983 6 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8404 The scope of automation, the benefits of automation, and automation-induced problems were discussed at a workshop held to determine whether those functions previously performed manually on the flight deck of commercial aircraft should always be automated in view of various human factors. Issues which require research for resolution were identified. The research questions developed are presented. Previously announced in STAR as N81-16022 (A.R.H.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). Ergonomics (ISSN 0014-0139), vol. 26, Oct. 1983, p. 953-961.

9. BOEHM-DAVIS, D. A.; CURRY, R. E.; WIENER, E. L. (Miami Univ., CoralGables, Fla.); HARRISON, R. L. Human Factors of Flight-deck Automation: NASA/Industry Workshop. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Jan. 1981 26P. Note: Report No.: NASA-TM-81260; A-8432 Language: English Country of Origin: United States Document Type: COLLOQUIA Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8107 The scope of automation, the benefits of automation, and automation-induced problems were discussed at a workshop held to determine whether those functions previously performed manually on the flight deck of commercial aircraft should always be automated in view of various human factors. Issues which require research for resolution were identified. The research questions developed are presented. (A.R.H.) Source of Abstract/Subfile: NASA STIF COSATI Code: 1C Aircraft. Presentation Note: Workshop held at Burlingame, Calif., 17-18 Jul. 1980.

10. Boles, David B.; Wickens, Christopher D. (Rensselaer Polytechnic Inst, NY, US). Display formatting in

information integration and nonintegration tasks. Human Factors; 1987 Aug Vol 29(4) 395-406; 1987; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Investigated (1) whether there was an interaction between pure vs mixed format displays and task demands and (2) whether reaction time (RT) differences existed between analog numerical indicators and verbal or digital indicators, using 2 experiments with a total of 60 undergraduates. Analog, digital, and verbal formats were employed with numerical judgment tasks requiring either the integration or nonintegration of display elements. Results show that integration tasks do not call for mixed-format displays. As predicted by multiple resource theory, the dual task (nonintegration) did benefit from a mixed-format display. Analog indicators were responded to more quickly than were digital or verbal indicators. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

11. Bortolussi, M. R.; Kantowitz, B. H.; Hart, S. G. (Behavioral Ins. for Technology & Science, West Lafayette, IN). Measuring pilot workload in a motion base trainer: A comparison of fourtechniques. Special Issue: Ergonomics in aviation. . Applied Ergonomics; 1986 Dec Vol 17(4) 278-283; 1986; CODEN: AERGBW; ISSN: 00036870. Note: Human. Compared methods of predicting and measuring pilot workload, using 12 malepilots and a GAT-1 trainer. Two scenarios with different levels of difficulty were designed to test a visual 2- and a 4-choice reaction time (RT) task, time production, retrospective multidimensional subjective ratings, and in-flight verbal workload estimates. All 4 techniques were able to distinguish between the overall levels of scenario complexity. Three secondary tasks and workload ratings obtained in-flight were generally able to distinguish among levels of difficulty for different segments within the scenarios. Results show that the insertion of secondary tasks does not significantly affect flight performance. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved) .

12. BORTOLUSSI, MICHAEL R. (Western Aerospace Laboratories, Inc., MoffettField, CA); HART, SANDRA G.; SHIVELY, ROBERT J. (NASA, Ames ResearchCenter, Moffett Field, CA). Measuring moment-to-moment pilot workload using synchronous presentations of secondary tasks in a motion-base trainer. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; 1987. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8817 A simulation was conducted to determine whether the sensitivity of secondary task measures of pilot workload could be improved by synchronizing their presentation to the occurrence of specific events or pilot actions. This synchronous method of presentation was compared to the more typical asynchronous method, where secondary task presentations are independent of pilot's flight-related activities. Twelve pilots flew low- and high-difficulty scenarios in a motion-base trainer with and without concurrent secondary tasks (e.g., choice reaction time and time production). The difficulty of each scenario was manipulated by the addition of 21 flight-related tasks superimposed on a standard approach and landing sequence. The insertion of the secondary tasks did not affect primary flight performance. However, secondary task performance did reflect workload differences between scenarios and among flight segments within scenarios, replicating the results of an earlier study in which the secondary tasks were presented asynchronously (Bortolussi et al., 1986). (Author) Source of Abstract/Subfile: AIAA/TIS. IN: International Symposium on Aviation Psychology, 4th, Columbus, OH, Apr. 27-30, 1987, Proceedings (A88-42927 17-53). Columbus, OH, Ohio State University, 1987, p. 651-657.

13. Bortolussi, Michael R.; Hart, Sandra G.; Shively, Robert J. (Western Aerospace Labs, Moffett Field, CA, US). Measuring moment to moment pilot workload using synchronous presentationsof secondary tasks in a motion based trainer. . Aviation, Space, and Environmental Medicine; 1989 Feb Vol 60(2) 124-129; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. 12 pilots flew low- and high-difficulty scenarios in a motion-base trainer with and without concurrent secondary tasks (e.g., choice reaction time (RT), time production). The difficulty of each scenario was manipulated by the addition of 21 flight-related tasks superimposed on a standard approach and landing sequence. Results indicate that both choice RT and time production secondary tasks can be useful measures of pilot workload. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved) KP: high vs low difficulty scenarios in motion base trainer with vs without concurrent secondary tasks; workload assessed through choice RT & time production; pilots .

14. Braune, Rolf; Wickens, Christopher D. (U Illinois-Willard Airport Inst of Aviation, Aviation Research Lab, Savoy). The functional age profile: An objective decision criterion for the assessment of pilot performance capacities and capabilities. Human Factors; 1985 Dec Vol 27(6) 681-693; 1985; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Developed a computer-based information-processing performance battery with aviation-relevant task structures to assess performance capability within and

across age groups. 60 males (aged 20-60 yrs) completed the test battery; results show a decline in some spatial abilities, dichotic listening, and perceptual-motor coordination across all age groups; a decline in speed beyond age 40 yrs; and no apparent decline in time-sharing or hidden-figures task abilities. (23 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

15. Braune, Rolf; Wickens, Christopher D. (U Illinois Inst of Aviation, Aviation Research Lab, Savoy). Time sharing revisited: Test of a componential model for the assessment of individual differences. Special Issue: Aviation psychology. Ergonomics; 1986 Nov Vol 29(11) 1399-1414; 1986; CODEN: ERGOAX; ISSN: 00140139. Note: Human. Time-sharing ability as an individual differences variable in dual task performance was examined using a componential model. Five proposed components were assessed: (1) serial processing ability, (2) an internal model of the system dynamics, (3) performing heterogeneous operations, (4) adaptation to rapidly changing dynamic conditions, and (5) parallel processing ability. The approach combined methodologies from experimental psychology and from individual differences research. 40 20-31 yr old males were given 4 single task pretests and performed a compensatory tracking task in dual task combinations administered during 6 sessions over a period of 3 days. Results of a factor analysis and a series of stepwise multiple-regression analyses revealed 2 important dimensions of individual differences in dual task performance: (1) individual differences in cognitive style linked to the concept of field dependence-independence and (2) individual differences in time-sharing ability. The individual differences in cognitive style were identified by the 1st derived factor. Based on the results, the concept of a process-specific time-sharing ability is introduced. (French & German abstracts) (32 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

16. Carswell, C. Melody; Wickens, Christopher D. (U Illinois, Champaign). Information integration and the object display: An interaction of task demands and display superiority. Ergonomics; 1987 Mar Vol 30(3) 511-527; 1987; CODEN: ERGOAX; ISSN: 00140139. Note: Human. Compared 2 graphical display formats, using 2 tasks, varying in their demands to integrate multiple information sources. An object display utilized different dimensions of a single perceptual object to display task-relevant information. A contrasting bar graph technique used the same dimension of separate objects to present identical information. In Exp I, 24 Ss (aged 18-30 yrs) used both displays to perform a simulated process control task in which integration of information from several time-varying sources was required. In Exp II, 20 additional Ss (aged 18-26 yrs) used both displays in a nonintegration task that required monitoring for particular values of 6 independent system outputs. Results of the integration experiment reveal that performance was superior when the object display was used. In the nonintegration [illegible] the bar graphs provided more efficient performance. (French, German & Japanese abstracts) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

17. Carswell, C. Melody; Wickens, Christopher D. (U Illinois, Champaign). Lateral task segregation and the task hemispheric integrity effect. Human Factors; 1985 Dec Vol 27(6) 695-700; 1985; CODEN: HUFAA6; ISSN: 00187208. Note: Human. The task-hemispheric integrity effect (THIE) refers to the high time-sharing efficiency obtained for the concurrent performance of a verbal and spatial task when the spatial task is displayed to the left of the operator's midline and is controlled by the left hand and the verbal components are located in the operator's right. Two experiments designed to test the contribution of lateral display or control separation to the THIE were conducted with 16 right-handed males. Results show that reduction of display separation reduced the effects associated with hemispheric compatibility and that allocation of both controls to the same hand eliminated these effects. It is suggested that the THIE (1) is a dominant factor in performance only when the components of the 2 tasks can be laterally segregated at all stages of information processing, (2) describes the superiority of hand and visual field only in the dual-task case, and (3) is a less potent determinant of performance than spatial stimulus-response compatibility. (8 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

18. CASPER, PATRICIA A. (Purdue University, West Lafayette, IN); SHIVELY, ROBERT, J.; HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). Decision support for workload assessment - Introducing WC FIELDE. Purdue Univ., West Lafayette, Ind: 1987 10 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8814 Currently there is a great demand for mental workload evaluation in the course of system design and modification. In light of this demand, a microprocessor-based decision support system has been created called WC FIELDE: Workload Consultant for FIELD Evaluation. The system helps the user select workload measures appropriate to his or her application from the large pool of currently available techniques. Both novices

and those with some workload experience may benefit from using WC FIELDE, since the system's operation is entirely transparent and all rules involved in the decision process are available for the user to examine. WC FIELDE recommends several assessment methodologies in decreasing order of appropriateness, and provides additional information on each measure at the end of the program in the form of text files. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Human Factors Society, Annual Meeting, 31st, New York, NY, Oct. 19-23, 1987, Proceedings. Volume 1 (A88-35401 14-54). Santa Monica, CA, Human Factors Society, 1987, p. 72-76.

19. CHARNY, LEONID; HORNSBY, MARY E.; SHERIDAN, THOMAS B. (MIT, Cambridge, MA). An interactive multi-objective decision-aiding system for tactical mission planning. IN: Human Factors Society, Annual Meeting, 31st, New York, NY, Oct. 19-23, 1987, Proceedings. Volume 1 (A88-35401 14-54). Santa Monica, CA, Human Factors Society, 1987, p. 432-436; 1987 9 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Journal Announcement: IAA8814 This paper describes an interactive computer-aiding system for tactical aircraft mission planning. A Multiple-Objective Decision-Making approach has been applied to the tactical mission planning domain. The planner specifies a set of potential flight routes and selects an optimum one as the result of a human-computer dialogue. In this dialogue, the planner iteratively specifies acceptable constraints and desired weights on several mission-related decision objectives. The system provides graphic feedback about the merit of the selected route vis a vis the specified objectives, and allows the planner to tailor the mission route plan to meet explicit decision objectives. (Author) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

20. CHARNY, LEONID; SHERIDAN, THOMAS B. Satisficing decision-making in supervisory control, part 2 Final Report, Mar. 1983 - Jul. 1986. Massachusetts Inst. of Tech., Cambridge. Man-Machine Systems Lab; Jul. 1986 59P. Note: Report No.: AD-A174631 Contract No.: N00014-83-K-0193 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A04/MF A01 Journal Announcement: STAR8712 This paper describes a flexible graphics system GraMAD for aiding a human decision-maker in making a selection out of a discrete set of alternatives while trading off several criteria. Three major components of this selection process, called satisficing, are identified and three modes of information presentation to the decision-maker are studied. Necessary elements of multiple-objective computer aiding systems are discussed. Results of experiments with human subjects working with the GraMAD system are discussed. (GRA) Source of Abstract/Subfile: DTIC COSATI Code: 5A Administration & Management.

21. CHIDESTER, THOMAS R.; KANKI, BARBARA G. (NASA, Ames Research Center, Moffett, Field, CA); HELMREICH, ROBERT L. (Texas, University, Austin). Performance evaluation in full-mission simulation - Methodological advances and research challenges (in air transport operations). National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; 1989 14 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA9010 The crew-factors research program at NASA Ames has developed a methodology for studying the impact of a variety of variables on the effectiveness of crews flying realistic but high workload simulated trips. The validity of investigations using the methodology is enhanced by careful design of full-mission scenarios, performance assessment using converging sources of data, and recruitment of representative subjects. Recently, portions of this methodology have been adapted for use in assessing the effectiveness of crew coordination among participants in line-oriented flight training. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: International Symposium on Aviation Psychology, 5th, Columbus, OH, Apr. 17-20, 1989, Proceedings. Volume 1 (A90-26176 10-53). Columbus, OH, Ohio State University, 1989, p. 15-21.

22. Collins, Allan; Adams, Marilyn J.; Pew, Richard W. (Bolt Beranek & Newman, Cambridge, MA). Effectiveness of an interactive map display in tutoring geography. Journal of Educational Psychology; 1978 Feb Vol 70(1) 1-7; 1978; CODEN: JLEPAX; ISSN: 00220663. Note: Human. Evaluated the teaching effectiveness of different aspects of the SCHOLARcomputer-assisted instruction system. The experiment compared how well students learn using SCHOLAR with (a) the interactive map display of Map-SCHOLAR, (b) a static labeled map, and (c) an unlabeled map. The 9 high school and 9 college student Ss learned significantly more with the interactive map display than with either the labeled map or the unlabeled map. A new method called backtrace analysis was used to assess the effectiveness of specific aspects of the tutoring strategy and the map system used in the experiment. (PsycLIT Database Copyright 1979 American Psychological Assn, all rights reserved).

23. Diaz, Loving, Rolando; Diaz, Guerrero, Rogelio; Helmreich, Robert L. Spence, Janet T. IN: U. Texas,

Ag***n. Comparacion transcultural y analisis psicometrico de una medida de rasgosmasculinos (instrumentales) y femininos (expresivos). (Cross cultural comparison and psychometric analysis of masculine (instrumental) and feminine (expressive) traits.) . Revista de la Asociacion Latinoamericana de Psicologia Social; 1981 Jan-Jun Vol 1(1) 3-37 ; 1981. Note: Human. 594 Mexican and 2,310 North American students, aged 16-25 yrs, wereadministered the Personal Attitude Questionnaire and the Bem Sex-Role Inventory. In both sample populations, females tended to score much higher on F+ traits (those that are especially socially desirable for women), while males tended to score considerably higher on M+ traits (i.e., those that are especially socially desirable for males). Evaluation of the masculine-feminine (M-F) traits, however, showed that Mexican males scored significantly lower on such items as "never cries" and "does not feel hurt easily" than all female Ss or American male Ss. The median scores from both US sexes were significantly below the *median* scores of the Mexican sample. Findings indicate that M-F traits as previously reported by US investigators are also applicable to Mexican sample, even though sex-role differences seem to be more pronounced in traditional Mexican society. (26 ref) (PsycLIT Database Copyright 1982 American Psychological Assn, all rights reserved) .

24. Doerr, Bridget T.; Hutchins, Edwin B. (U Pennsylvania, School of Nursing, Philadelphia). Health risk appraisal: Process, problems, and prospects for nursing practice and research. . Nursing Research; 1981 Sep-Oct Vol 30(5) 299-306; 1981. Note: Human. Reviews studies of the technical characteristics of health-risk appraisalinstruments and of their utility as motivators for behavioral change conducive to positive health. An example is described of an intake instrument that processes information about life-style, family history, and certain physical measures to produce the client's risk age (which may be higher or lower than CA), the age that could be achieved through changes in life-style, and health hazards facing the client. (35 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved)

25. DONCHIN, EMANUEL (Illinois Univ., Urbana-Champaign.); HART, SANDRA G. HARTZELL, EARL J. Workshop on Workload and Training, and Examination of their Interactions: Executive summary. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Jul. 1987 40P. Note: Report No.: NASA-TM-89459; A-87212; NAS 1.15:89459 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8719 The goal of the workshop was to bring together experts in the fields of workload and training and representatives from the Dept. of Defense and industrial organizations who are reponsible for specifying, building, and managing advanced, complex systems. The challenging environments and requirements imposed by military helicopter missions and space station operations were presented as the focus for the panel discussions. The workshop permitted a detailed examination of the theoretical foundations of the fields of training and workload, as well as their practical applications. Furthermore, it created a forum where government, industry, and academic experts were able to examine each other's concepts, values, and goals. The discussions pointed out the necessity for a more efficient and effective flow of information among the groups respresented. The executive summary describes the rationale of the meeting, summarizes the primary points of discussion, and lists the participants and some of their summary comments. (Author) Source of Abstract/Subfile: NASA STIF COSATI Code: 5H Man-machine Relations. Presentation Note: Workshop held in Carmel, Calif., 5-10 Jan. 1986.

26. DUFFENDACK, J. C. /MICHIGAN, U., DEPT. OF AEROSPACE ENGINEERING AND DEPTOF, PSYCHOLOGY, HUMAN PERFORMANCE CENTER, ANN ARBOR, MICH./; FENSCH, L. K. /MICHIGAN, U., DEPT. OF PSYCHOLOGY, HUMAN PERFORMANCE CENTER, ANN ARBOR, MICH./; PEW, R. W. Sine-wave tracking revisited. (Sine wave tracking, studying operator manual control performance). IEEE TRANSACTIONS ON HUMAN FACTORS IN ELECTRONICS, VOL. HFE-8, JUN. 1967, P. 130-134. 9 REFS; Jun. 1967. Note: Contract No.: NASR-54/06/; NGR-23-005-906 Language: English Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA6717 Source of Abstract/Subfile: AIAA/TIS.

27. DUFFENDACK, J. C.; FENSCH, L. K.; PEW, R. W. Summary of sine-wave tracking studies (Sine-wave tracking studies indicate predictability of input and control device dynamics in manual control by human operator). Michigan Univ., Ann Arbor; 1966. Note: Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Journal Announcement: STAR6706. IN NASA, WASHINGTON MANUAL CONTROL 1966 P 15-24 REPS /SEE N67-15850 06-05/ GPO- HC $2.50, CFSTI- MF $0.65.

28. Erwin, C. W.; Wiener, E. L.; Linnoila, M. I.; Truscott, T. R. Alcohol induced drowsiness and vigilance

performance. Journal of Studies on Alcohol; 1978 Mar Vol 39(3) 505-516; 1978; CODEN: JSALDP; ISSN: 0096882X. Note: Human. Visual vigilance was tested in 8 men and 7 women social drinkers (age 21-26yrs) after they drank 0, 0.5, 0.8, and 1.2 g of 95% alcohol per kg of body weight. The mean blood alcohol concentrations before the task were 0.0362, 0.070, and 0.102%. Ss viewed pseudo-randomly presented signal lights embedded in nonresponse stimuli occurring at 1-sec intervals in an oscilloscope for 30 min. The percentage of correct keypress responses was significantly lower after the high dose of alcohol, and the response time was significantly longer. Deterioration in performance was also related to time at the task but there were no significant interactions with the alcohol effect. Men consistently detected more signals than women; the 2-way ANOVA indicated significant main effects for alcohol and sex but no interaction. Eyelid position was continuously monitored; overall, 66% of the misses occurred with the eyes open, 26% with the eyes closed longer than 1 sec, and 8.3% from eyeblinks (less than 1 sec). Alcohol had the greatest effect on eyelid-closed misses; the effect increased linearly with the dose. (PsycLIT Database Copyright 1979 American Psychological Assn, all rights reserved).

29. (NASA-Ames Research Ctr, Moffett Field US Naval Air Station, CA). Evaluation of the potential format and content of a cockpit display of traffic information. AU: Hart, Sandra G.; Loomis, Lee L. Human Factors; 1980 Oct Vol 22(5) 591-604; 1980; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Results from 3 experiments with 51 airplane pilots indicate several display features (e.g., flightpath predictors) that might contribute to a pilot's ability to perceive the traffic situation correctly. Also provided is information about the impact of different aspects of the geometry of an encounter between 2 aircraft targets on an observer's ability to evaluate the horizontal and vertical relationship between them. (5 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved).

30. FADDEN, D. M.; WEENER, E. F. (Boeing Commercial Airplane Co., Seattle, Wash.). Computer generated displays and pilot effectiveness. In: International Air Transportation Conference, New Orleans, La., April 30-May 3, 1979, Proceedings. Volume 2. (A81-18051 06-01) New York, American Society of Civil Engineers, 1979, p. 553-561; 1979. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Journal Announcement: IAA8106 On-board digital computers and electronic display equipment for 757 and 767 aircraft permit almost any reasonable format or presentation and computation of flight parameters previously unavailable for display. Previous computer display programs have indicated the necessity of dynamic simulation to maximize display effectiveness; optimization in the format of information displays can reduce the mental calculations by the pilot, allowing more time for managing the flight. The pilot panel mockup, pilot adaptation enhancement, and the duties of the pilot as the flight manager are outlined, concluding that the new computer displays will allow the pilot to operate more accurately and efficiently. (A.T.) Source of Abstract/Subfile: AIAA/TIS.

31. FOUSHEE, H. CLAYTON (NASA, Ames Research Center, Moffett Field, CA)HELMREICH, ROBERT L. (Texas, University, Austin). Group interaction and flight crew performance. National Aeronautics and Space Administration, Ames Research Center, Moffett Field, CA; 1988 36 Refs. Note: Language: English Country of Origin: United States Document Type: ANALYTIC OF COLLECTED WORK Documents available from AIAA Technical Library Journal Announcement: IAA8914 The application of human-factors analysis to the performance of aircraft-operation tasks by the crew as a group is discussed in an introductory review and illustrated with anecdotal material. Topics addressed include the function of a group in the operational environment, the classification of group performance factors (input, process, and output parameters), input variables and the flight crew process, and the effect of process variables on performance. Consideration is given to aviation safety issues, techniques for altering group norms, ways of increasing crew effort and coordination, and the optimization of group composition. (T.K.) Source of Abstract/Subfile: AIAA/TIS. IN: Human factors in aviation (A89-34431 14-54). San Diego, CA, Academic Press, Inc., 1988, p. 189-227.

32. Foushee, H. Clayton; Helmreich, Robert L.; Spence, Janet T. (U Texas, Austin). Implicit theories of masculinity and femininity: Dualistic or bipolar? Psychology of Women Quarterly; 1979 Spr Vol 3(3) 259-269; 1979; CODEN: PWQQDY; ISSN: 03616843. Note: Human. Investigated whether persons' implicit personality theories include the notion that masculine and feminine characteristics tend to preclude each other so that the 2 clusters of attributes are perceived to be negatively correlated. 124 female and 120 male undergraduates were given 1 of 4 basic descriptions of a group of men or women. These descriptions specified the presence or absence of "masculine" or "feminine" attributes as defined by the Personal Attributes Questionnaire. Ss given descriptions specifying the presence or absence of "masculine" characteristics were asked the extent to which they could make inferences about the presence or absence of "feminine" characteristics. An analogous procedure was implemented for the descriptions

specifying the presence or absence of " feminine" characteristics. Results confirm the hypothesis that individuals tend to perceive a negative relationship between masculinity and femininity in others. (11 ref) (PsycLIT Database Copyright 1980 American Psychological Assn, all rights reserved) KP: implicit personality theories; perception of relationship between masculinity & femininity in others; male vs female college students .

33. Fracker, Martin L.; Wickens, Christopher D. (Armstrong Aerospace Medical Research Lab, Wright-Patterson US Air Force Base, OH, US). Resources, confusions, and compatibility in dual axis tracking: Displays, controls, and dynamics. Journal of Experimental Psychology Human Perception and Performance; 1989 Feb Vol 15(1) 80-96; 1989; CODEN: JPHPDH; ISSN: 00961523. Note: Human. Why do people often find that performing two tasks at once is harder than performing one task at a time? Three mechanisms of task interference that might answer that question were investigated: resource competition, confusions, and incompatible task proximity between processing stages. The subjects performed dual-axis compensatory tracking with error displays that were either integrated or separated, with axis controls that either were integrated into one stick or remained separate, and with control dynamics on the two axes that were either the same or different. Tracking error increased and control activity decreased as a function of the combined difficulty of the two control dynamics. Integrated displays and integrated controls both led to increased confusions between tracking axes although error was not reliably affected. Significantly, performance was also affected by whether the integrality of displays matched that of controls. These results suggest that resource competition, confusions, and compatibility of proximity play distinct roles in dual-axis tracking performance. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

34. GANDER, P. H.; KRONAUER, R. E.; GRAEBER, R. C. (NASA, Ames ResearchCenter, Moffett Field, CA; Harvard, University, Cambridge, MA). Phase shifting two coupled circadian pacemakers - Implications for jet lag. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; 1985 19 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8619 Two Van der Pol oscillators with reciprocal linear velocity coupling are utilized to model the response of the human circadian timing system to abrupt displacements of the environmental time cues (zeitgebers). The core temperature rhythm and sleep-wake cycle simulated by the model are examined. The relationship between the entraining of circadian rhythms by environmental variables and behavioral and physiological events and the rates of resynchronization is studied. The effects of zeitgeber phase shifts and zeitgeber strength on the resynchronization rates are analyzed. The influence of intrinsic pacemaker periods and coupling strength on resynchronization are investigated. The simulated data reveal that: resynchronization after a time zone shift depends on the magnitude of the shift; the time of day of the shift has little influence on resynchronization; the strength of zeitgebers affects the rate and direction of the resynchronization; the intrinsic pacemaker periods have a significant effect on resynchronization; and increasing the coupling between the oscillators results in an increase in the rate of resynchronization. The model data are compared to transmeridian flight studies data and similar resynchronization patterns are observed. (I.F.) Source of Abstract/Subfile: AIAA/TIS. American Journal of Physiology: Regulatory, Integrative and Comparative Physiology (ISSN 0363-6119), no. 249, 1985, p. R709-R719.

35. GANDER, P. H.; MYHRE, G.; GRAEBER, R. C.; ANDERSEN, H. T.; LAUBER, J. K. Effects of 9-hour time zone changes on fatigue and circadian rhythms of sleep/wake and core temperature. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Dec. 1985 38P. Note: Report No.: NASA-TM-88197; A-86057; NAS 1.15:88197 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8607 Physiological and psychological disruptions caused by transmeridian flights may affect the ability of flight crews to meet operational demands. To study these effects, 9 Royal Norwegian Airforces P3-Orion crewmembers flew from Norway to California (-9 hr), and back (+9 hr). Rectal temperature, heart rate and wrist activity were recorded every 2 min, fatigue and mood were rated every 2 hr during the waking day, and logs were kept of sleep times and ratings. Subjects also completed 4 personality inventories. The time-zone shifts produced negative changes in mood which persisted longer after westward flights. Sleep quality (subjective and objective) and duration were slightly disrupted (more after eastward flights). The circadian rhythms of sleep/wake and temperature both completed the 9-hr delay by day 5 in California, although temperature adjusted more slowly. The size of the delay shift was significantly correlated with scores on extroversion and achievement need personality scales. Response to the 9-hr advance were more

variable. One subject exhibited a 15-hr delay in his temperature rhythm, and an atypical sleep/nap pattern. On average, the sleep/wake cycle (but not the temperature rhythm), completed the 9-hr advance by the end of the study. Both rhythms adapted more slowly after the eastward flight. (Author) COSATI Code: 6S Stress Physiology.

36. GANDER, PHILIPPA H.; CONNELL, LINDA J.; GRAEBER, R. CURTIS (NASA, AmesResearch, Center, Moffett Field, CA). Masking of the circadian rhythms of heart rate and core temperature by the rest-activity cycle in man. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif. 1986 14 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8710 Experiments were conducted to estimate the magnitude of the masking effect produced in humans by alternate periods of physical activity and rest or sleep on the circadian rhythms of heart rate and core temperature. The heart rate, rectal temperature, and nondominant wrist activity were monitored in 12 male subjects during 6 days of normal routine at home and during 6 days of controlled bed-rest regimen. The comparisons of averaged waveforms for the activity, heart rate, and temperature indicated that about 45 percent of the range of the circadian heart rate rhythm during normal routine and about 14 percent of the range of the circadian temperature rhythm were attributable to the effects of activity. The smaller effect of activity on the temperature rhythm may be partially attributable to the fact that core temperature is being more rigorously conserved than heart rate, at least during moderate exercise. (I.S.) Source of Abstract/Subfile: AIAA/TIB. Journal of Biological Rhythms, vol. 1, no. 2, 1986, p. 119-135.

37. Gander, Philippa H.; Graeber, R. Curtis (NASA Ames Research Ctr, Moffett Field, CA, US). Sleep in pilots flying short haul commercial schedules. 2nd CEC Workshop-Irregular and abnormal hours of work (1987, Brighton, England). . Ergonomics; 1987 Sep Vol 30(9) 1365-1377; 1987; CODEN: ERGOAX; ISSN: 00140139. Note: Human. In 74 pilots monitored before, during, and after 3- or 4-day duty schedules, Ss fell asleep later and woke up earlier on trip nights. Timing and duration of sleep were strongly correlated with timing and duration of the time available for sleep. Sleep quality was most consistently related to the number of segments flown in the preceding duty day rather than the duration of the duty day. Sleep was generally better after days with more flight segments, unless long duty days encroached on the time available for sleep. There was evidence of recuperation after a trip, when the duration of sleep was longest, the time taken to fall asleep was shortest, sleep ratings were highest, and napping was most common. (French, German & Japanese abstracts) (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved) KP: number of flights & hours of duty & between duty days; sleep patterns & quality before vs during vs after 3-4 day duty schedules; commercial pilots on short haul schedules; conference presentation.

38. Gander, Philippa H.; Myhre, Grete; Graeber, R. Curtis; Andersen, Harald T.; Et, Al IN: NASA Ames Research Ctr, Aviation Systems Research Branch, Moffett FieID, CA, US. Adjustment of sleep and the circadian temperature rhythm after flights across nine time zones. . Aviation, Space, and Environmental Medicine; 1989 Aug Vol 60(8) 733-743; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Adjustment of sleep-wake patterns and circadian temperature rhythm wasmonitored in 9 Royal Norwegian Air Force volunteers during a westward training deployment across 9 time zones. Ss recorded all sleep times, rated sleep quality, and completed personality inventories. Rectal temperature, heart rate, and wrist activity were continuously monitored. Adjustment was slower after the return eastward flight than after the outbound westward flight. Interindividual differences in adjustment of the temperature rhythm were correlated with some of the personality measures. Larger phase delays in the overall temperature waveform (as measured on the 5th day after westward flight) were exhibited by extraverts, and less consistently by evening types. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

39. GANDER, PHILIPPA H.; MYHRE, GRETE; GRAEBER, R. CURTIS; LAUBER, JOHN K. (NASA, Ames Research Center, Moffett Field, CA); ANDERSEN, HARALD T. (RoyalNorwegian, Air Force, Institute of Aviation Medicine, Oslo, Norway). Adjustment of sleep and the circadian temperature rhythm after flights across nine time zones. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; Aug. 1989 28 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8921 The adjustment of sleep-wake patterns and the circadian temperature rhythm was monitored in nine Royal Norwegian Airforce volunteers operating P-3 aircraft during a westward training deployment across nine time zones. Subjects recorded all sleep and nap times, rated nightly sleep quality, and completed personality inventories. Rectal temperature, heart rate, and wrist activity were

continuously monitored. Adjustment was slower after the return eastward flight than after the outbound westward flight. The eastward flight produced slower readjustment of sleep timing to local time and greater interindividual variability in the patterns of adjustment of sleep and temperature. One subject apparently exhibited resynchronization by partition, with the temperature rhythm undergoing the reciprocal 15-h delay. In contrast, average heart rates during sleep were significantly elevated only after westward flight. Interindividual differences in adjustment of the temperature rhythm were correlated with some of the personality measures. Larger phase delays in the overall temperature waveform (as measured on the 5th day after westward flight) were exhibited by extraverts, and less consistently by evening types. (Author) Source of Abstract/Subfile: AIAA/TIS. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 60, Aug. 1989, p. 733-743.

40. GRAEBER, R. C. Crew factors in flight operations. Part 4: Sleep and wakefulness in international aircrews. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Feb. 1986 113P. Note: Report No.: NASA-TM-88231; A-86182; NAS 1.15:88231 Contract No.: NCC2-302 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A06/MF A01 Journal Announcement: STAR8619 Physiological recordings of sleep and wakefulness in operating international (B-747) flight crews were obtained. Crews spent their first layover (48 h) of a trip in a sleep laboratory where standardized EEG, electro-oculograph (EOC), and electromyograph (EMG) sleep recordings were carried out whenever volunteers chose to sleep. During periods of wakefulness they underwent multiple sleep latency tests every 2 h in order to assess daytime drowsiness. The same standardized recordings were carried out at a home-based laboratory before departure. Approximately four crews each participated in flights over 7 to 9 time zones on five routes. All participants were encouraged to use whatever sleep-wake strategies they thought would provide them with the most satisfactory crew rest. Overall, layover sleep quality was not seriously disturbed, but eastward flights produced greater sleep disruption. The contributors of individual factors and the usefulness of various sleep strategies are discussed in the individual laboratory reports and in an operational summary. (Author) COSATI Code: 6P Physiology.

41. GRAEBER, R. C.; CUTHBERT, B. N.; SING, H. C.; SCHNEIDER, R. J.; SESSIONS, G. R. Rapid transmeridian deployment: Cognitive performance and chronobiologic prophylaxis for circadian dysfunction. Walter Reed Army Inst. of Research, Washington, D.C; Jun. 1980 15P. Note: Report No.: AD-A090393 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A02/MF A01 Journal Announcement: STAR8103 Rapid deployment of combat units to overseas locations is a primary concern of today's strategic planners. Such movements require the airlifting of units across multiple time zones. Numerous studies have documented the adverse physiological and behavioral consequences accompanying the rapid crossing of three or more time zones. These effects result from the requirement that the body must adjust its circadian rhythms to the new local time. Under normal conditions, these daily cycles are synchronized by the external Zeitgebers (i.e., time-givers) of the local environment. The sudden shifting of these Zeitgebers causes the shifting at different rates of the body's physiological, biochemical, and behavioral rhythms. While some circadian rhythms adjust quite rapidly, others adjust very slowly. Consequently, the passenger's circadian system is not only out of synchrony with the environment but is also internally desynchronized. It is the latter condition, circadian dyschronism, which is particularly responsible for the fatigue and malaise typically reported as 'jet lag' during the first several days following rapid transmeridian flight. (GRA) Source of Abstract/Subfile: DTIC COSATI Code: 6S Stress Physiology.

42. Graeber, R. Curtis; Dement, William C.; Nicholson, Anthony N.; Sasaki, Mitsuo; Et. Al (NASA-Ames Research Ctr, Aeronautical Human Factors Research Office,Moffett Field, CA). International cooperative study of aircrew layover sleep: Operational summary. Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect II) 10-13 ; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. In a study of layover sleep, it was found that eastward flight produced moresleep disruption than westward. Different sleep and scheduling strategies are recommended for each flight direction, and the importance of individual crewmember factors is discussed in relation to age and circadian type. (3 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved) KP: eastward vs westward flight & work scheduling; sleep disruption; aircraft crew members .

43. Graeber, R. Curtis; Lauber, John K.; Connell, Linda J. Gander, Philippe H. (NASA-Ames Research Ctr, Aeronautical Human FactorsResearch Office, Moffett Field, CA). International aircrew sleep and wakefulness after multiple time zone flights: A cooperative study. . Aviation, Space, and Environmental

Medicine; 1986 Dec Vol 57(12, Sect II) 3-9 ; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Provides an overview of an international EEG study of sleep and wakefulnessin flight crews operating long-haul routes across 7 or 8 time zones, using 56 crewmembers (aged 31-61 yrs). The study's history, research design, and standardization of procedures are discussed. The overall results are consistent among 4 participating laboratories and support the feasibility of cooperative international sleep research in the operational arena. (15 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

44. GRAEBER, R. CURTIS; LAUBER, JOHN K.; CONNELL, LINDA J.; GANDER, PHILIPPAH. (NASA, Ames Research Center, Moffett Field, CA). International aircrew sleep and wakefulness after multiple time zone flights - A cooperative study. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Dec. 1986 15 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8710 An international research team has carried out an electroencephalographic study of sleep and wakefulness in flight crews operating long-haul routes across seven or eight time zones. Following baseline recordings, volunteer crews (n = 56) from four airlines spent their first outbound layover at a sleep laboratory. This paper provides an overview of the project's history, its research design, and the standardization of procedures. The overall results are remarkably consistent among the four participating laboratories and strongly support the feasibility of cooperative international sleep research in the operational arena. (Author) Source of Abstract/Subfile: AIAA/TIS. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 57, Dec. 1986, p. B3-B9.

45. GRAEBER, R. CURTIS (NASA, Ames Research Center, Moffet Field, CA)DEMENT, WILLIAM C. (Stanford University, CA); NICHOLSON, ANTHONY N. (RAF, Institute, of Aviation Medicine, Farnborough, England); SASAKI, MITSUO(Japan, Air Lines, Co., Ltd., Flight Crew Medical Dept., Tokyo); WEGMANN, HANS, M. (DFVLR, Institut fuer Flugmedizin, Cologne, West Germany). International cooperative study of aircrew layover sleep Operational summary. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Cal.; Dec. 1986. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8710 The findings of this cooperative study of layover sleep have direct implications for flight operations. In the consensus view of the principal investigators, these can be divided into their relevance for eastward or westward flight. Eastward flight produced more sleep disruption than westward. Different sleep and scheduling strategies are recommended for each flight direction, and the importance of individual crewmember factors is discussed in relation to age and circadian type. Despite the limitations of this study with regard to trip simplicity and the baseline data, the results for each airline are highly consistent and should be applicable to a wide range of long-haul crewmembers and carriers. (Author) Source of Abstract/Subfile: AIAA/TIS. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 57, Dec. 1986, p. B10-B13.

46. GRAEBER, R. CURTIS (NASA, Ames Research Center, Moffett Field, CA; U.SArmy, Medical Service Corps, Washington, DC). Aircrew fatigue and circadian rhythmicity. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; 1988 46 Refs. Note: Language: English Country of Origin: United States Document Type: ANALYTIC OF COLLECTED WORK Documents available from AIAA Technical Library Journal Announcement: IAA8914 Recent statistical and experimental studies on the role of circadian rhythms in aircrew fatigue and aviation accidents are reviewed from a human-factors perspective, and typical data are presented in extensive graphs. Consideration is given to the biological clock and the limits of endurance, circadian desynchronization, sleep and sleepiness, short-haul and long-haul operational studies, and the potential advantages of cockpit automation. (T.K.) Source of Abstract/Subfile: AIAA/TIS. IN: Human factors in aviation (A89-34431 14-54). San Diego, CA, Academic Press, Inc., 1988, p. 305-344.

47. Green, Paul; Pew, Richard W. (U Michigan Human Performance Ctr). Evaluating pictographic symbols: An automotive application. Human Factors; 1978 Feb Vol 20(1) 103-114; 1978; CODEN: HUFAA6; ISSN: 00187208. Note: Human. 50 university students participated in a laboratory experiment which examined 19 pictographic symbols previously used or proposed for labeling automobile controls and displays. Association norms, measures of familiarity, and magnitude estimates of the symbols' communicativeness were collected. 20 Ss also participated in a paired-associate learning task and a 2-alternative, forced-choice reaction-time (RT) task in which they made same-different judgments in response to verbally presented symbol labels followed by visually presented pictograms. It was found that, in general, the relative order of merit for the individual symbols was not consistent across tasks.

Specifically, ratings of communicativeness were well correlated with associative strength and to a lesser extent with RT, but associative strength was only weakly correlated with RT. Ease of learning was found to be an independent measure. (26 ref) (PsycLIT Database Copyright 1979 American Psychological Assn, all rights reserved).

48. GREGORICH, STEVE; HELMREICH, ROBERT L.; WILHELM, JOHN A. (Texas, University, Austin); CHIDESTER, THOMAS (NASA, Ames Research Center, MoffettField, CA). Personality based clusters as predictors of aviator attitudes and performance. Texas Univ., Austin; 1989 16 Refs. Note: Contract No.: NCC2-286 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA9010 The feasibility of identification of personality-based population clusters was investigated along with the relationships of these subpopulations to relevant attitude and performance measures. The results of instrumental and expressive personality tests, using the Personal Characteristics Inventory (PCI) test battery and the Cockpit Management Attitudes Questionnaire, suggest that theoretically meaningful subpopulations exist among aviators, and that these groupings are useful in understanding of personality factors acting as moderator variables in the determination of aviator attitudes and performance. Out of the three clusters most easily described in terms of their relative elevations on the PCI subscales ('the right stuff', the 'wrong stuff', and the 'no stuff'), the members of the right stuff cluster tended to have more desirable patterns of responses along relevant attitudinal dimensions. (I.S.) Source of Abstract/Subfile: AIAA/TIS. IN: International Symposium on Aviation Psychology, 5th, Columbus, OH, Apr. 17-20, 1989, Proceedings. Volume 2 (A90-26176 10-53). Columbus, OH, Ohio State University, 1989, p. 686-691.

49. GRIGNETTI, M. C.; MILLER, D. C.; NICKERSON, R. S.; PEW, R. W. Information processing models and computer aids for human performance. Task 2: Human-computer interaction models (Queueing theory model of dynamic human behavior in time sharing computer system) Semiannual Technical Report, 1 Jan. - 30 Jun. 1971. Bolt, Beranek, and Newman, Inc., Cambridge, Mass; Jun. 1971 104P. Note: Report No.: AD-732913; BBN-2190; AFOSR-71-2845TR; SATR-1 Contract No.: F44620-71-C-0065; ARPA ORDER 890 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR7208 A measuring system was implemented to obtain the statistical parameters necessary to specify a queueing theory model of the dynamic behavior of a state-of-the-art time-shared computer system, and present results on the statistics of usage of one such computer system. A methodology is presented for the performance of experiments involving human users and for the interpretation of their results. It is expected that these results will yield predictive models for the overall efficiency of the users-computer system under various circumstances. (Author (GRA)) Source of Abstract/Subfile: DTIC COSATI Code: 9B Computers.

50. Haiff, Henry M.; Hollan, James D.; Hutchins, Edwin L. (Haiff Resources Inc, Arlington, VA). Cognitive science and military training. Special Issue: Psychological science and education. . American Psychologist; 1986 Oct Vol 41(10) 1131-1139; 1986; CODEN: AMPSAB; ISSN: 0003066X. Note: Human. Discusses how the massive scale and diversity of training needs in the military render it an enterprise that offers extensive opportunity for the application of cognitive science. Training in maintenance, in tactics, and in piloting or control of aircraft present several issues of interest to cognitive scientists. Four recently developed military training systems illustrate the potential for cognitive science to improve military training. These systems include a family of memorization games based on semantic networks; a simulator for steam propulsion plants with a graphic, schematic student interface; a system for training in problems of relative motion that provides explicit representations of spatial concepts and problem-solv.ng procedures; and a method of building a new cognitive skill for air-intercept control based on principles for the development of automaticity. These systems illustrate the importance of making relevant knowledge concrete and explicit, of using problem-solving contexts for instruction in basic principles, and of careful management of information processing during learning. (28 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

51. HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). Crew workload-management strategies - A critical factor in system performance. National Aeronautics and Space Administration, Ames Research Center, Moffett Field, CA; 1989. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA9010 This paper reviews the philosophy and goals of the NASA/USAF Strategic Behavior/Workload Management Program. The philosophical foundation of the program is

based on the assumption that an improved understanding of pilot strategies will clarify the complex and inconsistent relationships observed among objective task demands and measures of system performance and pilot workload. The goals are to: (1) develop operationally relevant figures of merit for performance, (2) quantify the effects of strategic behaviors on system performance and pilot workload, (3) identify evaluation criteria for workload measures, and (4) develop methods of improving pilots' abilities to manage workload extremes. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: International Symposium on Aviation Psychology, 5th, Columbus, OH, Apr. 17-20, 1989, Proceedings. Volume 1 (A90-26176 10-53). Columbus, OH, Ohio State University, 1989, p. 22-27.

52. HART, SANDRA G. Crew workload strategies in advanced cockpits. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; Oct. 1990. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC/MF A12 Journal Announcement: STAR9102 Many methods of measuring and predicting operator workload have been developed that provide useful information in the design, evaluation, and operation of complex systems and which aid in developing models of human attention and performance. However, the relationships between such measures, imposed task demands, and measures of performance remain complex and even contradictory. It appears that we have ignored an important factor: people do not passively translate task demands into performance. Rather, they actively manage their time, resources, and effort to achieve an acceptable level of performance while maintaining a comfortable level of workload. While such adaptive, creative, and strategic behaviors are the primary reason that human operators remain an essential component of all advanced man-machine systems, they also result in individual differences in the way people respond to the same task demands and inconsistent relationships among measures. Finally, we are able to measure workload and performance, but interpreting such measures remains difficult; it is still not clear how much workload is too much or too little nor the consequences of suboptimal workload on system performance and the mental, physical, and emotional well-being of the human operators. The rationale and philosophy of a program of research developed to address these issues will be reviewed and contrasted to traditional methods of defining, measuring, and predicting human operator workload. Viewgraphs are given. (Author) Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In NASA, Langley Research Center, Aviation Safety/Automation Program Conference p 105-125 (SEE N91-10936 02-03).

53. HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). Helicopter human factors. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; 1988 116 Refs. Note: Language: English Country of Origin: United States Document Type: ANALYTIC OF COLLECTED WORK Documents available from AIAA Technical Library Journal Announcement: IAA8914 The state-of-the-art helicopter and its pilot are examined using the tools of human-factors analysis. The significant role of human error in helicopter accidents is discussed; the history of human-factors research on helicopters is briefly traced; the typical flight tasks are described; and the noise, vibration, and temperature conditions typical of modern military helicopters are characterized. Also considered are helicopter controls, cockpit instruments and displays, and the impact of cockpit design on pilot workload. Particular attention is given to possible advanced-technology improvements, such as control stabilization and augmentation, FBW and fly-by-light systems, multifunction displays, night-vision goggles, pilot night-vision systems, night-vision displays with superimposed symbols, target acquisition and designation systems, and aural displays. Diagrams, drawings, and photographs are provided. (T.K.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). IN: Human factors in aviation (A89-34431 14-54). San Diego, CA, Academic Press, Inc., 1988, p. 591-638.

54. HART, SANDRA G. Measurement of pilot workload. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif. Jun. 1987. Note: Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A07/MF A01 Journal Announcement: STAR8724 A multistage process for evaluating the workload of a five-minute segment of flight including approach and landing for a typical transport aircraft was described. The goal of the analysis was to compare the workload of the two pilots. Four types of measurement techniques were suggested: Analytic (a preliminary task and time line analysis identified task requirements and target performance levels); Performance (flight path control, communications, and interval production); Physiological (heart rate and heart rate variability); and Subjective ratings (a multidimensional technique developed at NASA Ames). (Author) Source of Abstract/Subfile: NASA STIP Subject Classification: 7554 Man/System Technology & Life Support

(1975-). In Advisory Group for Aerospace Research and The Practical Assessment of Pilot Workload p 116-122 (SEE N87-30054 24-54).

55. HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). Overview of NASA Rotorcraft Human Factors Research. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; 1989 34 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA9011 The principal areas of research supported by the NASA Rotorcraft Human Factors Research Branch are reviewed. The program elements addressed include situational awareness, pilot/vehicle interface, mission management, and training. Representative examples of research conducted in these areas since 1987 are summarized. (C.D.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). IN: AHS, Annual Forum, 45th, Boston, MA, May 22-24, 1989, Proceedings (A90-28151 11-01). Alexandria, VA, American Helicopter Society, 1989, p. 441-453.

56. HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). The relationship between workload and training - An introduction. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; 1986. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8713 This paper reviews the relationships among workload, performance, and training. Its goal is to introduce the concepts of workload and training and to suggest how they may be related. It suggests some of the practical and theoretical benefits to be derived from their joint consideration. Training effectiveness can be improved by monitoring trainee workload and the reliability of workload predictions, and measures can be improved by identifying and controlling the training levels of experimental subjects. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Human Factors Society, Annual Meeting, 30th, Dayton, OH, Sept. 29-Oct. 3, 1986, Proceedings. Volume 2 (A87-33001 13-54). Santa Monica, CA, Human Factors Society, 1986, p. 1116-1120.

57. HART, SANDRA G., comp. Research papers and publications (1981-1987): Workload research program. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Aug. 1987 124P. Note: Report No.: NASA-TM-100016; A-87196; NAS 1.15:100016 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A06/MF A01 Journal Announcement: STAR8804 An annotated bibliography of the research reports written by participants in NASA's Workload Research Program since 1981 is presented, representing the results of theoretical and applied research conducted at Ames Research Center and at universities and industrial laboratories funded by the program. The major program elements included: 1) developing an understanding of the workload concept; 2) providing valid, reliable, and practical measures of workload; and 3) creating a computer model to predict workload. The goal is to provide workload-related design principles, measures, guidelines, and computational models. The research results are transferred to user groups by establishing close ties with manufacturers, civil and military operators of aerospace systems, and regulatory agencies; publishing scientific articles; participating in and sponsoring workshops and symposia; providing information, guidelines, and computer models; and contributing to the formulation of standards. In addition, the methods and theories developed have been applied to specific operational and design problems at the request of a number of industry and government agencies. (Author) Source of Abstract/Subfile: NASA STIF COSATI Code: 5I Personnel Selection, Training, & Evaluation.

58. Hart, Sandra G.; Bortolussi, Michael R. (NASA--Ames Research Ctr, Moffett Field, CA). Pilot errors as a source of workload. Special Issue: Aviation psychology. Human Factors; 1984 Oct Vol 26(5) 545-556; 1984; CODEN: HUFAA6; ISSN: 00187208. Note: Human. 12 pilots estimated the effect of 163 events and activities that they hadencountered during their previous flying experiences on performance, effort, workload, and stress. The events, described in the context of flight scenario segments, included control, navigation and communications activities, aircraft and system failures, and pilot errors. In general, workload, stress, and effort ratings were significantly correlated with each other but not with performance ratings. However, some different response patterns were found as a function of flight segment and type of event. Workload, stress, and performance, but not effort, ratings varied with flight phase. Errors were found as a significant source of change for workload, stress, and performance, suggesting that errors could be conceptualized as a cause of workload rather than as a symptom. Findings can be used to create simulation scenarios that are predicted to impose subjectively different levels of workload. (8 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved) KP: flight scenario

& events of previous flying; performance & effort & work load & stress; pilots .

59. HART, SANDRA G.; BRICKNER, MICHAEL S. (National Academy of Sciences -National, Research Council, Washington, DC.). Helmet-mounted pilot night vision systems: Human factors issues. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, CA; Jul. 1989. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A99/MF A04 Journal Announcement: STAR9016 Helmet-mounted displays of infrared imagery (forward-looking infrared (FLIR)) allow helicopter pilots to perform low level missions at night and in low visibility. However, pilots experience high visual and cognitive workload during these missions, and their performance capabilities may be reduced. Human factors problems inherent in existing systems stem from three primary sources: the nature of thermal imagery; the characteristics of specific FLIR systems; and the difficulty of using FLIR system for flying and/or visually acquiring and tracking objects in the environment. The pilot night vision system (PNVS) in the Apache AH-64 provides a monochrome, 30 by 40 deg helmet-mounted display of infrared imagery. Thermal imagery is inferior to television imagery in both resolution and contrast ratio. Gray shades represent temperatures differences rather than brightness variability, and images undergo significant changes over time. The limited field of view, displacement of the sensor from the pilot's eye position, and monocular presentation of a bright FLIR image (while the other eye remains dark-adapted) are all potential sources of disorientation, limitations in depth and distance estimation, sensations of apparent motion, and difficulties in target and obstacle detection. Insufficient information about human perceptual and performance limitations restrains the ability of human factors specialists to provide significantly improved specifications, training programs, or alternative designs. Additional research is required to determine the most critical problem areas and to propose solutions that consider the human as well as the development of technology. (Author) Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In its Spatial Displays and Spatial Instruments 21 p (SEE N90-22918 16-54).

60. HART, SANDRA G.; HARTZELL, E. JAMES; VOORHEES, JAMES W.; BUCHER, NANCY M.; SHIVELY, R. JAY (Army Aviation Systems Command, Moffett Field, Calif.). An integrated approach to rotorcraft human factors research. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Feb. 1988. Note: Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A17/MF A01 Journal Announcement: STAR8809 As the potential of civil and military helicopters has increased, more complex and demanding missions in increasingly hostile environments have been required. Users, designers, and manufacturers have an urgent need for information about human behavior and function to create systems that take advantage of human capabilities, without overloading them. Because there is a large gap between what is known about human behavior and the information needed to predict pilot workload and performance in the complex missions projected for pilots of advanced helicopters, Army and NASA scientists are actively engaged in Human Factors Research at Ames. The research ranges from laboratory experiments to computational modeling, simulation evaluation, and inflight testing. Information obtained in highly controlled but simpler environments generates predictions which can be tested in more realistic situations. These results are used, in turn, to refine theoretical models, provide the focus for subsequent research, and ensure operational relevance, while maintaining predictive advantages. The advantages and disadvantages of each type of research are described along with examples of experimental results. (Author) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In NASA, Washington, NASA/Army Rotorcraft Technology. Volume 3: Systems Integration, Research Aircraft, and Industry p 1167-1188 (SEE N88-16650 09-01).

61. Hart, Sandra G.; Hauser, Jan R. (NASA-Ames Research Ctr, Moffett Field, CA). Inflight application of three pilot workload measurement techniques. Aviation, Space, and Environmental Medicine; 1987 May Vol 58(5) 402-410; 1987; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Tested 3 measures of workload during 11 routine missions conducted by anairborn observatory: communications performance, subjective ratings, and heart rate (HR). Nine pilots served as Ss. The activities that contributed to crewmember workload varied; the commander was responsible for aircraft control and navigation whereas the copilot handled communications. Ss' ratings of workload, stress, and effort were highly correlated and varied across flight segments, peaking during takeoff and landing. Subjective fatigue increased significantly from takeoff to landing for all flights. HR was significantly higher for the commander than for the copilot. Although HR peaked for both Ss during takeoff and landing, the amount of change was significantly greater for the commander. Subjective ratings of stress, workload, and mental effort were

significantly correlated with HR and communications frequency. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

62. HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA); HAUSER, JAN, R. (Xerox, Inc., Palo Alto, CA). Inflight application of three pilot workload measurement techniques. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; May 1987 12 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8717 Three inflight techniques for workload measurement were tested in nine pilots flying the NASA Kuiper Airborne Observatory: subjective ratings, heart rate, and communication performance. The activities that contributed to the crew-member workload varied; the commander was responsible for aircraft control and navigation whereas the copilot handled communications. The three workload measures were found to provide different information. Pilot ratings of workload, effort, and stress were sensitive to variations in flight-related task demands across flight segments but did not reflect specific differences in the type of demands imposed on the commander and the copilot. The heart rate was sensitive to the differential impact of duties, being higher for the commander than for the copilot. The rate of communications per minute of flight proved to be the most sensitive indicator. It was related to workload, stress, effort rating, and average heart rate across flight segments. (I.S.) Source of Abstract/Subfile: AIAA/TIS. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 58, May 1987, p. 402-410.

63. Helmreich, Reinhard (U Constance, W Germany). Media specific learning effects: An empirical study of the effects of television and radio, . Communication Research; 1976 Jan Vol 3(1) 53-62; 1976. Note: Human. Studied the comparative learning effects of identical programs broadcast by TV or radio. 168 German undergraduates watched or listened to a program on life in Australia and completed questionnaires on its content and semantic differential measures of their emotional reactions either immediately, 1, 2, or 3 wks later. Results indicate that both of these media impart knowledge to the same extent and that the forgetting of the knowledge is not media-specific. However, emotional impressions were different for television viewers and radio listeners and did not change with the passing of time after the program presentation. (PsycLIT Database Copyright 1976 American Psychological Assn, all rights reserved).

64. Helmreich, Robert (U Texas, Austin). Applied social psychology: The unfulfilled promise. Personality and Social Psychology Bulletin; 1975 Fal Vol 1(4) 548-560; 1975. Note: Human. Examines the conflict between applied and theoretical social psychology. It is argued both that this applied-theoretical distinction is a pernicious one which diverts attention from more basic issues of generality and validity, and that the applicability of mainstream social psychology is disappointingly slight. While developments in statistical techniques and computer data processing have increased the opportunities for larger-scale, multivariate research which may reflect more accurately the complexities of the natural world, most reports in the major journals of the field continue to be of small, laboratory experiments using college students as Ss. The prospects for future change in orientation are discussed. (33 ref) (PsycLIT Database Copyright 1976 American Psychological Assn, all rights reserved).

65. Helmreich, Robert L. (U Texas, Austin). Applying psychology in outer space: Unfilled promises revisited. American Psychologist; 1983 Apr Vol 38(4) 445-450; 1983; CODEN: AMPSAB; ISSN: 0003066X. Note: Human. Argues that numerous issues directly relevant to the field of personality and social psychology are present and may become increasingly important in the US space program. It is suggested that data from personality and social psychology have been underused resources in the US space program. The responsibility for this outcome is seen as resting both with investigators and in structural aspects of the National Aeronautics and Space Administration. The contrasting centrality of psychology in the Russian space program is noted. Suggestions for increasing the role of personality and social psychology in the US space program are offered. (25 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

66. Helmreich, Robert L. (U Texas, Austin). Cockpit management attitudes. Special Issue: Aviation psychology. Human Factors; 1984 Oct Vol 26(5) 583-589; 1984; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Administered a cockpit management attitudes survey to 245 airline pilots(mean age 33 yrs). The observed divergence in attitudes indicated that many Ss were unaware or unconvinced of previous findings concerning effective flight-deck management. Data suggest that these attitudes were independent of personality traits and that training in cockpit resource management may improve performance in line operations. Differences in attitudes were noted between captains and first officers with respect to the importance of avoiding negative comments on the performance of other crew members, the

value of casual conversation in improving performance, and conditions under which first officers should question the decisions of the captain. Training programs in cockpit management are recommended that would combine factual presentations, moderated group discussions, and behavioral exercises. (6 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved) KP: personality traits; attitudes toward cockpit management; airline pilots.

67. HELMREICH, ROBERT L. (Texas, University, Austin). Explorations in achievement motivation. Texas Univ., Austin; Aug. 1982 8 Refs. Note: Contract No.: NAG2-137 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA8801 Recent research on the nature of achievement motivation is reviewed. A three-factor model of intrinsic motives is presented and related to various criteria of performance, job satisfaction and leisure activities. The relationships between intrinsic and extrinsic motives are discussed. Needed areas for future research are described. (Author) Source of Abstract/Subfile: AIAA/TIS. American Psychological Association, Annual Meeting, Washington, DC, Aug. 24, 1982, Paper. 10 p.

68. HELMREICH, ROBERT L. (Texas, University, Austin). Exploring flightcrew behaviour. Texas Univ., Austin; 1987 30 Refs. Note: Contract No.: NCC2-286 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8813 A program of research into the determinants of flightcrew performance in commercial and military aviation is described, along with limitations and advantages associated with the conduct of research in such settings. Preliminary results indicate significant relationships among personality factors, attitudes regarding flight operations, and crew performance. The potential theoretical and applied utility of the research and directions for further research are discussed. (Author) Source of Abstract/Subfile: AIAA/TIS. Social Behaviour (ISSN 0885-6249), vol. 2, 1987, p. 63-72.

69. HELMREICH, ROBERT L. Living in contained environments: Research implications from undersea habitats (undersea habitats). Texas Univ., Austin. Dept. of Psychology; 1986 15P. Note: Presented at Individuals and Group Behavior in Toxic and Contained Environments: A Conference to Explore the Psychological Effects of Chemical and Biological Warfare, Austin, Tex., 13 Dec. 1986 Report No.: NASA-CR-180341; NAS 1.26:180341 Contract No.: NCC2-286 Language: English Country of Origin: United States Document Type: REPORT; CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A02/MF A01 Journal Announcement: STAR8721 A cost-reward model is used to frame a discussion of differences in observed behavior of individuals and groups in confined environments. It has been observed that the high cost of functioning in a stressful environment is likely to produce poor performance when anticipated rewards are low but that participants can manage the stress and achieve high performance if they anticipate high rewards. The high-reward environment is exemplified by early undersea habitats such as Sealab and Tektite and by early space missions. Other aspects of behavior occur in all confined environments and point to an important area for future research. Of particular interest are intergroup conflicts arising between the confined group and its external control. Also, individual differences in personality seem always to have an impact in confined environments. Recent research has focused on: (1) predicting performance and adjustment based on instrumental and expressive aspects of the self; (2) the differential predictive power of achievement striving and irritation/irritability in Type A personalities; and (3) the nature and role of leadership in small, isolated groups. (J.P.3) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. Presentation.

70. HELMREICH, ROBERT L. (Texas, University, Austin). Personality and organizational influences on aerospace human performance. Texas Univ., Austin; 1989 22 Refs. Note: Report No.: AAS PAPER 87-646 Contract No.: NCC2-286 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8919 Individual and organizational influences on performance in aerospace environments are discussed. A model of personality with demonstrated validity is described along with reasons why personality's effects on performance have been underestimated. Organizational forces including intergroup conflict and coercive pressures are also described. It is suggested that basic and applied research in analog situations is needed to provide necessary guidance for planning future space missions. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Space - A new community of opportunity; Proceedings of the Thirty-fourth Annual AAS International Conference, Houston, TX, Nov. 3-5, 1987 (A89-43702 19-12). San Diego, CA, Univelt, Inc., 1989, p. 231-238.

71. HELMREICH, ROBERT L. (Texas, University, Austin). Pilot selection and training. Texas Univ., Austin;

Aug. 1982. Note: Contract No.: NAG2-137 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA8801 Personality and situational factors relevant to individual and group performance in highly demanding environments, such as those faced by astronauts or by jet transport crew, are discussed. It is emphasized that although technical competence and proficiency in pilot selection are prerequisites for safety, operating a modern jet transport is a group endeavor that requires the effective coordination of the entire crew. A self-report test battery for measuring positive and negative personality traits of pilot candidates, termed the Personal Characteristics Inventory, is described. (I.S.) Source of Abstract/Subfile: AIAA/TIS. American Psychological Association, Annual Meeting, Washington, DC, Aug. 24, 1982, Paper. 12 p.

72. HELMREICH, ROBERT L. (Texas, University, Austin). The role of psychologists in future spaceflight. Texas Univ., Austin; Apr. 1985. Note: Contract No.: NAG2-137 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA8801 The need for psychologists to have a more active role in planning space missions is discussed. It is suggested that it would be beneficial if psychologists conducted research aimed at optimizing the organization, composition, and performance of crews; participated in the selection and training of crews; and monitored the actual performance and adjustment of crews during missions. The areas which require further research and the types of research strategies to be implemented are described. The desirable traits for future space personnel and the role of psychologists in mission control are examined. (I.F.) Source of Abstract/Subfile: AIAA/TIS. SPACEFAIR '85, Meeting, Boston, MA, Apr. 14, 1985, Paper. 9 p.

73. HELMREICH, ROBERT L. (Texas, University, Austin). Social psychological research in NASA - History, status, prospects. American Psychological Association, Annual Convention, 94th, Washington, DC, Aug. 22-26, 1986, Paper. 5 p; Aug. 1986 8 Refs. Note: Language: English Country of Origin: United States Document Type: PREPRINT Journal Announcement: IAA8813 The history of psychological research in NASA is reviewed with consideration given to changes and new roles for psychology. With a view to establishing a permanent presence in space in the form of the Space Station, consideration is currently being given to a plan for research in aviation and space psychology. Multiple methodologies and research settings wqould be utilized, ranging from the laboratory to the simulator to the undersea habitat and to the simultaneous examination of behavior at the organizational, group, and individual level. (K.K.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

74. HELMREICH, ROBERT L. Studying flight crew behavior: A social psychologist encounters the real world. Texas Univ., Austin. Dept. of Psychology; 1986 18P. Note: Presented at the Annual Meeting of the American Psychological Association, Washington, D.C., Aug. 1986 Report No.: NASA-CR-180284; NAS 1.26:180284 Contract No.: NAG2-137 Language: English Country of Origin: United States Document Type: REPORT; CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A02/MF A01 Journal Announcement: STAR8722 Considerable social psychological research has been conducted on the relationship between personality and performance in various occupational settings. Of special interest are situations where the performer is under pressure or the consequences of poor performance can be serious, as in aircraft operation. Some significant findings are summarized, including those related to Type A personality factors, achievement motivation factors, and attitude factors. Future research should focus on group behavior. (J.P.B.) Source of Abstract/Subfile: NASA STIP COSATI Code: 5I Personnel Selection, Training, & Evaluation. Presentation.

75. HELMREICH, ROBERT L. (Texas, University, Austin). Training - Behavioral and motivational solutions? Texas Univ., Austin; Dec. 1983 11 Refs. Note: Contract No.: NAG2-137 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA8801 Psychological factors which govern interpersonal activities in the cockpit are examined. It is suggested that crew members should be selected based on personality characteristics required for the position and that training does not cause long lasting personality changes, it only teaches and improves task performance skills. The effects of mindlessness as defined by Langer (1978) and the attribution theory of Jones and Nisbett (1971) on flight deck communications and cockpit management are described. The needs for a new system of training crew members, with emphasis on strategies that induce cognitive processes and awareness, and for field investigations of pilots are discussed. (I.F.) Source of Abstract/Subfile: AIAA/TIS. Air Line Pilots Association, Beyond Pilot Error - A Symposium of Scientific Focus, Washington, DC, Dec. 6-8, 1983, Paper. 11 p.

76. HELMREICH, ROBERT L. (Texas, University, Austin). What changes and what endures - The capabilities and limitations of training and selection. Texas Univ., Austin; Oct. 1983 12 Refs. Note: Contract No.: NAG2-137 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA8801 The contributions of psychology to aviation in the areas of selection, training, and evaluation, and the implementation of new technologies are discussed. The concept of personality traits versus modification of human behavior through principles of learning are analyzed. Particular consideration is given to achievement motivation (defined in terms of mastery, work, and competitiveness) and the differences between traits and attitudes. It is argued that personality traits are important dimensions of the self and are useful measures of individual differences. The selection of individuals with desired personality characteristics and the training of personnel to improve crew coordination, flight-deck management, and interpersonal efficacy are examined. (I.F.) Source of Abstract/Subfile: AIAA/TIS. Irish Air Line Pilots Association and Aer Lingus, Flight Operations Symposium, Dublin, Ireland, Oct. 19, 20, 1983, Paper. 13 p.

77. Helmreich, Robert; Bakeman, Roger; Radloff, Roland (U Texas, Austin). The Life History Questionnaire as a predictor of performance in Navy divertraining. . Journal of Applied Psychology; 1973 Apr Vol 57(2) 148-153; 1973. Note: Human. Describes a new demographic instrument, the Life History Questionnaire(LHQ), which elicits demographic data longitudinally by providing a question-by- year matrix of responses. Variables derived from the LHQ were used to predict success in US Navy diver training. Validation and cross-validation data were obtained from 115 enlisted men in 5 diving classes. 2 criteria were developed for the samples-pass-fail indicator and a 4-point performance criterion. Correlational data for 12 predictors (e.g., social status, health, and educational performance) are presented. The LHQ appears to provide sufficient longitudinal data to enable detailed investigation of relationships among a variety of life settings and experiences and to relate these to subsequent behavior. (16 ref) (PsycLIT Database Copyright 1975 American Psychological Assn, all rights reserved) .

78. Helmreich, Robert L.; Beane, William; Lucker, G. William; Spence, Janet T. (U Texas, Austin). Achievement motivation and scientific attainment. Personality and Social Psychology Bulletin; 1978 Apr Vol 4(2) 222-226; 1978; ISSN: 01461672. Note: Human. Applied a 3-component (work orientation, mastery needs, and competitiveness)measure of achievement motivation to a criterion from the Science Citation Index for 103 male PhD scientists and engineers. Significant interactions between work and mastery and work and competitiveness were found. The relationship between this model of achievement motivation and scientific attainment is discussed. (13 ref) (PsycLIT Database Copyright 1980 American Psychological Assn, all rights reserved) .

79. Helmreich, Robert L.; Et, Al (U Texas, Austin). Making it in academic psychology: Demographic and personality correlates ofattainment. . Journal of Personality and Social Psychology; 1980 Nov Vol 39(5) 896-908; 1980; CODEN: JPSPB2; ISSN: 00223514. Note: Human. Examined personality, demographic characteristics, publication rate, andcitations to published work in a sample of 141 male and 55 female academic psychologists. Reputational rankings of their graduate schools and current institutions were significantly related to citations, as were components of achievement motivation. Mastery and work needs were positively related to citations, whereas competitiveness was negatively associated with the criterion. Large sex differences were found in citations, with men receiving significantly more recognition and producing at a higher rate. A model of attainment in psychology is proposed, and possible explanations for the differential attainment of the sexes are explored. (26 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved) KP: sex differences & personality traits & demographic characteristics & publication rate & citations; attainment in academic psychology; personality & social psychologists .

80. Helmreich, Robert L.; Foushee, H. Clayton; Benson, Robert; Russini, William (U Texas,Austin). Cockpit resource management: Exploring the attitude performance linkage.Third Symposium on Aviation Psychology (1985, Columbus, Ohio). . Aviation, Space, and Environmental Medicine; 1986 Dec Vol 57(12, Sect I)1198-1200 CO: AEMEAY; 1986; ISSN: 00956562. Note: Human. Measured attitudes regarding cockpit management in 114 pilots whose lineflying performance was independently evaluated as above or below average. Data indicate that these attitudes were significant predictors of behavior. The performance of 95.7% of the Ss was correctly classified by the analysis. Implications for cockpit resource management training and pilot selection are discussed. (10 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved) .

81. HELMREICH, ROBERT L. (Texas, University, Austin); HOLLAND, ALBERT W. SANTY, PATRICIA

A. (NASA, Johnson Space Center, Houston, TX); ROSE, ROBERTM. (Minnesota, University, Minneapolis); MCFADDEN, TERRY J. Strategies for crew selection for long duration missions. Texas Univ., Austin; Sep. 1990 19 Refs. Note: Report No.: AIAA PAPER 90-3762 Contract No.: NCC2-286 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA9101 Issues surrounding psychological reactions to long duration spaceflight are discussed with respect to the definition of criteria for selecting crewmembers for such expeditions. Two broad dimensions of personality and behavior are defined - Instrumentality including achievement orientation, leadership, and ability to perform under pressure and Expressivity encompassing interpersonal sensitivity and competence. A strategy for validating techniques to select in candidates with the optimum psychological profile to perform successfully on long duration missions is described. (Author) Source of Abstract/Subfile: AIAA/TIS. AIAA, Space Programs and Technologies Conference, Huntsville, AL, Sept. 25-27, 1990. 6 p.

82. HELMREICH, ROBERT L.; SAWIN, LINDA L.; CARSRUD, ALAN L. (Texas, University, Austin). The honeymoon effect in job performance - Temporal increases in the predictive power of achievement motivation. Texas Univ., Austin; 1986 19 Refs. Note: Contract No.: NCC2-286; NAG2-137 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8806 Correlations between a job performance criterion and personality measures reflecting achievement motivation and an interpersonal orientation were examined at three points in time after completion of job training for a sample of airline reservations agents. Although correlations between the personality predictors and performance were small and nonsignificant for the 3-month period after beginning the job, by the end of six and eight months a number of significant relationships had emerged. Implications for the utility of personality measures in selection and performance prediction are discussed. (Author) Source of Abstract/Subfile: AIAA/TIS. Journal of Applied Psychology (ISSN 0021-9010), vol. 71, no. 2, 1986, p. 185-188.

83. Helmreich, Robert L.; Spence, Janet T.; Pred, Robert S. (U Texas, Austin, US). Making it without losing it: Type A, achievement motivation, and scientificattainment revisited. . Personality and Social Psychology Bulletin; 1988 Sep Vol 14(3) 495-504; 1988; ISSN: 01461672. Note: Human. In a study by K. A. Matthews et al (see PA, Vol 66:8070), responses by 118male academic psychologists to the Jenkins Activity Survey for Health Prediction (JAS), a measure of the Type A construct, were found to be significantly, positively correlated with 2 measures of attainment--citations by others to published work and number of publications. In the present study, JAS responses from the Matthews et al sample were subjected to a factor analysis with oblique rotation and 2 new subscales were developed on the basis of this analysis. Achievement Strivings was found to be significantly correlated with both the publication and citation measures; Impatience and Irritability was uncorrelated with the achievement criteria. Results suggest that the current formulation of the Type A construct may contain two components, one associated with positive achievement and the other with poor health. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

84. Helmreich, Robert L.; Spence, Janet T.; Thorbecke, William L. (U Texas, Austin). On the stability of productivity and recognition. Personality and Social Psychology Bulletin; 1981 Sep Vol 7(3) 516-522; 1981; ISSN: 01461672. Note: Human. Examined the auto- and cross-lagged correlations between productivity(measured by number of publications) and recognition (measured by citations to published work) in 82 personality and social psychologists for 1965, 1970, and 1975. Citation rates were more stable over time than publication rates, although all autocorrelations were significant. Those classified as prolific scientists (productive and highly cited) on the basis of 1965 data retained this position 5 and 10 yrs later; silent scientists (low publications and low citations in 1965) continued to be unproductive and unrecognized in 1970 and 1975. Institutional effects on productivity are also discussed. (18 ref) (PsycLIT Database Copyright 1982 American Psychological Assn, all rights reserved).

85. Helmreich, Robert L.; Spence, Janet T.; Holahan, Carole K. (U Texas, Austin). Psychological androgyny and sex role flexibility: A test of two hypotheses. Journal of Personality and Social Psychology; 1979 Oct Vol 37(10) 1631-1644; 1979; CODEN: JPSPB2; ISSN: 00223514. Note: Human. In a conceptual replication and extension of a study by S. L. Bem and E.Lenney (1976), 90 male and 118 female college students rated their comfort in and preference for performing several series of masculine, feminine, and neutral activities. Correlations between ratings and scores on the masculinity (instrumentality) and femininity (expressiveness) scales of the Personal Attributes Questionnaire (PAQ) of J. T. Spence and R. L. Helmreich (1978) tended to be theoretically reasonable in sign but in each sex were low in magnitude and only occasionally significant. Classification of Ss into 4 PAQ groups (androgynous,

display techniques Letter progress report, Jun. 1 - Aug. 31, 1965 (Human performance characteristics in manual control tasks, and techniques for data analysis and systems simulation). Michigan Univ., Ann Arbor. OFFICE OF RESEARCH ADMINISTRATION; Nov. 1965. Note: Report No.: NASA-CR-68981 Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6604 Source of Abstract/Subfile: NASA STIF COSATI Code: 5H Man-machine Relations. 5 NOV. 1965 5 P ITS REPT.-06343-6-P.

96. HOWE, R. M.; PEW, R. W. (Man-machine performance measurements) development of on-line man-machine system performance measurement and display techniques. Michigan Univ., Ann Arbor. OFFICE OF RESEARCH ADMINISTRATION; Jul. 1965. Note: Report No.: NASA-CR-64106 Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6519 Source of Abstract/Subfile: NASA STIF. 9 JUL. 1965 34 P REFS.

97. Howell, W. C.; Colle, H. A.; Kantowitz, B. H.; Wiener, E. L. (Rice U). Guidelines for education and training in engineering psychology. American Psychologist; 1987 Jun Vol 42(6) 602-604; 1987; CODEN: AMPSAB; ISSN: 0003066X. Note: Human. Presents guidelines for education and training in engineering psychology to aid faculty and curriculum planners in the design of graduate programs at both the master's and doctoral level. Topics discussed include a definition of engineering psychology, the guiding philosophy, 4 domains of competency, and the need for supervised research and practical application experience. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

98. HUTCHINS, EDWIN. Metaphors for interface design. California Univ., San Diego, La Jolla. Inst. for Cognitive Science; Apr. 1987 33P. Note: Report No.: AD-A182248; AD-E951026; ICS-8703 Contract No.: N000?-85-C-0133; DA PROJ. RR0-4206 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8722 Computer system designers and computer users frequently utilize metaphors as organizing structures for dealing with the complexity of behavior of human/computer interfaces. This paper considers four metaphors concerning the mode of interaction between user and machine: the conversation metaphor, the declaration metaphor, the model world metaphor and the collaborative manipulation metaphor. It is argued that the key to the functional properties of an interface lie in the reference relations between the expressions in the interface language and the things to which the expressions refer. The ways in which such metaphors are suggested by advances in I/O technology and the ways they constrain the possibilities we see in technology are discussed. Each of the metaphors discussed promotes a particular type of reference relation. Furthermore, because the computer is a medium in which types of reference relations that are not possible in ordinary language can be realized, the space of interface metaphors is quite likely much larger than we presently imagine it to be. (GRA) Source of Abstract/Subfile: DTIC COSATI Code: 9B Computers.

99. JOHNSON, WALTER W.; HART, SANDRA G. (NASA, Ames Research Center, MoffettField, CA). Step tracking shrinking targets. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; 1987. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8814 Four models describing how people might acquire targets that dynamically vary in size were examined; two that described movement speed as a simple function of target size (either initial or final) and two that described movement speed as a function of the predicted size of the targets at a fixed time in the future (one was referenced to the beginning of the reaction time phase, and the other to the end of this phase). It was found that movement time was best described as a function of a size prediction made at the end, rather than the start, of the reaction time phase. Subjective workload ratings primarily reflected the total amount of time needed to acquire the targets rather than the time pressure imposed by the diminishing size of these targets. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Human Factors Society, Annual Meeting, 31st, New York, NY, Oct. 19-23, 1987, Proceedings. Volume 1 (A88-35401 14-54). Santa Monica, CA, Human Factors Society, 1987, p. 248-252.

100. Johnson, Walter W.; Tsang, Pamela S.; Bennett, C. Thomas; Phatak, Anil V. (NASA/Ames Research Ctr, Moffett Field, CA, US). The visually guided control of simulated altitude. Aviation, Space, and Environmental Medicine; 1989 Feb Vol 60(2) 152-156; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Simulated flights over 3 different ground textures were used to examine the ability of 5 right-handed Ss (aged 17-35 yrs) to extract optical information useful for active regulation of altitude. The

display techniques Letter progress report, Jun. 1 - Aug. 31, 1965 (Human performance characteristics in manual control tasks, and techniques for data analysis and systems simulation). Michigan Univ., Ann Arbor. OFFICE OF RESEARCH ADMINISTRATION; Nov. 1965. Note: Report No.: NASA-CR-68981 Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6604 Source of Abstract/Subfile: NASA STIF COSATI Code: 5H Man-machine Relations. 5 NOV. 1965 5 P ITS REPT.-06343-6-P.

96. HOWE, R. M.; PEW, R. W. (Man-machine performance measurements) development of on-line man-machine system performance measurement and display techniques. Michigan Univ., Ann Arbor. OFFICE OF RESEARCH ADMINISTRATION; Jul. 1965. Note: Report No.: NASA-CR-64106 Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6519 Source of Abstract/Subfile: NASA STIF. 9 JUL. 1965 34 P REFS.

97. Howell, W. C.; Collie, H. A.; Kantowitz, B. H.; Wiener, E. L. (Rice U). Guidelines for education and training in engineering psychology. American Psychologist; 1987 Jun Vol 42(6) 602-604; 1987; CODEN: AMPSAB; ISSN: 0003066X. Note: Human. Presents guidelines for education and training in engineering psychology to aid faculty and curriculum planners in the design of graduate programs at both the master's and doctoral level. Topics discussed include a definition of engineering psychology, the guiding philosophy, 4 domains of competency, and the need for supervised research and practical application experience. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

98. HUTCHINS, EDWIN. Metaphors for interface design. California Univ., San Diego, La Jolla. Inst. for Cognitive Sci ence; Apr. 1987 33P. Note: Report No.: AD-A182248; AD-E951026; ICS-8703 Contract No.: N000?. -85-C-0133; DA PROJ. RR0-4206 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8722 Computer system designers and computer users frequently utilize metaphors as organizing structures for dealing with the complexity of behavior of human/computer interfaces. This paper considers four metaphors concerning the mode of interaction between user and machine: the conversation metaphor, the declaration metaphor, the model world metaphor and the collaborative manipulation metaphor. It is argued that the key to the functional properties of an interface lie in the reference relations between the expressions in the interface language and the things to which the expressions refer. The ways in which such metaphors are suggested by advances in I/O technology and the ways they constrain the possibilities we see in technology are discussed. Each of the metaphors discussed promotes a particular type of reference relation. Furthermore, because the computer is a medium in which types of reference relations that are not possible in ordinary language can be realized, the space of interface metaphors is quite likely much larger than we presently imagine it to be. (GRA) Source of Abstract/Subfile: DTIC COSATI Code: 9B Computers.

99. JOHNSON, WALTER W.; HART, SANDRA G. (NASA, Ames Research Center, MoffettField, CA). Step tracking shrinking targets. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; 1987. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8814 Four models describing how people might acquire targets that dynamically vary in size were examined; two that described movement speed as a simple function of target size (either initial or final) and two that described movement speed as a function of the predicted size of the targets at a fixed time in the future (one was referenced to the beginning of the reaction time phase, and the other to the end of this phase). It was found that movement time was best described as a function of a size prediction made at the end, rather than the start, of the reaction time phase. Subjective workload ratings primarily reflected the total amount of time needed to acquire the targets rather than the time pressure imposed by the diminishing size of these targets. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Human Factors Society, Annual Meeting, 31st, New York, NY, Oct. 19-23, 1987, Proceedings. Volume 1 (A88-35401 14-54). Santa Monica, CA, Human Factors Society, 1987, p. 248-252.

100. Johnson, Walter W.; Tsang, Pamela S.; Bennett, C. Thomas; Phatak, Anil V. (NASA/Ames Research Ctr, Moffett Field, CA, US). The visually guided control of simulated altitude. Aviation, Space, and Environmental Medicine; 1989 Feb Vol 60(2) 152-156; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Simulated flights over 3 different ground textures were used to examine the ability of 5 right-handed Ss (aged 17-35 yrs) to extract optical information useful for active regulation of altitude. The

textures were regularly spaced lines as follows: orthogonal to the direction of flight (latitude texture); parallel to the direction of flight (meridian texture); and parallel and orthogonal (square texture). Visual constant velocity forward flight simulations were displayed on a screen, and Ss were asked to maintain 1 of 3 initial altitudes using a rate control stick. Adjusted root mean square errors showed altitude regulation was more difficult at higher altitudes and over meridian textures. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

101. KANTOWITZ, BARRY H. (Battelle Memorial Institute, Seattle, WA)BORTOLUSSI, MICHAEL R. (Western Aerospace Laboratories, Inc., MoffetField, CA); HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). Measuring pilot workload in a motion base simulator. III - Synchronous secondary task. Battelle Memorial Inst., Seattle; 1987. Note: Contract No.: NCC2-228 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8814 This experiment continues earlier research of Kantowitz et al. (1983) conducted in a GAT-1 motion-base trainer to evaluate choice-reaction secondary tasks as measures of pilot work load. The earlier work used an asynchronous secondary task presented every 22 sec regardless of flying performance. The present experiment uses a synchronous task presented only when a critical event occured on the flying task. Both two- and four-choice visual secondary tasks were investigated. Analysis of primary flying-task results showed no decrement in error for altitude, indicating that the key assumption necessary for using a choice secondary task was satisfied. Reaction times showed significant differences between 'easy' and 'hard' flight scenarios as well as the ability to discriminate among flight tasks. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Human Factors Society, Annual Meeting, 31st, New York, NY, Oct. 19-23, 1987, Proceedings. Volume 2 (A88-35401 14-54). Santa Monica, CA, Human Factors Society, 1987, p. 834-837.

102. KING, TERESA (San Jose State University, CA); HAMERMAN-MATSUMOTO, JOY(Bio-Dynamics, Research and Development Corp., Eugene, OR); HART, SANDRA G. (NASA, Ames Research Center, Moffett Field, CA). Dissociation revisited - Workload and performance in a simulated flight task. San Jose State Univ., CA; 1989. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA9010 The multiple resource model has been used as the theoretical basis for interpreting single-to-dual task changes in measures of performance and workload ratings. Inconsistent relationships among these measures have been termed dissociation. It is possible they are an artifact of the way performance and workload measures are collected: performance measures are available for the components of a complex task whereas workload ratings are integrated across all of the tasks performed within an interval of time. This study compared component ratings with global ratings and found that component ratings provide better information about subjects' task strategies and in interpreting the resultant relationships between workload ratings and performance. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: International Symposium on Aviation Psychology, 5th, Columbus, OH, Apr. 17-20, 1989, Proceedings. Volume 2 (A90-26176 10-53). Columbus, OH, Ohio State University, 1989, p. 796-801.

103. Kramer, Arthur F.; Wickens, Christopher D.; Donchin, Emanuel (U Illinois, Cognitive Psychophysiology Lab, Urbana-Champaign). An analysis of the processing requirements of a complex perceptual motor task. Human Factors; 1983 Dec Vol 25(6) 597-621; 1983; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Examined the joint effect of system order, the number of tracking dimensions, and the amount of practice on mental workload. The event-related brain potential (ERP) is introduced as a promising mental-workload index. 19 college students participated in a series of studies in which they were required to perform a target acquisition task while covertly counting either auditory or visual probes. The effects of several task-difficulty manipulations on the P300 component of the ERP elicited by the counted stimulus probes were investigated. With sufficiently practiced Ss, the amplitude of the P300 decreased with increases in task difficulty. The 2nd experiment also provided evidence that the P300 is selectively sensitive to task-relevant attributes. A 3rd experiment demonstrated a convergence in the amplitude of the P300s elicited in the simple and difficult versions of the tracking task. The amplitude of the P300 was also found to covary with the measures of tracking performance. Results illustrate the sensitivity of the P300 to the processing requirements of a complex target acquisition task. Findings are discussed in terms of the multidimensional nature of processing resources. (53 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

104. Kramer, Arthur F.; Wickens, Christopher D.; Donchin, Emanuel (U Illinois, Champaign). Processing of stimulus properties: Evidence for dual task integrality. Journal of Experimental Psychology Human

Perception and Performance; 1985 Aug Vol 11(4) 393-408; 1985; CODEN: JPHPDH; ISSN: 00961523. Note: Human. Assessed the conditions under which dual-task integrality can be fostered by manipulating 4 factors likely to influence the integrality between tasks: intertask redundancy (ITD), the spatial proximity of primary and secondary task displays, the degree to which primary and secondary task displays constitute a single object, and the resource demands of the 2 tasks. The resource allocation policy was inferred from changes in the amplitude of the P300 component of the event-related brain potential. 12 university students participated in 3 experimental sessions in which they performed both single and dual tasks. The primary task was a pursuit step tracking task. The secondary tasks required Ss to discriminate between different intensities or different spatial positions of a stimulus. Task pairs that required the processing of different properties of the same object resulted in better performance than task pairs that required the processing of different objects. These same object-task pairs led to a positive relation between primary task difficulty and the resources allocated to secondary task stimuli. ITD and the physical proximity of task displays produced similar effects of reduced magnitude. (54 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

105. Lucaniello, Georgann; Toole, Tonya; Cavanagh, James (Florida State U, Tallahassee). Searching short term memory for linear positioning movements. Perceptual and Motor Skills; 1983 Aug Vol 57(1) 267-274; 1983; CODEN: PMOSAZ; ISSN: 00315125. Note: Human. To determine whether memory search for movements is serial or parallel, the search processes involved in a short-term motor-memory paradigm were investigated. A linear-positioning task was used to present a series of 1, 2, or 3 movements in a memory set. Upon completion of a memory set, Ss (4 undergraduates) were presented with a search movement. The search movement was either the same length as 1 of the memory set movements ("yes" response) or a different length ("no" response). Ss completed 3 consecutive days of testing. On Day 1, RT and movement length were practiced. On Day 2, Ss were required to search a memory set of movements and respond in the yes condition by lifting the index finger of the left hand. This movement terminated an RT search clock. The same procedures were followed on Day 3, except that a no response was indicated by lifting the index finger. A 2 * 3 * 3 (Response * Memory Set * RT trials) within-Ss analysis yielded nonsignificant main effects and interactions. Results are discussed in relation to verbal memory. (18 ref) (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

106. Lucker, G. William; Beane, William E.; Helmreich, Robert L. (U Michigan, Ctr for Human Growth & Development, Ann Arbor). The strength of the halo effect in physical attractiveness research. Journal of Psychology; 1981 Jan Vol 107(1) 69-75; 1981; CODEN: JOPSAM; ISSN: 00223980. Note: Human. Two studies of the strength of the "halo effect" (the effect of physicalattractiveness on person perception) examined the ratings of 24 male and female targets by 155 male and 155 female college students. Both the 1st study and its replication indicate that the halo effect is much more limited than previously implied. However, 3 attributions--sexiness, femininity/masculinity, and liking-- showed a strong relationship to physical attractiveness, especially for female targets. (8 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved).

107. MASSIMINO, MICHAEL J.; SHERIDAN, THOMAS B. Variable force and visual feedback effects on teleoperator man/machine performance. Massachusetts Inst. of Tech., Cambridge; Jan. 1989. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A21/MF A03 Journal Announcement: STAR9023 An experimental study was conducted to determine the effects of various forms of visual and force feedback on human performance for several telemanipulation tasks. Experiments were conducted with varying frame rates and subtended visual angles, with and without force feedback. (Author) Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In JPL, California Inst. of Tech., Proceedings of the NASA Conference on Space Telerobotics, Volume 1 p 89-98 (SEE N90-29000 23-54).

108. Matthews, Karen A.; Helmreich, Robert L.; Beane, William E.; Lucker, G. William IN: U. Pittsburgh. Pattern A, achievement striving, and scientific merit: Does pattern A help or hinder? . Journal of Personality and Social Psychology; 1980 Nov Vol 39(5) 962-967; 1980; CODEN: JPSPB2; ISSN: 00223514. Note: Human. Clinical observations and recent theorizing offer 2 opposing predictions about the relationship between the Type A behavior pattern and the merit of one's work: (a) Type A helps; (b) Type A hinders. To test these 2 possibilities, 118 male members of the Society of Experimental Social Psychologists completed the Jenkins Activity Survey for Health Prediction and the Work and Family Orientation Questionnaire. Ss' citation scores were derived from the Social Science Citation Index 1973-1975. Assuming that citations are a rough measure of meritorious work, results reveal that Type A

behavior by men was associated with superior scientific work. (29 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved) KP: Type A behavior & merit of scientific work; male members of the Society of Experimental Social Psychologists .

109. Mendel, Max B.; Sheridan, Thomas B. (Massachusetts Inst of Technology, Man-Machine Systems Lab, Cambridge, US). Filtering information from human experts. IEEE Transactions on Systems, Man, and Cybernetics; 1989 Jan-Feb Vol 19(1)6-16 ; 1989; CODEN: ISYMAW; ISSN: 00189472. Note: Human. Proposes a model or "filter" for debiasing and combining opinions from multiple experts into a single consistent estimate of some variable of interest. A distinguishing feature of the approach consists of making the calibration of experts an integral part of filtering, enabling the filter to learn from previous experience with the experts. The theoretical development takes a Bayesian perspective exploiting B. de Finetti's (1937, 1964) notion of exchangeability. Experimental results with a preliminary computer implementation of the filter involving 2 postgraduate students in mechanical engineering show that its estimates were better than those from comparable filters that did not involve calibration. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved) .

110. MENDEL, MAX B.; SHERIDAN, THOMAS B. (MIT, Cambridge, MA). Filtering information from human experts. Massachusetts Inst. of Tech., Cambridge; Feb. 1989 26 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8918 The authors propose a model, or filter, for debiasing opinions from multiple experts and combining them into a single consistent estimate of some variable of interest. A distinguishing feature of the approach consists of making the calibration of experts an integral part of filtering. This enables the filter to learn from previous experience with the experts. The theoretical development takes a Bayesian perspective, using de Finetti's (1964) notion of exchangeability. Experimental results with a preliminary computer implementation of the filter show that its estimates are better than those from comparable filters that do not involve calibration. (I.E.) Source of Abstract/Subfile: AIAA/TIS. IEEE Transactions on Systems, Man, and Cybernetics (ISSN 0018-9472), vol. 19, Jan.-Feb. 1989, p. 6-16. Research supported by NASA, Westinghouse Electric Corp., and U.S. Navy.

111. MENDEL, MAX B.; SHERIDAN, THOMAS B. Optimal combination of information from multiple sources, part 3 Final Report, Mar. 1983 - Jul. 1986. Massachusetts Inst. of Tech., Cambridge. Dept. of Mechanical Engineering; Jul. 1986 69P. Note: Report No.: AD-A174726 Contract No.: N00014-83-K-0193 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A04/MF A01 Journal Announcement: STAR8712 A computer decision aiding system for debiasing and combining information from multiple sources (e.g., human experts, sensors) is proposed. The algorithm is based on six assumptions that apply when the sources are relately knowledgeable with respect to the operator on the variable of interest, and the operator is willing to base his evaluation of their performance on a previously selected (finite) sequence of so called calibration variables. It is also assumed that the operator is interested in maximizing gains, that is, he wishes to act in an optimal or Bayesian manner. An experiment with two human sources of information was conducted to evaluate the performance of the aiding system under a variety of loss functions. On a family of bilinear loss functions, the output of the aid was found to perform better than a naive scheme like simply believing the information the two sources gave. The combination rule was also found to perform better than the output to any individual source. (Author (GRA)) Source of Abstract/Subfile: DTIC COSATI Code: 5H Man-machine Relations.

112. MILLER, D. C.; MURALIDHARAN, R.; BARON, S.; FEEHRER, C. E.; PEW, R. W. Development of human performance models for man-machine system simulation Interim Report, 1 Oct. 1976 - 30 Sep. 1977. Bolt, Beranek, and Newman, Inc., Cambridge, Mass; Oct. 1978 78P. Note: Report No.: AD-A069879; BBN-3739; AFOSR-79-0674TR Contract No.: F44620-76-C-0029; AF PROJ. 2313 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A05/MF A01 Journal Announcement: STAR7921 This report contains discussions and program flow charts pertinent to bottom-up and top-down models developed by BBN to predict the performance of RPV controllers. Included are brief discussions of the control task itself and of problems and issues encountered during model development. (GRA) Source of Abstract/Subfile: DTIC Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5E Human Factors Engineering.

113. MILLER, RONALD C. (Sterling Software, Palo Alto, CA); BORTOLUSSI, MICHAELR. (BITS, Inc., Moffett Field, CA); HART, SANDRA G. (NASA, Ames ResearchCenter, Moffett Field, CA). Evaluating

the subjective workload of directional orientation tasks with varying display formats. Sterling Software, Moffett field, Calif; 1986 6 Refs. Note: Report No.: SAE PAPER 861640 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8801 The impact of various flight-related tasks on the workload imposed by the requirement to compute new headings, course changes, and reciprocal headings is investigated experimentally. It is shown that, in terms of speed and accuracy, pilots are more efficient when alphanumeric display formats are provided. It is suggested that a voice command of 'turn to a specific heading' would provide the optimal method for issuing heading changes when used in conjunction with an alphanumeric display format. (K.K.) Source of Abstract/Subfile: AIAA/TIS. IN: Aerospace Behavioral Engineering Technology Conference, 5th, Long Beach, CA, Oct. 13-16, 1986, Proceedings (A88-10152 01-54). Warrendale, PA, Society of Automotive Engineers, Inc., 1986, p. 135-138.

114. Monk, Timothy H.; Moline, Margaret L.; Graeber, R. Curtis (U Pittsburgh School of Medicine, Western Psychiatric Inst & Clinic Sleep&Evaluation Ctr, PA, US). Inducing jet lag in the laboratory: Patterns of adjustment to an acute shift in routine. . Aviation, Space, and Environmental Medicine; 1988 Aug Vol 59(8) 703-710; 1988; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Eight adult males were studied in a temporal isolation experiment lasting 15days. After 5 days and nights of entrainment to his own habitual routine, each S experienced an acute, unheralded 6-hr phase advance in routine, accomplished by truncating his 6th sleep episode. For the remaining 10 days of the study, Ss were held to a routine 6-hr phase advance to the original. Significant symptoms of jet lag appeared in mood, performance efficiency, sleep, and circadian temperature rhythms. When plotted as a function to "days postshift," some variables (i.e., temperature phase, percent REM sleep) showed a fairly monotonic recovery to baseline levels. Other variables (i.e., actual sleep duration, percent slow-wave sleep, motivation loss, subjective sleepiness) showed a zig-zag recovery pattern, suggesting the interaction of 2 competing processes and reinforcing the need for greater sophistication in the development of jet lag coping strategies. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved) .

115. MONK, TIMOTHY H. (Western Psychiatric Institute and Clinic, Pittsburgh, PA); MOLINE, MARGARET L. (Cornell University, White Plains, NY); GRAEBER, R. CURTIS (NASA, Ames Research Center, Moffett Field, CA). Inducing jet lag in the laboratory - Patterns of adjustment to an acute shift in routine. Pittsburgh Univ., Pa; Aug. 1988 29 Refs. Note: Contract No.: NCC2-253 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8821 Eight middle-aged males were studied in a temporal isolation experimental lasting 15 d. After 5 d and nights of entrainment to his own habitual routine, each subject experienced an acute unheralded 6-h phase advance in routine, accomplished by truncating his sixth sleep episode. For the remaining 10 d of the study, subjects were held to a routine 6-h phase advanced to the original. Significant symptoms of jet lag appeared in mood, performance efficiency, sleep, and circadian temperature rhythms. When plotted as a function to days postshift, some variables showed a fairly monotonic recovery to baseline levels, but other variables showed a zig-zag recovery pattern, suggesting the interaction of two competing processes, and reinforcing the need for greater sophistication in the development of jet-lag coping strategies. (Author) Source of Abstract/Subfile: AIAA/TIS. Aviation, Space, and Environmental Medicine (ISSN 0095-6562), vol. 59, Aug. 1988, p. 703-710.

116. NAGEL, DAVID C.; HART, SANDRA G. Helicopter human factors research. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Feb. 1988. Note: Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A25/MF A01 Journal Announcement: STAR8809 Helicopter flight is among the most demanding of all human-machine integrations. The inherent manual control complexities of rotorcraft are made even more challenging by the small margin for error created in certain operations, such as nap-of-the-Earth (NOE) flight, by the proximity of the terrain. Accident data recount numerous examples of unintended conflict between helicopters and terrain and attest to the perceptual and control difficulties associated with low altitude flight tasks. Ames Research Center, in cooperation with the U.S. Army Aeroflightdynamics Directorate, has initiated an ambitious research program aimed at increasing safety margins for both civilian and military rotorcraft operations. The program is broad, fundamental, and focused on the development of scientific understandings and technological countermeasures. Research being conducted in several areas is reviewed: workload assessment, prediction, and measure validation; development of advanced displays and effective pilot/automation interfaces; identification of visual cues necessary for low-level, low-visibility flight and modeling of

visual flight-path control; and pilot training. (Author) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In NASA, Washington, NASA/Army Rotorcraft Technology. Volume 2: Materials and Structures, Propulsion and Drive Systems, Flight Dynamics and Control, and Acoustics p 929-947 (SEE N85-16632 09-01).

117. NICKERSON, R. S. (Bolt Beranek and Newman, Inc., Cambridge, Mass.); PEW, R. W. (Michigan, University, Ann Arbor, Mich.). Visual pattern matching - An investigation of some effects of decision task, auditory codability, and spatial correspondence. Journal of Experimental Psychology, vol. 98, Apr. 1973, p. 36-43; Apr. 1973 10 Refs. Note: Contract No.: F44620-69-C-0115 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7313.

118. NORMAN, DONALD A.; HUTCHINS, EDWIN L., JR. Computation via direct manipulation Final Report, 1 Dec. 1984 - 29 Feb. 1988. California Univ., San Diego, La Jolla. Inst. for Cognitive Science; Aug. 1988 31P. Note: Report No.: AD-A198417 Contract No.: N00014-85-C-0133; RR04206 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8906 Interfaces to complex equipment can often impose severe difficulties for the user. In part, these difficulties are caused by the abstract nature of the interaction that many modern interfaces present to the operator. A new class of interfaces, the direct manipulation interface, appears to offer improvements in ease of use and understandability because the abstraction of the normal interface is replaced with what might be called the model world metaphor, where the user can feel as if the operations are done directly upon the external environment. Research under this contract examined in detail the nature of directness in the use of computer interfaces. The research demonstrates that the concept of directness is a complex one, involving at least four different aspects of the interface, including two gulfs, one for execution and one for evaluation, and two different kinds of mappings: semantic mappings and referential distance. The experimental and theoretical work reported under this contract examines the complexities of the differences among interface styles, demonstrates the importance of visibility and sound in the performance of tasks, and presents a new, detailed analysis of the general attributes of cognitive artifacts, including an important new theoretical construct: the object-symbol. (GRA) Source of Abstract/Subfile: DTIC Subject Classification: 7554 Man/System Technology & Life Support (1975-).

119. Nyquist, Linda; Slivken, Karla; Spence, Janet T.; Helmreich, Robert L. (U Texas, Austin). Household responsibilities in middle class couples: The contribution ofdemographic and personality variables. . Sex Roles; 1985 Jan Vol 12(1-2) 15-34; 1985; CODEN: SROLDH; ISSN: 03600025. Note: Human. 164 middle-class fathers (mean age 35 yrs) and mothers (mean age 34 yrs) of1st- and 2nd-grade children were administered a battery of self-report instruments to investigate the contribution of demographic and personality variables to household responsibilities in middle-class couples. The self-report measures included the Personal-Attributes Questionnaire (PAQ), Work and Family Orientation Scale (FOS), and a household activities questionnaire inquiring about the relative responsibility of husband and wife for routine domestic tasks traditionally assigned to women, maintenance tasks traditionally assigned to men, decision making, and child rearing. Results show that, in the modal couple, child-rearing and decision-making responsibilities were shared approximately equally by husband and wife, but in most homes, everyday household tasks were divided among traditional gender lines. Several demographic factors, particularly the employment status of the wife, accounted for significant portions of the variability among couples in degree of responsibility assumed by the wife and husband for decision making and for feminine tasks. The division of responsibility was also related to PAQ scores of instrumentality and expressiveness and to FOS items dealing with achievement motivation. (21 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved) KP: demographic & personality variables; household responsibilities; middle class parents of 1st & 2nd graders .

120. PAPAZIAN, BRUCE; ROBERTS, R. B.; REDICK, DONALD J.; TANI, DANIEL M.; PEW, RICHARD, W. An intelligent tool for the design of presentations: A system identification study Final Report, Mar. - Oct. 1988. BBN Systems and Technologies Corp., Cambridge, MA; Oct. 1989 186P. Note: Report No.: AD-A215770; BBN-6932; RADC-TR-89-197 Contract No.: F30602-87-D-0093 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A09/MF A01 Journal Announcement: STAR9010 This report summarizes a study to identify the appropriate role of knowledge based technology in the design of user-computer interfaces and to assess the suitability of the published human factors design guidelines as a

source of interface design knowledge. In addition to specific recommendations in these areas, the report incorporates a literature review of the following topics: the development of knowledge-based systems, rules-of-thumb concerning the types of problems to which knowledge-based systems have been successfully applied, the general nature of design problem solving, interface design methods, the use of human factors guidelines in interface design, and the state-of-the-art in interface design support tools. (GRA) Source of Abstract/Subfile: DTIC.

121. Patterson, Kay; Helmreich, Robert; Stapp, Joy (U Texas, Austin). Likability, sex role congruence of interest, and competence: It all depends on how you ask... Journal of Applied Social Psychology; 1975 Apr-Jun Vol 5(2) 93-109; 1975. Note: Human. 572 female and 385 male undergraduates were shown 1 of 4 videotapedversions of a male or female stimulus person (SP) being interviewed, the SP's being Competent or Incompetent and Masculine or Feminine in their interests. All Ss were asked to rate the SPs' likability on an objective questionnaire, those in one condition (Standard) immediately after viewing the tape, and in another (Projective) after first having responded to a series of open-ended, TAT-like questions about the SP. In the Standard condition, the major results were 2 highly significant effects-- Competent SPs were liked better than Incompetent ones, and the Masculine Competent SPs more than their feminine counterparts. Several changes occurred in the Projective condition. Only profeminist female Ss continued to prefer the Masculine Competent female SP to the Feminine Competent, the other group reversing their ratings. In response to the male SPs, profeminist male Ss in the Projective condition preferred both masculine SPs to the feminine ones and, in comparison with other groups, exhibited a reduced competency effect. (PsycLIT Database Copyright 1976 American Psychological Assn, all rights reserved)

122. PEW, R. W. /MICHIGAN, U., DEPT. OF PSYCHOLOGY, HUMAN PERFORMANCE CENTER, ANN, ARBOR, MICH./. Human information-processing concepts for system engineers. (Human information processing concepts examining read-in, storage, decision making and read-out subsystems). IN- SYSTEM ENGINEERING HANDBOOK. EDITED BY R. E. MACHOL, W. P. TANNER, JR., AND S. N. ALEXANDER. NEW YORK, MCGRAW-HILL BOOK CO., 1965, P. 31-3 TO 31-19. 49 REFS; 1965. Note: Contract No.: AF 49/638/-1235 Language: English Country of Origin: United States Document Type: ANALYTIC OR COLLECTED WORK Documents available from AIAA Technical Library Journal Announcement: IAA6514 Source of Abstract/Subfile: AIAA/TIS.

123. PEW, R. W. Human information processing and reaction time (Proportional relationship between reaction time and information processing in humans as factor of system design). Bolt, Beranek, and Newman, Inc., Cambridge, Mass; Mar. 1971 14P. Note: Report No.: AD-728217; BBN-2111; AFOSR-71-2193TR Contract No.: F44620-69-C-0115; AF PROJ. 9778 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR7204 The report was prepared to summarize for an engineering-oriented audience some of the basic principles underlying the determination of the time for human information processing. (Author (GRA)) Source of Abstract/Subfile: DTIC COSATI Code: 5J Psychology (Individual & Group Behavior).

124. PEW, R. W. /MICHIGAN, U., DEPT. OF PSYCHOLOGY, HUMAN PERFORMANCE CENTER, ANN, ARBOR, MICH./. A model of human controller performance in a relay control system. (Human operator performance in bang-bang control system in phase plane, interpreting results in terms of switching lines). IN- NATIONAL SYMPOSIUM ON HUMAN FACTORS IN ELECTRONICS, 5TH, SAN DIEGO, CALIF., MAY 5, 6, 1964, PROCEEDINGS. SPONSORED BY THE PROFESSIONAL TECHNICAL GROUP ON HUMAN FACTORS IN ELECTRONICS OF THE INST. OF ELECTRICAL AND ELECTRONICS ENGINEERS. NORTH HOLLYWOOD, CALIF., WESTERN PERIODICALS CO., 1964, P. 241- 251. 7 REFS; 1964 Note: Contract No.: AF 49/638/-449; AF 49/638/-1235 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA6420 Source of Abstract/Subfile: AIAA/TIS.

125. PEW, R. W. /MICHIGAN, U,, DEPT. OF PSYCHOLOGY, HUMAN PERFORMANCE CENTER, ANN, ARBOR, MICH./. Performance of human operators in a three-state relay control system with velocity-augmented displays. (Performance of human operators in three-state relay control system with velocity augmented displays). IEEE TRANSACTIONS ON HUMAN FACTORS IN ELECTRONICS, VOL. HFE-7, JUN. 1966, P. 77-83. 5 REFS; Jun. 1966. Note: Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA6616 Source of Abstract/Subfile: AIAA/TIS.

126. PEW, R. W. Proceedings of the 8th Annual Conference on Manual Control (Proceedings of conference on manual control to show interplay between man and machine and application of control theory in medicine and psychology). Michigan Univ., Ann Arbor, Jul. 1972 649P. Note: Report No.: NASA-CR-131244; AD-754908; AFFDL-TR-72-92 Contract No.: NSR-23-005-364 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR7311 The volume presents recent developments in the field of manual control theory and applications. The papers give analytical methods as well as examples of the important interplay between man and machine, such as how man controls and stabilizes machine dynamics, and how machines extend man's capability. Included in the broad range of subjects are procedures to evaluate and identify display systems, controllers, manipulators, human operators, aircraft, and non-flying vehicles. Of particular interest is the continuing trend of applying control theory to problems in medicine and psychology, as well as to problems in vehicle control. (Author (GRA)) Source of Abstract/Subfile: DTIC COSATI Code: 1C Aircraft. Presentation Note: Conf. held at Ann Arbor, Mich., 17-19 May 1972.

127. PEW, R. W. /MICHIGAN, U., DEPT. OF PSYCHOLOGY, ANN ARBOR, MICH./. Recent psychological research relevant to the human factors engineering of man-machine systems. (Psychological research relevant to human factors engineering of man-machine systems, discussing information processing). NATIONAL ELECTRONICS CONFERENCE, CHICAGO, ILL., OCT. 25-27, 1965, PROCEEDINGS. VOLUME 21. <A66-14553 05-09< CONFERENCE SPONSORED BY THE ILLINOIS INST. OF TECH., THE INST. OF ELECTRICAL AND ELECTRONICS ENGINEERS, NORTHWESTERN U., THE U. OF ILLINOIS, ARGONNE NATIONAL LAB., ELECTRONIC REPRESENTATIVES ASSN., SCIENTIFIC APPARATUS MAKERS ASSN., THE SOCIETY OF MOTION PICTURE AND TELEVISION ENGINEERS, IOWA STATE U., MARQUETTE U., MICHIGAN STATE U., THE U. OF MINNESOTA, PURDUE U., THE U. OF MICHIGAN, THE U. OF NOTRE DAME, OHIO STATE U., AND THE U. OF WISCONSIN. CHICAGO, NATIONAL ELECTRONICS CONFERENCE, INC., 1965, P. 678-682. 14 REFS; 1965. Note: Contract No.: AF 49/638/-1235; AF 33/615/-1817 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA6605 Source of Abstract/Subfile: AIAA/TIS.

128. PEW, R. W. /MICHIGAN, U., ANN ARBOR, MICH./. The speed-accuracy operating characteristic (Speed-accuracy interrelationship in human performance as operating characteristic for reaction time under variety of task conditions). Note: SYMPOSIUM SPONSORED BY THE INST. FOR PERCEPTION RESEARCH. IN- ATTENTION AND PERFORMANCE II, PROCEEDINGS OF THE DONDERS CENTENARY SYMPOSIUM ON REACTION TIME, EINDHOVEN, NETHERLANDS, JUL. 29-AUG. 2, 1968. P. 16-26. /A70-24710 10-05/ Contract No.: NASR-54/06/; AF 49/638/-1235 Language: English Document Type: REPORT; CONFERENCE PAPER Journal Announcement: IAA7010. Publication Presentation.

129. PEW, R. W.; ANDERSON, N. S.; CHAPANIS, A.; FISCHOFF, B.; GOLDSTEIN, I. L. Research needs for human factors. National Academy of Sciences - National Research Council, Washington, D. C. Committee on Human Factors; Jan. 1983 219P. Note: Report No.: AD-A129899; RESEARCH-NOTE-83-07 Contract No.: N00014-81-C-0017 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A11/MF A01 Journal Announcement: STAR8323 This report describes basic research needed to improve the scientific basis of applied human factors work. Six topical areas are covered; human decision making; eliciting information from experts; user-computer interaction; supervisory control systems; population group differences; and applied methods. (Author (GRA)) Source of Abstract/Subfile: DTIC Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5E Human Factors Engineering.

130. PEW, R. W.; BARON, S. (Bolt Beranek and Newman, Inc., Cambridge, MA). Perspective on human performance modelling. Automatica (ISSN 0005-1098), vol. 19, Nov. 1983, p. 663-676; Nov. 1983 33 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA8408 An overview of, and perspective on, human performance modelling is presented. The role of human performance models in the design process for complex man-machine systems is discussed. Then psychologically-based models and a control-theoretic approach to modelling are reviewed. Finally, a recently developed model that illustrates how features of the two approaches may be synthesized to analyze a wider range of supervisory control problems is described and discussed.

(Author) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). Documents available from AIAA Technical Library.

131. PEW, R. W.; FEEHRER, C. E.; BARON, S.; MILLER, D. C. Critical review and analysis of performance models applicable to manmachine systems evaluation Interim Scientific Report, 1 Oct. 1975 - 30 Sep. 1976. Bolt, Beranek, and Newman, Inc., Cambridge, Mass; Mar. 1977 306P. Note: Report No.: AD-A038597; BBN-3446; AFOSR-77-0520TR Contract No.: F44620-76-C-0029 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A14/MF A01 Journal Announcement: STAR7718 This report focuses on the review of potentially relevant models and on the identification of issues in model development and application that may have an important impact on models for large-scale, man-machine systems. A detailed and critical evaluation of several classes of human-performance models is presented. Interrelations among existing models are examined, and an evaluation is made on the needs and gaps in the technology. Modelling issues are identified, and research recommendations indicated. Approximately forty models, techniques that have some applicability to the simulation modelling program are abstracted in the Appendix. (Author (GRA)) Source of Abstract/Subfile: DTIC Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations.

132. PEW, R. W.; JAGACINSKI, R. J. Mapping an operator's perception of a parameter space (Operator visual perception mapping during parameter adjustment in dynamic control system). Michigan Univ., Ann Arbor, 1972. Note: Contract No.: NSR-23-005-364 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR7301 Operators monitored the output of two versions of the crossover model having a common random input. Their task was to make discrete, real-time adjustments of the parameters k and tau of one of the models to make its output time history converge to that of the other, fixed model. A plot was obtained of the direction of parameter change as a function of position in the (tau, k) parameter space relative to the nominal value. The plot has a great deal of structure and serves as one form of representation of the operator's perception of the parameter space. (Author) COSATI Code: 5E Human Factors Engineering. In NASA, Washington 7th Ann. Conf. on Manual Control p 201-206 (SEE N73-10104 01-05) Publication Note: Sponsored in part by NSF.

133. PEW, R. W.; ROBB, M. Skill training for the production of a memorized movement pattern (Efficacy of sensory feedback information given during training period for improving human performance in producing memorized movement pattern). Michigan Univ., Ann Arbor; Dec. 1968 37P. Note: Report No.: NASA-CR-1251 Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR6904 Source of Abstract/Subfile: NASA STIF COSATI Code: 5H Man-machine Relations.

134. PEW, R. W.; ROLLINS, A. M. Dialog specification procedures Final Report. Bolt, Beranek, and Newman, Inc., Cambridge, Mass; Sep. 1975 90P. Note: Report No.: PB-252976/6; BBN-3129-REV; USDA-ASCS-123351034-REV Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR7622 The ASCS dialog specification procedures manual is intended to promote the development of easily interpreted, friendly dialogs by: (1) Encouraging uniformity of dialogs from one application to another; (2) exploiting the full capabilities of programmable terminals for creating effective genuinely interactive dialog; and (3) providing designer aids for dialog creation and documentation. These aids meet the requirements for communicating the dialogs that are created to programmers who must implement them and managers who must review and approve them from a users viewpoint. (GRA) COSATI Code: 9B Computers. Announcements: Revised Publication Note: Sponsored by the Dept. of Agriculture.

135. PEW, R. W.; RUPP, G. L. /MICHIGAN, U., ANN ARBOR, MICH./. Two quantitative measures of skill development (Human perceptual motor skill development in tracking performance, using feedback control system gain and effective time delay as measures). JOURNAL OF EXPERIMENTAL PSYCHOLOGY, VOL. 90, P. 1-7; Sep. 1971 14 Refs. Note: Contract No.: NASR-54/06/ Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7121 Source of Abstract/Subfile: AIAA/TIS.

136. Pew, Richard W. (Bolt Beranek & Newman, Experimental Psychology Dept, Cambridge, MA). Human performance issues in the design of future Air Force systems. Aviation, Space, and Environmental

Medicine; 1986 Oct Vol 57(10, Sect 2) 78-82; 1986; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Discusses 3 design and analysis issues relating to human performance in USAir Force systems along a continuum of levels of automation: (1) integrated information display for direct interpretation by the crew, (2) the design of interfaces to the expert systems that are providing recommendations to the crew, and (3) the scope and depth of supervisory control that the crew should provide at the level of robotics. It is concluded that at all 3 levels, traditional task analyses are inadequate as a tool for beginning the crew-system design process. What is needed are design decisions that are driven by human performance issues, rather than having these issues enter the analysis process after the major technological decisions have been made. (5 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

137. PEW, RICHARD W.; CORKER, KEVIN M.; DAVIS, LAWRENCE. Human factors engineering workstation for model-based cockpit design. SAE, Aerospace Technology Conference and Exposition, Anaheim, CA, Oct. 3-6, 1988. 9 p; Oct. 1988 12 Refs. Note: Report No.: SAE PAPER 881475 Language: English Country of Origin: United States Document Type: PREPRINT Documents available from AIAA Technical Library Journal Announcement: IAA8910 A cockpit design workstation provides a graphic and software tool-based representation of the human operator, the goals, the task environment, the procedural constraints, and the equipment options. Simulations of man/machine system performance were used to study analytically the impact of system design on human performance. The merits of the object-oriented programming paradigm include the ability to combine object descriptions and the modular approach in the form of message interfaces. This programming approach was implemented in the cockpit automation technology program and in the Army/NASA aircrew/aircraft integration program. (A.A.F.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-).

138. RAJU, G. JAGANNATH; VERGHESE, GEORGE C.; SHERIDAN, THOMAS B. (MIT, Cambridge, MA). Design issues in 2-port network models of bilateral remote manipulation. Massachusetts Inst. of Tech., Cambridge; 1989 13 Refs. Note: Contract No.: JPL-956892 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8924 A two-port impedance-network model of a single-degree-of-freedom remote manipulation system in which a human operator at the master port interacts with a task object at the slave port in a remote location is presented. The design of the network involves the selection of feedback gains for the servomechanisms that transmit motion and force information from one port of the two-port to the other in both directions. The proposed methodology allows this selection to be based on both stability requirements and specifications of desired port impedances, given models of the task and the human operator. The resulting design guidelines guarantee stability for any passive task object at the slave port and any passive human impedance at the master port. (I.E.) Source of Abstract/Subfile: AIAA/TIS. IN: 1989 IEEE International Conference on Robotics and Automation, Scottsdale, AZ, May 14-19, 1989, Proceedings. Volume 3 (A89-53401 24-63). Washington, DC, IEEE Computer Society Press, 1989, p. 1316-1321.

139. REMINGTON, R. W.; WIENER, E. L. Man-machine interface requirements - advanced technology. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif. Dec. 1984. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A15/MF A01 Journal Announcement: STAR8506 Research issues and areas are identified where increased understanding of the human operator and the interaction between the operator and the avionics could lead to improvements in the performance of current and proposed helicopters. Both current and advanced helicopter systems and avionics are considered. Areas critical to man-machine interface requirements include: (1) artificial intelligence; (2) visual displays; (3) voice technology; (4) cockpit integration; and (5) pilot work loads and performance. (B.W.) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In its Technical Workshop: Advanced Helicopter Cockpit Design Concepts p 247-266 (SEE N85-14806 06-04).

140. Roth, E. M.; Bennett, K. B.; Woods, D. D. (Westinghouse Research & Development Ctr, Pittsburgh, PA, US). Human interaction with an "intelligent" machine. Special Issue: Cognitiveengineering in dynamic worlds. . International Journal of Man Machine Studies; 1987 Nov-Dec Vol 27(5-6) 479-525 ; 1987; CODEN: IJMMBC; ISSN: 00207373. Note: Human. Four technicians varying in level of experience and interactive style (passive or active) diagnosed faults in electromechanical equipment with the aid of an expert system. Results indicate that the standard approach to expert system design, in which the user

gathers data for the machine, was inadequate in this instance. Problem solving was marked by novel situations outside the machine's competence, special conditions, underspecified instructions, and error recovery, all of which required substantial knowledge and active participation on the part of technicians. The authors argue that intelligent systems should be based on the notion of a joint cognitive system architecture in which computational technology aids the user in problem solving and the user manages varied knowledge sources. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

141. Roth, E. M.; Woods, David D. (Westinghouse Research & Development Ctr, Pittsburgh, PA, US). Aiding human performance: I. Cognitive analysis. Travail Humain; 1988 Jan Vol 51(1) 39-64; 1988; ISSN: 00411868. Note: Human. Explores issues in aiding human performance through an analysis of a naturalproblem-solving habitat: the control of water level in a boiler during the startup of a power plant. Two mutually reinforcing analyses were conducted to understand the existing system for feedwater/level control as a problem-solving system. One analysis focused on mapping the cognitive demands imposed by the task world itself or building a competence model. The other focused on developing a performance model, a description of what operators actually do, successfully and erroneously, to cope with the demands of the world. The analyses enabled identification of options to produce a better match between the cognitive demands of the task and the available resources. (French abstract) (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

142. SHERIDAN, THOMAS B. (MIT, Cambridge, MA). Supervisory control of telerobots in space. IN: Machine intelligence and autonomy for aerospace systems (A89-31076 12-59). Washington, DC, American Institute of Aeronautics and Astronautics, Inc., 1988, p. 31-50; 1988 17 Refs. Note: Language: English Country of Origin: United States Document Type: ANALYTIC OF COLLECTED WORK Journal Announcement: IAA8912 An evaluation is made of the requirements for supervisory human control of teleoperation systems in orbit, with a view to aspects of man-machine roles and interactions that have been advanced as well as those that remain problematic. In order for a telerobot to perform a new task, its human supervisor must plan the new commands, transform them in coded form to the computer, monitor the automated execution of these programmed operations, perhaps intervene in the event of some problem, and finally, learn from the experience just gained. Attention is presently given to criteria for the allocation of responsibility to the human supervisor rather than computers possessing progressively greater degrees of autonomy. (O.C.) Source of Abstract/Subfile: AIAA/TIS. Documents available from AIAA Technical Library.

143. SHERIDAN, THOMAS B. (MIT, Cambridge, MA). The system perspective (for pilot-aircraft control interaction). IN: Human factors in aviation (A89-34431 14-54). San Diego, CA, Academic Press, Inc., 1988, p. 27-51; 1988 13 Refs. Note: Language: English Country of Origin: United States Document Type: ANALYTIC OF COLLECTED WORK Journal Announcement: IAA8914 The application of systems theory to aviation human-factors analyses is discussed in an introductory overview. Topics addressed include small- and large-scale problems (pilot control of an aircraft vs the U.S. National Airspace System), aircraft production as a system, system definition and representation, and the advantages of a systems approach. Consideration is given to the history of systems analysis; current practices; goals, decision, and control; and supervisory control of systems. Extensive diagrams and flow charts are provided. (T.K.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). Documents available from AIAA Technical Library.

144. SHERIDAN, THOMAS B.; CHARNY, LEONID; MENDEL, MAX B.; ROSEBOROUGH, JAMESB. Supervisory control, mental models and decision aids, part 1 Final Report, Mar. 1983 - Jul. 1986. Massachusetts Inst. of Tech., Cambridge. Dept. of Mechanical Engineering; Jul. 1986 20P. Note: Report No.: AD-A174727 Contract No.: N00014-83-K-0193 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A02/MF A01 Journal Announcement: STAR8712 This paper poses a framework for considering human supervisory control of semi-automatic systems. It analyzes supervisory control into specific human functions and gives examples of research that have been done and/or are needed with respect to each of these functions. For each such function it is argued that the human supervisory operator necessarily has a corresponding mental model, and potentially can have a computer-based decision aid. The relation of the proposed framework to the canonical modern control paradigm is also discussed, as are the reasonable limitations of our ability to model such a complex human machine interaction which itself exercises a high degree of free choice. Three accompanying papers offer detailed contributions to three of the supervisory functions (and corresponding decision aids) which heretofore have been neglected, namely: (1) formation

of objectives by satisficing; (2) acquisition, calibration and combination of measures of process state; and (3) estimation of process state from current measure and past control actions. (GRA) Source of Abstract/Subfile: DTIC Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations.

145. SHERIDAN, THOMAS B.; KRUSER, DANA S.; DEUTSCH, STANLEY, eds. Human Factors in Automated and Robotic Space Systems: Proceedings of a symposium. Part 1. National Academy of Sciences - National Research Council, Washington, DC. Committee on Human Factors; 1987 475P. Note: Report No.: NASA-CR-182495; NAS 1.26:182495 Contract No.: NASW-4071 Language: English Country of Origin: United States Document Type: CONFERENCE PROCEEDINGS Documents available from AIAA Technical Library Other Availability: NTIS HC A20/MF A01 Journal Announcement: STAR8918 Human factors research likely to produce results applicable to the development of a NASA space station is discussed. The particular sessions covered in Part 1 include: (1) system productivity -- people and machines; (2) expert systems and their use; (3) language and displays for human-computer communication; and (4) computer aided monitoring and decision making. Papers from each subject area are reproduced and the discussions from each area are summarized. (A.D.) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. Presentation Note: Symposium held in Washington, DC, 29-30 Jan. 1987.

146. Sheridan, Thomas B.; Mann, Robert W. (Massachusetts Inst of Technology). Design of control devices for people with severe motor impairment. Human Factors; 1978 Jun Vol 20(3) 321-337; 1978; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Reviews the incidence and demography of severe sensorimotor disablement inthe US and discusses current technology in prostheses and orthoses for upper and lower limbs. Criteria for the design of such systems and tradeoffs which the system designer must make in the process of design are explained. It is concluded that after many years of neglect, engineers are designing more sophisticated and more economical devices; it is also noted, however, that many of these devices remain in experimental stages and that widespread benefit depends on continued effort to improve technology and to understand psychosocial aspects. (PsycLIT Database Copyright 1979 American Psychological Assn, all rights reserved).

147. SHERIDAN, THOMAS B.; RAJU, G. JAGGANATH; BUZAN, FORREST T.; YARED, WAELPARK, JONG. Adjustable impedance, force feedback and command language aids for telerobotics (parts 1-4 of an 8-part MIT progress report). Massachusetts Inst. of Tech., Cambridge. Man-Machine Systems Lab; Jan. 1989. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A21/MF A03 Journal Announcement: STAR9023 Projects recently completed or in progress at MIT Man-Machine Systems Laboratory are summarized. (1) A 2-part impedance network model of a single degree of freedom remote manipulation system is presented in which a human operator at the master port interacts with a task object at the slave port in a remote location is presented. (2) The extension of the predictor concept to include force feedback and dynamic modeling of the manipulator and the environment is addressed. (3) A system was constructed to infer intent from the operator's commands and the teleoperation context, and generalize this information to interpret future commands. (4) A command language system is being designed that is robust, easy to learn, and has more natural man-machine communication. A general telerobot problem selected as an important command language context is finding a collision-free path for a robot. (Author) Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In JPL, California Inst. of Tech., Proceedings of the NASA Conference on Space Telerobotics, Volume 1 p 81-88 (SEE N90-29000 23-54) Publication Note: Sponsored in part by NASA, Ames Research Center.

148. SHERIDAN, THOMAS B.; ROSEBOROUGH, JAMES B.; DAS, HARI; CHIN, KAN-PINGINOUE, SEIICHI. Use of graphics in decision aids for telerobotic control: (Parts 5-8 of an 8-part MIT progress report). Massachusetts Inst. of Tech., Cambridge. Man-Machine Systems Lab; Jan. 1989. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A23/MF A04 Journal Announcement: STAR9024 Four separate projects recently completed or in progress at the MIT Man-Machine Systems Laboratory are summarized. They are: a decision aid for retrieving a tumbling satellite in space; kinematic control and graphic display of redundant teleoperators; real time terrain/object generation: a quad-tree approach; and two dimensional control for three dimensional obstacle avoidance. (Author) COSATI Code: 5H Man-machine Relations. In JPL, California Inst. of Tech., Proceedings of

the NASA Conference on Space Telerobotics, Volume 3 p 533-541 (SEE N90-29780 24-54).

149. SHIVELY, ROBERT J. (U.S. Army, Aeroflightdynamics Directorate, MoffettField, CA); BORTOLUSSI, MICHAEL R. (Western Aerospace Laboratories, Inc., Moffett, Field, CA); BATTISTE, VERNOL; HART, SANDRA G. (NASA, Ames ResearchCenter, Moffett Field, CA); PEPITONE, DAVID D. (San Jose State University, CA); MATSUMOTO, JOY HAMERMAN. Inflight evaluation of pilot workload measures for rotorcraft research. Army Aviation Research and Development Command, Moffett Field, Calif. 1987 12 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8817 The effectiveness of heart-rate monitoring and the NASA TLX workload rating scale (Hart et al., 1985) in measuring helicopter-pilot workloads is investigated experimentally. Four NASA test pilots flew two 2-h missions each in an SH-3G helicopter, following scenarios with takeoff, hover, cross-country, and landing tasks; pilot performance on the tasks undertaken near the landing area was measured by laser tracking. The results are presented in graphs and discussed in detail, and it is found that the TLX ratings clearly distinguish the flight segments and are well correlated with the performance data. The mean heart rate (measured as interbeat interval) is correlated (r = -0.69) with the TLX workload, but only the standard deviation of the interbeat interval is able to distinguish between flight segments; the correlation between standard deviation and TLX ratings is negative but not significant. (T.K.) Source of Abstract/Subfile: AIAA/TIS. IN: International Symposium on Aviation Psychology, 4th, Columbus, OH, Apr. 27-30, 1987, Proceedings (A88-42927 17-53). Columbus, OH, Ohio State University, 1987, p. 637-643.

150. Sorkin, R. D.; Pohlmann, L. D.; Woods, D. D. (Arizona State U). Decision interaction between auditory channels. Perception and Psychophysics; 1976 Apr Vol 19(4) 290-295; 1976. Note: Human. Two female students detected signals presented in a 2-channel, simultaneousdetection task at 630 and 1,400 Hz. The familiar pattern of interference between the frequency channels was observed -detectability in one channel was depressed on trials when a signal or a yes response occurred in the other channel. On each trial, measures were made of the energy within specified frequency bands arounds each signal frequency. The relationships between these measures and performance in each channel were studied. There was no consistent relationship between the magnitude of the measure in one channel and performance in the other. It is suggested that interactions between the channels probably originate in the response process of the interfering channel. (PsycLIT Database Copyright 1976 American Psychological Assn, all rights reserved).

151. Spence, Janet T.; Helmreich, Robert L. (U Texas, Austin). Androgyny versus gender schema: A comment on Bem's gender schema theory. Psychological Review; 1981 Jul Vol 88(4) 365-368; 1981; CODEN: PSRVAX; ISSN: 0033295X. Note: Human. S. L. Bem (see PA, Vol 66:00000) proposes that the Bem Sex-Role Inventory(BSRI) measures individual differences in a unidimensional construct in addition to 2 independent dimensions, global self-concepts of masculinity and femininity. Evidence suggests that the BSRI measures primarily self-images of instrumental and expressive personality traits and that these trait clusters show little or no relationship to global self-images of masculinity and femininity or to unidimensional constructs such as the tendency to utilize gender schemata. (12 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved) KP: Bem Sex Role Inventory as measure of individual differences in self concepts vs global self images of masculinity & femininity; criticism of S. L. Bem's gender schemata.

152. SPENCE, JANET T.; HELMREICH, ROBERT L. (Texas, University, Austin). Beyond face validity - A comment on Nicholls, Licht, and Pearl (gender-related personality traits). Texas Univ., Austin; 1983 17 Refs. Note: Contract No.: NAG2-137; NIH-MH-32066 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8810 In their discussion of the Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence and Helmrich, 1978), Nicholls, et al. (1982) blur two issues. The first concerns the legitimacy of equating the clusters of gender-related personality traits tapped by these instrumetns with the global constructs of masculinity and feminity. The second concerns item similarity between the PAQ and BSRI M scales and measures of self-esteem and the question of whether the several instruments measure the same or separable constructs. Decisions about each of these issues involve complex considerations that do not directly involve face validity. (Author) Source of Abstract/Subfile: AIAA/TIS. Psychological Bulletin (ISSN 0033-2909), vol. 94, no. 1, 1983, p. 181-184.

153. Spence, Janet T.; Helmreich, Robert L. (U Texas, Austin). Comparison of masculine and feminine personality attributes and sex role attitudes across age groups. . Developmental Psychology; 1979 Sep Vol

15(5) 582-583; 1979; CODEN: DEVPA9; ISSN: 00121649. Note: Human. Scores on the Masculinity (M) and Femininity scales of the Personal Attributes Questionnaire were compared in 488 male and 682 female high school students, 308 male and 304 female college students, 325 mothers and 277 fathers of elementary school children, and 736 mothers and 736 fathers of college students. Significant age trends occurred only for males on M. Scores on the Attitudes Toward Women Scale suggested that females were more liberal than males and students more liberal than parents of college students. Results are explained in terms of the differential sex-role expectations and life experiences of males and females. (2 ref) (PsycLIT Database Copyright 1980 American Psychological Assn, all rights reserved).

154. Spence, Janet T.; Helmreich, Robert L.; Pred, Robert S. (U Texas, Austin, US). Impatience versus achievement strivings in the Type A pattern: Differentialeffects on students' health and academic achievement. . Journal of Applied Psychology; 1987 Nov Vol 72(4) 522-528; 1987; ISSN: 00219010. Note: Human. Psychometric analyses of college students' responses to the Jenkins ActivitySurvey, a self-report measure of the Type A behavior pattern, revealed the presence of two relatively independent factors. On the basis of these analyses, two scales, labeled Achievement Strivings (AS) and Impatience-Irritability (II), were developed. In two samples of male and female college students, scores on AS but not on II were found to be significantly correlated with grade average. Responses to a health survey, on the other hand, indicated that frequency of physical complaints was significantly correlated with II but not with AS. These results suggest that there are two relatively independent factors in the Type A pattern that have differential effects on performance and health. Future research on the personality factors related to coronary heart disease and other disorders might more profitably focus on the syndrome reflected in the II scale than on the Type A pattern. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

155. Spence, Janet T.; Helmreich, Robert L. (U Texas, Austin). The many faces of androgyny: A reply to Locksley and Colten. Journal of Personality and Social Psychology; 1979 Jun Vol 37(6) 1032-1046; 1979; CODEN: JPSPB2; ISSN: 00223514. Note: Human. In their critique of the Bem Sex Role Inventory (BSRI) and Personal Attributes Questionnaire (PAQ), A. Locksley and M. Colten (see PA, Vol 64:10293) assume that a singular androgyny theory exists to which the rationale and the psychometric properties of these instruments are tied and that each is intended to be a broad- gauged measure of masculinity and femininity or of global self-images of these concepts. The present authors, however, conceive of the PAQ as a specialized measure of socially desirable instrumental and expressive characteristics, objectively defined trait dimensions that distinguish between the sexes to some degree and thus may be labeled "masculine" and "feminine." (34 ref) (PsycLIT Database Copyright 1980 American Psychological Assn, all rights reserved).

156. Spence, Janet T.; Helmreich, Robert L. (U Texas, Austin). Masculine instrumentality and feminine expressiveness: Their relationships with sex role attitudes and behaviors. . Psychology of Women Quarterly; 1980 Win Vol 5(2) 147-163; 1980; CODEN: PWOQDY; ISSN: 03616843. Note: Human. Data from the Bem Sex-Role Inventory (BSRI) and the Personal AttributesQuestionnaire (PAQ) Masculinity and Femininity scales have led to the hypothesis that androgynous individuals are more behaviorally flexible than others, manifesting both masculine and feminine role behaviors. Sex-role androgyny is also said to have other beneficial consequences such as high self-esteem. The content of these instruments, however, is largely confined to socially desirable instrumental (masculine) and expressive (feminine) personality traits. A review of the literature indicates that these abstract trait dimensions have only minimal relationships with sex-role attitudes and sex-role behaviors not tapping instrumentality and expressiveness, and provide little support for the general behavioral flexibility hypothesis. Although PAQ and BSRI findings cannot be generalized to sex-role behaviors in general, the literature suggests that instrumentality and expressiveness per se have important implications. Appreciation of their contributions may be advanced more rapidly if these trait dimensions are disentangled from global concepts of sex-roles or masculinity, femininity, and androgyny. (33 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved) KP: separation of instrumentality & expressiveness personality traits from sex role attitudes & behaviors.

157. Spence, Janet T.; Helmreich, Robert L.; Holahan, Carole K. (U Texas, Austin). Negative and positive components of psychological masculinity and femininityand their relationships to self reports of neurotic and acting out behaviors. . Journal of Personality and Social Psychology; 1979 Oct Vol 37(10) 1673-1682; 1979; CODEN: JPSPB2; ISSN: 00223514. Note: Human. Negatively valued masculinity (M-super(-)) and femininity (F-super(-))personality scales were developed to supplement the positively valued Masculinity (M-super(+)) and Femininity (F-super(+)) scales of J. T. Spence and R. L. Helmreich's

(1978) Personal Attributes Questionnaire. (M-super(-)) consisted of traits that had been judged to be (a) more typical of males than females, (b) undesirable in both sexes, and (c) agentic or instrumental in content. Two (F-super(-)) scales were developed, both containing stereotypically feminine, undesirable traits, one set of traits referring to communionlike characteristics and the other to verbal passive-aggressive qualities. In 220 male and 363 female undergraduates significant sex differences in the predicted direction were found on all scales. In both sexes, low and nonsignificant correlations were found between parallel positive and negative scales, but highly significant negative correlations were found between positive and negative cross-sex scales. Findings provide additional evidence for the multidimensionality of masculinity and femininity. Scores on a self-esteem measure were positively correlated with M-super(+) and F-super(+), uncorrelated with M- super(-), and negatively correlated with the F-super(-) scales. Different patterns were associated with 2 types of problem behaviors. Neuroticism was most highly correlated (negatively) with M-super(+), and acting out behavior was most strongly correlated (positively) with M-super(-). (14 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved).

158. Spence, Janet T.; Helmreich, Robert L. (U Texas, Austin). On assessing androgyny. Sex Roles; 1979 Dec Vol 5(6) 721-738; 1979; CODEN: SROLDH; ISSN: 03600025. Note: Human. Research with personality instruments containing separate masculinity (M) and femininity (F) scales has found them to be orthogonal, leading to the search for methods to express their conjoint relationships with other variables. The theoretical and/or empirical assumptions underlying 3 methods are explored: S. L. Bem's (1974) difference model; the absolute score method; and the difference/median method, which combines features of both. Bem's model and the difference/median method presuppose a unique combinatory model, while the absolute method detects a number of alternative possibilities. Empirical data (756 male and 1,010 female high school juniors and seniors) using the Personal Attributes Questionnaire are used to demonstrate that the joint contributions of M and F to the variance are not uniform and, consequently, that the absolute method has greater heuristic value. (15 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved) KP: difference vs absolute score vs difference/median methods for assessment of relationship between masculinity & femininity; female vs male high school & female college students .

159. Spence, Janet T.; Helmreich, Robert; Stapp, Joy (U Texas, Austin). Ratings of self and peers on sex role attributes and their relation to self esteem and conceptions of masculinity and femininity. . Journal of Personality and Social Psychology; 1975 Jul Vol 32(1) 29-39; 1975. Note: Human. 248 male and 282 female college students were given the authors' PersonalAttributes Questionnaire (consisting of 55 bipolar attributes drawn from the Sex Role Stereotype Questionnaire by P. S. Rosenkrantz et al) and were asked to rate themselves and then to compare directly the typical male and female college student. Self-ratings were divided into male-valued (stereotypically masculine attributes judged more desirable for both sexes), female-valued, and sex-specific items. Also administered was the Attitudes Toward Women Scale and a measure of social self-esteem (the Texas Social Behavior Inventory). Correlations of the self- ratings with stereotype scores and the Attitudes Toward Women Scale were low in magnitude, suggesting that sex role expectations do not distort self-concepts. For both men and women, "femininity" on the female-valued self items and "masculinity" on the male-valued items were positively correlated, and both were significantly related to self-esteem. Implications for a concept of masculinity and femininity as a duality which is characteristic of all individuals are discussed, as well as the use of the self-rating scales for measuring masculinity, femininity, and androgyny. (21 ref) (PsycLIT Database Copyright 1975 American Psychological Assn, all rights reserved) .

160. Spence, Janet T.; Helmreich, Robert; Stapp, Joy (U. Texas, Austin). A short version of the Attitudes toward Women Scale (AWS). Bulletin of the Psychonomic Society; 1973 Oct Vol. 2(4) 219-220; 1973. Note: Human. Presents a short (25-item) version of the Spence-Helmreich Attitudes towardWomen Scale. Correlations between scores on the short and the full (55-item) version for groups of male and female students (N = 527) and groups of their parents (N = 524) were .95 or above. Results of a factor analysis and part-whole correlations indicate the similarity of the 2 forms. Normative data for the student and parent samples are described. (PsycLIT Database Copyright 1974 American Psychological Assn, all rights reserved) .

161. Spence, Janet T.; Pred, Robert S.; Helmreich, Robert L. (U Texas, Austin, US). Achievement strivings, scholastic aptitude, and academic performance: A follow up to "Impatience versus achievement strivings in the Type A pattern." . Journal of Applied Psychology; 1989 Feb Vol 74(1) 176-178; 1989; ISSN: 00219010. Note: Human. A recent study of college students by J. T. Spence et al (see PA, Vol 75:9108)

demonstrated that the Jenkins Activity Survey measure of the Type A pattern consisted of two relatively independent factors labeled Achievement Strivings (AS) and Impatience-Irritability (II). Scores on the AS scale but not the II scale were significantly correlated with cumulative grade point average (GPA) on the basis of 2 or more semesters of work. Follow-up data on the academic performance of these students are reported here. Correlations between AS scores and updated GPAs that were based on at least 4 semesters of work were comparable in value with those reported by Spence et al. Scholastic Aptitude Test (SAT) scores, obtained from students' records, were also significantly related to GPA. However, SAT and AS scores were nonsignificantly correlated and combined additively to account for a substantial portion of the variability in GPAs. The R -sup-2s in four independent samples ranged from .22 to .36. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

162. Strayer, David L.; Wickens, Christopher D.; Braune, Rolf (U Illinois, Urbana-Champaign). Adult age differences in the speed and capacity of information processing: II. An electrophysiological approach. Psychology and Aging; 1987 Jun Vol 2(2) 99-110; 1987; ISSN: 08827974. Note: Human. A total of 60 subjects performed different variants of the Sternberg memory search task in an experiment designed to evaluate aging differences in the speed of the human information-processing system. The present study examined the nature of the age-related slowing using convergent methodologies of Sternberg's additive factors logic, the speed-accuracy trade-off, and the P300 component of the event-related brain potential. These methodologies revealed that a substantial component of slowing was manifest in perceptual encoding, response criterion adjustment, and response execution, with a lesser component related to memory search speed. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

163. Stricker, Lawrence J.; Helmreich, Robert L.; Roberts, David C. (Educational Testing Service, Princeton, NJ). A survey of the society for personality and social psychology. Personality and Social Psychology Bulletin; 1986 Mar Vol 12(1) 131-144; 1986; ISSN: 01461672. Note: Human. Surveyed 1,805 members of the Society for Personality and Social Psychology(the Society) to determine their opinions about matters concerning the Society, including the relations of the Society and its members with the American Psychological Association (APA), the Society's structure, its publications, and its convention program. 88% of the respondents reported that they were very or extremely likely to retain membership in the APA. 73% supported more active involvement of the Society in APA affairs. 24% reported that they were very or extremely satisfied with the Society's communication with federal funding agencies about research in personality psychology. In the last year, respondents read a mean number of 10 articles in the Society's Bulletin, and 83% had read at least 1. The Society's Review was less widely read. Results concerning the Society's activities at APA conventions are also presented. (2 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved) KP: structure & publications & convention program & relations with American Psychological Association; members of Society for Personality & Social Psychology.

164. Tisinger, Jerald L.; Graeber, R. Curtis (US Army Natick Research & Development Command, Food Sciences Lab, MA). Use of oral antibiotics in studies of ingestive behavior in rats. Physiology and Behavior; 1976 Nov Vol 17(5) 861-864; 1976. Note: Animal. The occurrence of chronic respiratory disease (CRD) in animal colonies is aproblem encountered in many laboratories. 16 female Holtzman albino rats were used to investigate the effects on food and water intake of the oral antibiotics most often used to treat CRD. Four concentrations (0.01, 0.05, 0.25, and 0.50%) of tetracycline hydrochloride (TH) and sodium sulfamerhazine (SS) were presented at different times mixed with food or water. Ss were permitted to choose between each drugged and normal food or water combination for 4 days. Both drugs seriously affected fluid intake when placed in solution. When mixed with food, only SS produced a preference-aversion function and increased total daily food and water intake regardless of concentration. The presence of TH in the food had no effect on food choice or on total daily food intake at any concentration. (PsycLIT Database Copyright 1977 American Psychological Assn, all rights reserved).

165. Toole, Tonya; Arink, Elizabeth A. (Florida State U, Tallahassee). Movement education: Its effect on motor skill performance. Research Quarterly for Exercise and Sport; 1982 Jun Vol 53(2) 156-162; 1982. Note: Human. 47 1st graders were taught movement principles either by a movement education or a traditional approach. The Throw and Catch Test, a batting test, and 2 tests that measure performance on striking and kicking distance and accuracy were used as pre- and posttests. Teaching approach groups were not significantly different on the later 2 tests that measured the transfer of training effect. Traditional learning was better than movement education in developing throwing, catching, and batting performance. Results suggest that when one's objective is to teach a specific skill within a relatively short

time period, a command style with demonstration is better than movement education. (28 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

166. Toole, Tonya; Lucariello, Georgann (Florida State U, Motor Behavior Lab, Tallahassee). Attentional requirements for location and distance of movement: Encoding and recognition. Perceptual and Motor Skills; 1984 Jun Vol 58(3) 939-944; 1984; CODEN: PMOSAZ; ISSN: 00315125. Note: Human. Studied the early processing stages of encoding and recognition of slow movement in a short-term motor-memory paradigm using 20 undergraduates. These stages were examined by determining whether G. T. Laabs's (see PA, Vol 51:10455) differential decay rates for location of movement and distance of movement could be replicated when the interfering activity was performed during the criterion and replication movements. Ss performed a linear-positioning task in a 2 * 2 * 2 (count by movement type by retention interval) experimental design. 10 Ss in one condition counted backwards by 3's during the criterion and replication movements. There were no detrimental effects for location and distance-cue reproduction when attention was shared with counting backwards. Consistent with Laabs's results, location of movement was maintained over the 15-sec interval while distance of movement spontaneously changed. Results support the notion that the early stages of encoding and recognition of cues for movement can occur unaffected in a secondary task. (13 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

167. Toole, Tonya; McColskey, Dale; Rider, Robert A. (Florida State U, Coll of Education, Tallahassee). Retention of movement cues by visually impaired persons. Journal of Visual Impairment and Blindness; 1984 Dec Vol 78(10) 487-490; 1984; ISSN: 0145482X. Note: Human. Examined whether kinesthetic movement of information in a short-memory paradigm would be superior in visually impaired (VI) persons when compared with sighted individuals. It was predicted that VI Ss would have a more sophisticated and refined kinesthetic modality and less absolute and variable error on a movement-retention task. Results from 11 sighted and 11 VI college students indicate that groups were equally effective in using the kinesthetic system to retain distance and location cues but that VI Ss were significantly more variable in their movement reproduction than sighted Ss. (29 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

168. Toole, Tonya; Pyne, Ann; McTarsney, Patricia A. (Florida State U, Motor Behavior Lab, Tallahassee). Age differences in memory for movement. Experimental Aging Research; 1984 Win Vol 10(4) 205-210; 1984; CODEN: EAGRDS; ISSN: 0361073X. Note: Human. Exp I investigated whether memory deficits for movement occur with age. 13 right-handed Ss in each of 4 age groups (18-32, 33-47, 48-62, and 63-77 yrs) were administered tests to determine Ss' ability to encode and recall as many as 12 consecutive linear movement lists. When minimal memory requirements were imposed, there were no significant differences in older and younger Ss' abilities to immediately recall movements. However, older Ss could not recall movements as well as younger Ss when greater memory demands, such as 9 or 12 movements, were made. Exp II examined whether experimenter-imposed organizational schemes would enhance memory for older Ss. 16 right-handed undergraduates and graduates and 16 right-handed elderly adults (aged 60-70 yrs) completed linear-positioning movement tasks. While experimenter-imposed organizational schemes improved recall for older Ss, age differences still existed when greater memory requirements were essential. Organizational schemes did not enhance memory for either young or old Ss when compared to a free-choice condition. (26 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

169. Tsang, P. S. (U Illinois, Aviation Research Lab, Savoy). Can pilots time share better than non pilots? Special Issue: Ergonomics in aviation. Applied Ergonomics; 1986 Dec Vol 17(4) 284-290; 1986; CODEN: AERGBW; ISSN: 00036870. Note: Human. Compared time-sharing performance of 12 right-handed male pilots (average age 28.8 yrs) with that of 12 right-handed male undergraduates. In a secondary task paradigm, Ss were required to perform 5 dual tasks with various degrees of structural similarity. A higher degree of task interference was observed for the structurally more similar task pairs. Although the pilots appeared to be more efficient in one of the dual task conditions, evidence for a general difference in time-sharing ability between the students and the pilots was not strong. Data are consistent with previous research and support the concept of multiple resources. It is concluded that the degree to which time-sharing performance is structure-dependent is not easily alterable by training and that laboratory findings on the structural determinants of time-sharing efficiency are generalizable to operational environments. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

170. TSANG, PAMELA S. (Illinois Univ., Savoy.); HART, SANDRA G.; VIDULICH, MICHAEL A. The

effects of display-control I/O, compatibility, and integrality on dual-task performance and subjective workload. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Feb. 1987. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A14/MF A01 Journal Announcement: STAR8724 The utility of speech technology was evaluated in terms of three dual task principles: resource competition between the time shared tasks, stimulus central processing response compatibility, and task integrality. Empirical support for these prinicples was reviewed. Two studies investigating the interactive effects of the three principles were described. Objective performance and subjective workload ratings for both single and dual tasks were examined. It was found that the single task measures were not necessarily good predictors for the dual task measures. It was shown that all three principles played an important role in determining an optimal task configuration. This was reflected in both the performance measures and the subjective measures. Therefore, consideration of all three principles is required to insure proper use of speech technology in a complex environment. (Author) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In AGARD, Information Management and Decision Making in Advanced Airborne Weapon Systems 9 p (SEE N87-29503 24-06).

171. Trang, Pamela S.; Johnson, Walter W. (Wright State U, Dayton, OH, US). Cognitive demands in automation. Aviation, Space, and Environmental Medicine; 1989 Feb Vol 60(2) 130-135; 1989; CODEN: AEMEAY; ISSN: 00956562. Note: Human. Examined the cognitive demands of automated systems and their implications on automation design and mental workload using 1 high-school and 5 college students (aged 17-31 yrs). A variety of tasks (continuous flight control, discrete target acquisition, and decision making) was used alone or in combination with other tasks. Performance and subjective workload ratings, obtained by 3 workload scales, were examined as a function of the level of automation. Results demonstrate the usefulness of the multiple resource approach to task analysis. The results also demonstrate the value of understanding the cognitive demands in the process of function allocation between human and machine. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

172. Trang, Pamela S.; Wickens, Christopher D. (Wright State U, Dayton, OH, US). The structural constraints and strategic control of resource allocation. Human Performance; 1988 Vol 1(1) 45-72; 1988; ISSN: 08959285. Note: Human. Examines the structural limitations in time-sharing performance by manipulating the structural properties of the component time-shared tasks. 20 right-handed male students (aged 19-30 yrs) were divided equally between a strategy instructions group and a no-strategy instructions group. A mixed design was employed with 2 groups of Ss receiving different instructions but performing the same tasks. Time-sharing efficiency was found to decrease as the degree of shared resources between the time-shared tasks increased. The level of resource allocation possible, on the other hand, increased as the degree of shared resources increased. To the extent that resources were shared, the skill of dynamic allocation appeared to be one that could be improved by training. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

173. Tulga, M. Kamil; Sheridan, Thomas B. (Commercial Information Corp, Woburn, MA). Dynamic decisions and work load in multitask supervisory control. IEEE Transactions on Systems, Man, and Cybernetics; 1980 May Vol SMC-10(5)217-232 CO: ISYMAW; 1980; ISSN: 00189472. Note: Human. Develops a paradigm for the problem of allocating in time a single resource to multiple simultaneous task demands that appear randomly, last for various periods, and offer varying rewards for service. Based on a dynamic optimizing algorithm plus an estimator, and including response time and future discounting constraints, a model of the human decision maker is compared to experimental results for human Ss performing such a task at a computer-graphics terminal. Results indicate a reasonable fit, under various model parameters and task conditions, and suggest hypotheses about the nature of human "planning ahead" and mental work load. (38 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved).

174. Tzelgov, Joseph; Tsach, Uri; Sheridan, Thomas B. (Ben Gurion U of the Negev, Beersheba, Israel). Effects of indicating failure odds and smoothed outputs on human failuredetection in dynamic systems. . Ergonomics; 1985 Feb Vol 28(2) 449-462; 1985; CODEN: ERGOAX; ISSN: 00140139. Note: Human. Discusses efforts to detect failures in dynamic systems with parallel models, in which the operator is expected to make decisions about possible failures by comparing the outputs of the system and its model, in the context of human information processing. Eight university students participated in an experiment conducted to test different means for aiding the operator in this task. It was found that the detection

process was improved by providing operators with estimates of the failure odds. When both the system and model outputs were noisy, additional improvement was achieved by providing operators with pre-smoothed outputs. (French, German & Japanese abstracts) (17 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

175. Vidulich, M. A.; Tsang, P. S. (NASA-Ames Research Ctr, Moffett Field, CA). Techniques of subjective workload assessment: A comparison of SWAT and the NASA Bipolar methods. Special Issue: Aviation psychology. Ergonomics; 1986 Nov Vol 29(11) 1385-1398; 1986; CODEN: ERGOAX; ISSN: 00140139. Note: Human. Compared 2 methods of assessing subjective workload in system evaluations--(1) the Subjective Workload Assessment Technique (SWAT) that employed a conjoint measurement procedure to confer interval scale properties on the workload ratings and (2) a bipolar technique under development at the National Aeronautics and Space Administration (NASA) that used an individually weighted workload score. Both methods were applied in a laboratory experiment, using 24 18-36 yr old right-handed males. Half the Ss were college students; half were pilots. The experiment required the rating of a number of single- and dual-tracking and spatial transformation tasks. Both subjective assessment techniques displayed similar sensitivity to the different task manipulations. However, both techniques failed to detect the resource competition effects in the dual-task performance and were in general insensitive to response execution processing demands. A notable difference between the 2 techniques was that the NASA-bipolar ratings consistently had a smaller between-S variability than the SWAT ratings. Discussion centers around the issue of the validity of assessment of subjective workload in general and the construct and concurrent validity of the 2 techniques in particular. (French & German abstracts) (18 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

176. Vidulich, M. A.; Wickens, Christopher D. (NASA-Ames Research Ctr, Moffett Field, CA). Causes of dissociation between subjective workload measures and performance: Caveats for the use of subjective assessments. Special Issue: Ergonomics in aviation. Applied Ergonomics; 1986 Dec Vol 17(4) 291-296; 1986; CODEN: AERGBW; ISSN: 00036870. Note: Human. Investigated whether the influence of cognitive processing is equally represented in both performance and subjective workload assessments, using 40 college students. The difficulty of a memory search task was manipulated by varying stimulus presentation rate, stimulus discernibility, value of good performance, and automaticity of performance; the task conditions were performed both alone and concurrently with a tracking task. Bipolar subjective workload assessments were collected. Dissociations between workload and performance were found to be related to automaticity, presentation rate, and motivation. Results support the hypothesis that the specific cognitive processes responsible for subjective assessments can differ from those responsible for performance. (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

177. Vidulich, Michael A.; Wickens, Christopher D. (NASA--Ames Research Ctr, Moffett Field, CA). Stimulus central processing response compatibility: Guidelines for the optimal use of speech technology. 14th Annual Conference of the Society for Computers in Psychology (1984, San Antonio, Texas). Behavior Research Methods, Instruments, and Computers; 1985 Apr Vol 17(2) 243-249; 1985; ISSN: 07433808. Note: Human. Stimulus-central processing-response (S-C-R) compatibility makes a 2-part set of predictions about the best input/output (I/O) configuration for a task on the basis of the type of central processing that the task requires. For tasks with predominately spatial central processing demands, the best I/O configuration is predicted to be visual/manual. For tasks with predominately verbal central processing demands, the best I/O configuration is expected to be auditory/speech. Three experiments are reviewed that support the concept of S-C-R compatibility. (11 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

178. WALSH, T. M. (NASA, Langley Research Center, Hampton, Va.); WHENER, E. F. (Boeing, Co., Seattle, Wash.). Automatic flight performance of a transport airplane on complex microwave landing system paths. National Aeronautics and Space Administration. Langley Research Center, Hampton, Va; Oct. 1977. Note: Language: English Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA7806 Essential characteristics of the U.S. microwave landing system (MLS) and the TCV B-737 aircraft used in flight demonstrations are described, with special emphasis on the analysis of the approach paths. MLS is used to provide the aircraft with guidance for automatic control on complex, curved descending paths with precision turns into short final approaches terminating in landing and rollout, even when subjected to strong and gusty tail- and cross-wind components and severe wind shear. The tracking performance achieved on these paths under MLS guidance is examined in detail, and the wind environment where the flights are conducted are quantified. The flights demonstrate the utility of the wide-area coverage of MLS for curved, descending paths

commencing with a standard RNAV approach into a terminal area and continuation of this approach throughout the MLS coverage and onto the runway. (S.D.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7504 Aircraft Communications & Navigation (1975-). NATO, AGARD, Symposium on Guidance and Control Design Considerations for Low Altitude and Terminal Area Flight, 25th, Dayton, Ohio, Oct. 17-20, 1977, Paper. 13 p. Country of Origin: United States.

179. WALSH, T. M.; WEENER, E. F. (Boeing Co., Seattle). Automatic flight performance of a transport airplane on complex microwave landing system paths. National Aeronautics and Space Administration. Langley Research Center, Hampton, Va; Apr. 1978. Note: Language: English Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A14/MF A01 Journal Announcement: STAR7817 During this demonstration the microwave landing system was utilized to provide the terminal configured vehicle B-737 airplane with guidance for automatic control on complex, curved descending paths with precision turns into short final approaches terminating in landing and roll-out, even when subjected to strong and gusty tail- and cross-wind components and severe wind shear. The data collected from more than fifty approach flights during the demonstration provided an opportunity to analyze airplane flight performance on a tatistical basis rather than on a single flight record basis as is customarily done with limited data replication. Mean and standard deviation data are presented for approach flight path tracking parameters. In addition, the adverse wind conditions encountered during these flights are described using three-dimensional wind vector characteristics computed from the extensive on-board sensor data. (L.S.) Source of Abstract/Subfile: NASA STIF Subject Classification: 7504 Aircraft Communications & Navigation (1975-). In AGARD Guidance and Control Design Considerations for Low-Altitude and Terminal-Area Flight 12 p (SEE N78-26049 17-01) Country of Origin: United States.

180. WEENER, E. F. The effect of simulator dynamics on pilot response. Michigan Univ., Ann Arbor. Dept. of Aerospace Engineering; Oct. 1974 67P. Note: Report No.: NASA-CR-132459 Contract No.: NSR-23-005-364 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS Journal Announcement: STAR7424 The effects of visual display dynamics on the altitude tracking performance of a subject in a fixed base flight simulator are considered. The subject, flying the linearized longitudinal equations of motion, attempts to maintain the same altitude as two airplanes positioned three hundred feet ahead, as in level formation flying. The horizon together with the two leading aircraft are represented symbolically on a CRT display. The subject's aircraft is disturbed by atmospheric turbulence. The data indicate a relationship between the bandwidth of the display dynamics and the short period characteristics of the simulated airplane. For an airplane with a relatively fast pitch response the presence of altitude display dynamics, with a bandwidth as high as five times the short period natural frequency, causes significant degradation of altitude tracking performance. (Author) COSATI Code: 5E Human Factors Engineering.

181. WEENER, E. F. (Boeing Commercial Airplane Co., Seattle, WA). Flight deck automation decisions. IN: Aerospace Behavioral Engineering Technology Conference, 3rd, Long Beach, CA, October 15-18, 1984, Proceedings (A86-26001 10-54). Warrendale, PA, Society of Automotive Engineers, Inc., 1984, p. 3-8; 1984 5 Refs. Note: Report No.: SAE PAPER 841471 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8610 Effective man-machine interface design for an airplane flight deck depends strongly on providing appropriate levels of control capability for use by the flight crew. The range of control options available to the airplane system designer extends from manual through partially automatic to full automatic. Selection of appropriate types and levels of automation for each new airplane is a complex task. It involves understanding the capabilities and limitations of the human operator, airplane operational and functional considerations, as well as concerns for cost and available technology. Recent airplanes have demonstrated the practicality of providing different levels of automation which can be applied by the flight crew under different circumstances. This trend expands the options available to the flight crew in coping with the changing operational environment. It also allows the flight crew to participate directly in the choice of when and how to apply automation. This paper describes the various automation factors which are considered in the process of developing a design. (Author) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-).

182. WEENER, E. F. Stalled and partially stalled high aspect ratio, straight wings Ph.D. Thesis. Michigan Univ., Ann Arbor; 1975 234P. Note: Language: English Country of Origin: United States Document Type: THESIS Other Availability: Univ. Microfilms Order No. 76-9541 Journal Announcement:

STAR7613 A computer investigation of the steady state load distribution on high aspect ratio, straight wings at geometric angles of attack near and beyond stall was conducted. The load distributions were computed using Multhopp's Fourier series solution of the downwash integralin Prandtl's lifting line theory. Analog computer solutions at high angles of attack exhibited sharp changes or jumps of the variables which were due to instabilities of the nonlinear system. The stability properties were examined via linearized equations written about singular operating points of the nonlinear system. For a specific wing model, stability is shown explicity in terms of the slopes of the local airfoil characteristics. (Dissert. Abstr.) Source of Abstract/Subfile: Dissert. Abstr. Documents available from AIAA Technical Library.

183. WEENER, E. F.; HOWE, R. M.; PEW, R. W. Effects of visual flight display dynamics on altitude tracking performance in a flight simulator. Michigan Univ., Ann Arbor. Dept. of Aerospace Engineering; 1973. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: STAR7511 The effects were studied of visual display dynamics on pilot tracking performance in a simulator. The tracking task consisted of maintaining the piloted aircraft at the same altitude as two aircraft positioned three-hundred feet ahead; as would be required in level formation flying. The two leading aircraft were represented symbolically along with the horizon on a CRT display. Vertical position of these aircraft with respect to the horizon indicated the altitude of the subject's aircraft, which was disturbed by atmospheric turbulence. Various bandwidths of second-order dynamics were interposed between the true aircraft altitude and the displayed altitude, whereas no dynamics were interposed in the attitude display. Experiments were run using two experienced pilots and two substantially different longitudinal dynamics for the piloted aircraft. Preliminary results indicate a significant decrease in altitude tracking performance for display dynamics with natural frequencies below ten radians per second. (Author) COSATI Code: 5E Human Factors Engineering. In MIT Proc. of the 9th Ann. Conf. on Manual Control p 3-8 (SEE N75-19126 11-01).

184. Wickens, Carol; Tuber, David S.; Wickens, Delos D. (Ohio State U). Memory for the conditioned response: The proactive effect of preexposure to potential conditioning stimuli and context change. Journal of Experimental Psychology General; 1983 Mar Vol 112(1) 41-57; 1983; CODEN: JPGEDD; ISSN: 00963445. Note: Animal. Three experiments with 48 cats investigated memory for CR as a function of proactive inhibition. The proactive operation was the preexposure to quasi-random presentations of the potential CS and UCS. The possible CSs were light and tone, and the UCSs were brief mild shocks to either the right or left paw, which produced a brisk leg jerk. In Exp I, all possible combinations of CS and UCS components of the eventual CR were present in the preexposure period for one or another group as in the traditional interference paradigms of human paired-associate memory research. Exp II demonstrated that the decline cannot be attributed to a strategy type of interpretation that asserts that when the retention-extinction situation occurs, Ss "backward scan" and judge themselves to be once again in the preexposure period. Performance immediately after reaching the conditioning criterion did not differ between the controls that experienced no preexposure and the experimentals, but it did so after the 10-wk retention interval. Exp III investigated the role of context in the memory deficits by maintaining the same context in the preexposure, conditioning, and memory test situations or giving the preexposure experience in an environment different from the other 2 situations. Context change greatly reduced but did not eliminate the proactive inhibition. It is concluded that the CR is readily forgotten given appropriate interference and does not differ from other kinds of learning in this respect. (27 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

185. Wickens, Christopher D.; Braune, Rolf; Stokes, Alan (U Illinois-Willard Airport, Aviation Research Lab, Savoy). Age differences in the speed and capacity of information processing: I. A dual task approach. Psychology and Aging; 1987 Mar Vol 2(1) 70-78; 1987; ISSN: 08827974. Note: Human. Sixty subjects, spanning the age range from 20 to 65, performed a series of tasks designed to evaluate the effects of aging on the speed and capacity of the human information-processing system. A tracking task was performed alone and concurrently with different versions of a Sternberg memory search task that varied the degree of resource competition with the tracking task. A dichotic-listening task, a tracking-task measure of perceptual-motor speed, and a complex transcription task were also performed. The data revealed a monotonic decrease in processing speed with age but no difference in time-sharing abilities between age groups. The latter conclusion was supported by a factor analysis of the test scores, which revealed that scores on the factor defining time-sharing did not differ with age. (PsycLIT Database Copyright 1987 American Psychological Assn., all rights reserved).

186. Wickens, Christopher D.; Et, Al (U Illinois Inst of Aviation, Aviation Research Lab, Savoy). The

Sternberg memory search task as an index of pilot workload. Special Issue: Aviation psychology. Ergonomics; 1986 Nov Vol 29(11) 1371-1383; 1986; CODEN: ERGOAX; ISSN: 00140139. Note: Human. Describes the rationale for the use of the S. Sternberg (see PA, Vol 54:390) memory search task as a diagnostic measure of pilot workload and summarizes 7 investigations that have employed this task in flight simulators or aircraft environments. The details of 2 other flight simulator experiments in which workload was measured by an auditory Sternberg task are reported. Results indicate the diagnostic value of the task in discriminating between the perceptual/central processing and response demands of a holding pattern and an approach pattern, respectively. Perceptual and response load were greater in an approach phase, relative to a holding phase. Neither phase imposed a substantial central processing load. Based on the findings of the studies described, a set of recommendations for employing the Sternberg task in aviation environments is presented. These recommendations emphasize the importance of information display and response procedures, the choice of particular memory sets, the presentation data, and the need to avoid extremely difficult flight tasks. (French & German abstracts) (27 ref) (PsycLIT Database Copyright 1987 American Psychological Assn, all rights reserved).

187. Wickens, Christopher D.; Kramer, Arthur F. (U Illinois, Champaign). Engineering psychology. Annual Review of Psychology; 1985 Vol 36 307-348; 1985; CODEN: ARPSAC; ISSN: 00664308. Note: Human. Reviews research on the cognitive aspects of engineering psychology, issues in human-computer interaction, process control, and automation. Human performance limits are considered with respect to the following: detection; response processes; attention, including such factors as task configuration, individual differences in learning, and subjective and physiological measures of workload; and decision making, including decision aids, heuristics and cognitive limits, and applications to criminal justice and forecasting. Other issues considered include causal inference and diagnosis and errors and internal models in human performance. Process control is discussed in terms of the nature of alarm indicators, the diagnostic process, and diagnosis training. Human-computer interaction is examined in relation to the psychology of programming, the learning of text editors, data manipulation and retrieval, and the implementation of automation. (111/2 p ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

188. Wickens, Christopher D.; Kramer, Arthur F.; Donchin, Emanuel (U Illinois, Cognitive Psychophysiology Lab, Champaign). The event related potential as an index of the processing demands of a complex target acquisition task. Sixth International Conference on Event Related Slow Potentials of the Brain (EPIC VI): Cognition, information processing, and language (1981, Lake Forest/Chicago, Illinois). Annals of the New York Academy of Sciences; 1984 Jun Vol 425 295-299; 1984; CODEN: ANYAA9; ISSN: 00778923. Note: Human. Two studies with 19 undergraduates investigated the effect of system order on the amplitude of the P300 component of the event-related potential to test the hypothesis that the amplitude of the P300 is sensitive to the perceptual demands of a task as manifested in the display monitoring paradigm while being relatively insensitive to response load. Also studied was the effect of practice in the primary task on the amplitude of the P300 elicited by a secondary task problem. Ss performed a 3-dimensional tracking task while correctly counting the total number of occurrences of a visual probe. Results show that P300 amplitude was sensitive to changes in the difficulty of a tracking task, both as a function of system order and phase. P300 appears to provide a useful metric for determining the locus of visual attention that is not constrained by the assumption that the S is attending to the area he/she is fixating on. (9 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

189. Wickens, Christopher; Kramer, Arthur; Vanasse, Linda; Donchin, Emanuel (U Illinois, Urbana-Champaign). Performance of concurrent tasks: A psychophysiological analysis of the reciprocity of information processing resources. Science; 1983 Sep Vol 221(4615) 1080-1082; 1983; CODEN: SCIEAS; ISSN: 00368075. Note: Human. 12 right-handed students performed a pursuit step-tracking task concurrently with 1 of 3 secondary tasks designed to elicit event-related brain potentials. Two of these latter tasks were clearly secondary, whereas stimuli for the 3rd were embedded in the primary task. Three additional conditions were included in which each of the 3 secondary tasks (auditory probe, visual probe flash, and visual probe step) was performed without the concurrent tracking task, even though the moving target remained on the screen. After performing each task, Ss were asked to rate the subjective difficulty of the task on a 7-point scale. Results show that as the resource demands of the tracking task increased, potentials elicited by the task-defined events increased in amplitude, whereas those elicited by secondary-task auditory stimuli decreased. Results provide additional support for the hypothesis that the reduction in the amplitude of the P300, elicited by the stimuli of secondary tasks, results from a depletion of the resources deployed in the service of the secondary task by competition for these resources from the primary task. It is suggested that the P300 manifests the activation of some information-processing

activity that is invoked by the appearance of task-relevant events, with its amplitude inversely related to its expectancy. Previous research suggests that this "subroutine" is involved in updating or revising the model of the environment maintained in working memory. (PsycLIT Database Copyright 1984 American Psychological Assn, all rights reserved).

190. Wickens, Christopher D.; Liu, Yili (U Illinois-Champaign Inst of Aviation, Aviation Research Lab, Savoy, US). Codes and modalities in multiple resources: A success and a qualification. Special Issue: Human information processing: Theory and applications. Human Factors; 1988 Oct Vol 30(5) 599-616; 1988; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Discusses the relevance of codes (verbal-spatial) and modalities (auditory-visual) in the multiple-resource model to the prediction of task interference. Section 1 describes an experiment in which either verbal or spatial decision tasks, responded to with either voice or keypress, were time-shared with 2nd-order tracking. Decision problem difficulty was manipulated, and subjective workload as well as performance measures were assessed. Results provide support for the importance of the dichotomy between verbal and spatial processing codes in accounting for task interference. Section 2 suggests that scanning produces a dominant cost to intramodal configurations when visual channels are separated in space; when visual separation is eliminated, however, the differences between cross-modal and intramodal performance may be best accounted for by a mechanism of preemption. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

191. Wickens, Christopher D.; Sandry, Diane L.; Vidulich, Michael (U Illinois, Champaign). Compatibility and resource competition between modalities of input, central processing, and output. Human Factors; 1983 Apr Vol 25(2) 227-248; 1983; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Synthesized auditory displays and speech recognizers were used in 2 experiments to develop guidelines for their implementation in military aircraft. 10 right-handed male students and 10 22-46 yr old right-handed male employees of a naval air test center served as Ss. In Exp I, the competition between encoding and response modalities of concurrent tasks was examined. The memory search task was more susceptible to competition for visual encoding, whereas the tracking task bore the greater impact from shared manual responding. Exp II examined competition between tasks for encoding and response modalities and the optimum assignment of modalities to a given task. A simulated flight task was performed concurrently with either a spatial task (target acquisition) or a verbal task (memory). Best performance and least interference with the flight task were obtained when the spatial task was displayed visually and responded to manually and also when the verbal task was displayed auditorily and responded to with speech. (39 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

192. Wickens, Christopher D.; Sandry, Diane L. (U Illinois, Urbana-Champaign). Task hemispheric integrity in dual task performance. Acta Psychologica; 1982 Dec Vol 52(3) 227-247; 1982; CODEN: APSOAZ; ISSN: 00016918. Note: Human. A condition of "task hemispheric integrity" is predicted to result in a dual task situation when the central processing and response components of each task are associated exclusively with a given cerebral hemisphere. The prediction that this condition will generate more efficient time-sharing was tested in a series of 4 experiments. In Exp I, with 9 right-handed male undergraduates, the prediction was confirmed when a spatial (tracking) and verbal (letter memory search) task were time-shared, and the hand assignment to task responses was manipulated. In Exp II, with 9 Ss, a spatial variant of the memory search was used instead of the verbal letter search, and hand assignment effects were not obtained, since when 2 spatial tasks are time-shared an integrity assignment is impossible. Exp III with 9 Ss validated the hemispheric lateralization of the 2 single task variants of the memory search task, while Exp IV with 8 Ss established the separate spatial and verbal resource demands of the 2 variants by observing their differential interference with concurrent spatial and verbal tasks. (28 ref) (PsycLIT Database Copyright 1983 American Psychological Assn, all rights reserved).

193. Wickens, Christopher D.; Vidulich, Michael; Sandry, Garza, Diane (U Illinois, Aviation Research Lab, Savoy). Principles of S C R compatibility with spatial and verbal tasks: The role of display control location and voice interactive display control interfacing. Special Issue: Aviation psychology. Human Factors; 1984 Oct Vol 26(5) 533-543; 1984; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Presents a model of stimulus/central-processing/response (S-C-R) compatibility that is based on the assumption that a pilot's tasks may be categorized into those that demand predominantly verbal operations and those that are spatial. The present 2 experiments examined 2 principles of compatibility of interfacing such tasks with displays and controls. The 1st principle, based upon hemispheric laterality effects, defines compatibility according to the display location and the response hand; the 2nd defines compatibility according to the modality of display (auditory and visual) and response (manual and speech). Verbal tasks

are best served by auditory inputs and speech response, whereas spatial tasks are best served by visual-manual channels. In both experiments, these principles of compatibility were confirmed under dual-task conditions. Implications for cockpit design are discussed. (8 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

194. Wickens, Christopher D.; Yeh, Yei Yu (U Illinois Inst of Aviation, Aviation Research Lab, Savoy) POCs and performance decrements: A reply to Kantowitz and Weldon. Human Factors; 1985 Oct Vol 27(5) 549-554; 1985; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Responds to criticisms presented by B. H. Kantowitz and M. Weldon (see PA, Vol 73:18784) of the performance operating characteristics (POC) methodology used in an article by the 1st author and colleagues (see PA, Vol 66:445), arguing that Kantowitz and Weldon do not address the primary issue of importance to system designers--how to compare interference between different tasks--which is an issue that requires the assumption of a technique for standardizing performance decrements across tasks. Two alternate techniques for standardizing are described. (10 ref) (PsycLIT Database Copyright 1986 American Psychological Assn, all rights reserved).

195. WIENER, E. L. (Miami, University, Coral Gables, Fla.). 'Controlled flight into terrain /CFIT/' accidents - System-induced errors. In: Human factors in our expanding technology; Proceedings of the Nineteenth Annual Meeting, Dallas, Tex., October 14-16, 1975. (A76-32226 15-54) Santa Monica, Calif., Human Factors Society, 1975, p. 95-101; 1975 11 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Journal Announcement: IAA7615 A review of the major recent accidents in U.S. commercial aviation leads to the conclusions that CFIT accidents are the result of system-induced errors and that these errors will continue to be generated by the unwieldy system of vehicles, traffic control, and terminals that have emerged as a result of component-wise design. Since rebuilding the system from the very foundations will never be possible, it must be improved the same way it was created, by patchwork. The need for help from human factors specialists in this patchwork is indicated. (V.P.) Source of Abstract/Subfile: AIAA/TIS.

196. Wiener, E. L. (U. Miami). Adaptive measurement of vigilance decrement. Ergonomics; 1973 Jul Vol. 16(4) 353-363; 1973. Note: Human. Describes a computer-based monitoring task which is adaptive, or self-adjusting, with the size of the signal stimulus (compared to a fixed nonsignal stimulus) mediated by the detection score of the S to maintain a constant detection rate. Ss were 21 undergraduates. Data indicate that to maintain a fixed detection criterion over a 48-min vigil, the adaptive variable (separation distance of a pair of dots presented simultaneously) behaved in a manner consistent with the usual measures of vigilance decrement. Several adaptive strategies are discussed. (French & German summaries) (PsycLIT Database Copyright 1974 American Psychological Assn, all rights reserved).

197. WIENER, E. L. (Miami, University, Coral Gables, Fla.). Adaptive measurement of vigilance decrement. Ergonomics, vol. 16, July 1973, p. 353-363; Jul. 1973 12 Refs. Note: Contract No.: PHS-R01-OH-00346 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7323 This paper describes a computer-based monitoring task which is adaptive, or self-adjusting, with the size of the signal stimulus (compared to a fixed non-signal stimulus) being mediated by the detection score of the subject, so as to maintain a constant detection rate. Data are presented which indicate that in order to maintain a fixed detection criterion over a 48-min vigil, the adaptive variable (separation distance of a pair of dots presented simultaneously) behaved in a manner consistent with the usual measures of vigilance decrement. Several adaptive strategies are discussed. ((Author)).

198. WIENER, E. L. (Miami, University, Coral Gables, Fla.). An adaptive vigilance task with knowledge of results. Human Factors, vol. 16, Aug. 1974, p. 333-338; Aug. 1974 7 Refs. Note: Contract No.: PHS-R01-OH-00346 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7501 Four groups of subjects performed a 48-min, computer-controlled, visual watch-keeping task. Two groups were run under fixed, nonadaptive conditions, one with immediate knowledge of results (KR) and the other without (NKR). The KR group showed the usual superiority in detection rate over the NKR group, and made fewer commissive errors (false alarms). Two other groups, also KR and NKR, ran under adaptive conditions, wherein the size of the signals they watched for was adjusted during the vigil according to past performance, so as to maintain a preset detection rate. The resulting curves for the adaptive variable closely resembled the traditional performance measure, detection rate. Various adaptive strategies are discussed. ((Author)).

199. WIENER, E. L. (Miami, University, Miami, Fla.). Aircraft collisions. In: Human Factors Society, Annual Meeting, 23rd, Boston, Mass., October 29-November 1, 1979, Proceedings. (A80-24026 08-53) Santa Monica, Calif., Human Factors Society, Inc., 1979, p. 26-29; 1979 9 Refs. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Journal Announcement: IAA8008 The paper examines collisions from a human factors perspective, seeing them as 'system-induced errors' resulting from control systems that stress regulation and airspace allocation, and do not properly consider the human operator. It is argued that in order to avoid future accidents, system designers must consider such topics as basic assumptions in air traffic control, mixed IFR and VFR navigation, pilot-controller and controller-controller communications, extra-cockpit vision, workload of pilots and controllers, proposed regulations, and instrumentation. (M.E.P.) Source of Abstract/Subfile: AIAA/TIS.

200. WIENER, E. L. (Miami, University, Coral Gables, FL). Beyond the sterile cockpit (dangers of automatic flight control). Miami Univ., Coral Gables, Fla; Feb. 1985 59 Refs. Note: Contract No.: NCC2-152 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8516 Consideration is given to some of the negative aspects of the trend toward increased automation of aircraft flight decks. The history of automated devices for navigation, communications and detection on board aircraft is reviewed. Instances of automatic system failure are identified which have led to accidents, and the events surrounding the downing of Korean Airlines Flight 747 are reexamined within the context of a computer-based system failure. Finally, new software and interactive systems to reduce navigational error due to inadequate computer-assisted flight instruction (CAI) are described, with emphasis given to speech processing and intelligent CAI systems. (I.H.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). Human Factors (ISSN 0018-7208), vol. 27, Feb. 1985, p. 75-90.

201. WIENER, E. L. (Miami, University, FL). Cockpit automation - In need of a philosophy. Miami Univ., Fla; 1985 14 Refs. Note: Report No.: SAE PAPER 851956 Contract No.: NCC2-152 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8615 Concern has been expressed over the rapid development and deployment of automatic devices in transport aircraft, due mainly to the human interface and particularly the role of automation in inducing human error. The paper discusses the need for coherent philosophies of automation, and proposes several approaches: (1) flight management by exception, which states that as long as a crew stays within the bounds of regulations, air traffic control and flight safety, it may fly as it sees fit; (2) exceptions by forecasting, where the use of forecasting models would predict boundary penetration, rather than waiting for it to happen; (3) goal-sharing, where a computer is informed of overall goals, and subsequently has the capability of checking inputs and aircraft position for consistency with the overall goal or intentions; and (4) artificial intelligence and expert systems, where intelligent machines could mimic human reason. (K.K.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). IN: Aerospace Behavioral Engineering Technology Conference, 4th, Long Beach, CA, October 14-17, 1985, Proceedings (A86-35426 15-54). Warrendale, PA, Society of Automotive Engineers, Inc., 1985, p. 369-375.

202. WIENER, E. L. (Miami, University, Coral Gables, FL). Computers in the cockpit - But what about the pilots? Miami Univ., Coral Gables, Fla; 1983 6 Refs. Note: Report No.: SAE PAPER 831546 Contract No.: NCC2-152 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8412 The advent of the microprocessor has made it possible to design and implement small special purpose digital computers for the flightdeck of an aircraft. However, by the end of the 1970s, many in aviation and government were concerned about certain safety implications of developments related to automation which had occurred. As a result of these concerns, NASA was directed to examine the human factors of automation. A field investigation concerning the arising questions was conducted, taking into account the introduction of the Dash 80 airliner in 1980. Attention is given to the design philosophy of the aircraft, the study methodology, and preliminary results of the study, which are based on analysis of the first wave of questionnaire data and interviews. Almost all pilots, and check captains as well, expressed the view that the first 50 to 100 hours in the -80 were difficult. The reasons for these difficulties were related to cockpit automation and, in addition, to the fact that the new aircraft was more powerful than the older models to which they were accustomed. (G.R.) Source of Abstract/Subfile: AIAA/TIS. IN: Aerospace Behavioral Engineering Technology Conference, 2nd, Long Beach, CA, October 3-6, 1983, Proceedings (A84-29476 12-54). Warrendale, PA, Society of Automotive Engineers, Inc., 1983, p. 453-458.

203. WIENER, E. L. (Miami, University, Coral Gables, Fla.). Controlled flight into terrain accidents - System-induced errors. In: Human Factors, vol. 19, Apr. 1977, p. 171-181; Apr. 1977 28 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Journal Announcement: IAA7714 Controlled flight into terrain accidents are those in which an aircraft, under the control of the crew, is flown into terrain (or water) with no prior awareness on the part of the crew of the impending disaster. This paper examines recent experience with these accidents, seeing them as the result of errors generated by a complex air traffic control system with ample opportunities for system-induced errors. Such problem areas as pilot-controller communication, flightdeck workload, noise-abatement procedures, government regulation, visual illusions, and cockpit-and ground-radar warning devices are discussed, with numerous examples of recent accident cases. The failure of the human factors profession to play a more significant role in the air traffic complex is also considered. ((Author)). Documents available from AIAA Technical Library.

204. WIENER, E. L. Human factors in cockpit automation: A field study of flight crew transition. Miami Univ., Coral Gables, Fla. Dept. of Management Science; Jul. 1985 124P. Note: Report No.: NASA-CR-177333; NAS 1.26:177333 Contract No.: NCC2-152 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A06/MF A01 Journal Announcement: STAR8519 The factors which affected two groups of airline pilots in the transition from traditional airline cockpits to a highly automated version were studied. All pilots were highly experienced in traditional models of the McDonnell-Douglas DC-9 prior to their transition to the more automated DC-9-80. Specific features of the new aircraft, particularly the digital flight guidance system (DFGS) and other automatic features such as the autothrottle system (ATS), autobrake, and digital display were studied. Particular attention was paid to the first 200 hours of line flying experience in the new aircraft, and the difficulties that some pilots found in adapting to the new systems during this initial operating period. Efforts to prevent skill loss from automation, training methods, traditional human factors issues, and general views of the pilots toward cockpit automation are discussed. (E.A.K.) Source of Abstract/Subfile: NASA STIF COSATI Code: 5H Man-machine Relations.

205. WIENER, E. L. Human factors in cockpit automation. Miami Univ., Coral Gables, Fla; Dec. 1984. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC A15/MF A01 Journal Announcement: STAR8506 The rapid advance in microprocessor technology has made it possible to automate many functions that were previously performed manually. Several research areas have been identified which are basic to the question of the implementation of automation in the cockpit. One of the identified areas deserving further research is warning and alerting systems. Modern transport aircraft have had one after another warning and alerting systems added, and computer-based cockpit systems make it possible to add even more. Three major areas of concern are: input methods (including voice, keyboard, touch panel, etc.), output methods and displays (from traditional instruments to CRTs, to exotic displays including the human voice), and training for automation. Training for operating highly automatic systems requires considerably more attention than it has been given in the past. Training methods have not kept pace with the advent of flight-deck automation. (B.W.) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In NASA. Ames Research Center Technical Workshop: Advanced Helicopter Cockpit Design Concepts p 173-186 (SEE N85-14806 06-04).

206. WIENER, E. L. (Miami, University, Coral Gables, Fla.). Midair collisions - The accidents, the systems, and the Realpolitik. Miami Univ., Coral Gables, Fla; Oct. 1980 42 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8103 Two midair collisions occurring in 1978 are described, and the air traffic control system and procedures in use at the time, human factors implications and political consequences of the accidents are examined. The first collision occurred in Memphis and involved a Falcon jet and a Cessna 150 in a situation in which the controllers handling each aircraft were not aware of the presence of the other aircraft until it was too late. The second occurred in San Diego four months later, when a Boeing 727 on a visual approach struck a Cessna 172 from the rear. Following the San Diego collision there arose a great deal of investigative activity, resulting in suggestions for tighter control on visual flight rules aircraft and the expansion of positive control airspace. These issues then led to a political battle involving general aviation, the FAA and the Congress. It is argued, however, that the collisions were in fact system-induced errors resulting from an air traffic control system which emphasizes airspace allocation and politics rather than the various human factors problems facing pilots and controllers. (A.L.W.) Source of Abstract/Subfile: AIAA/TIS. Human Factors, vol. 22, Oct. 1980, p.

521-533. NASA-supported research.

207. WIENER, E. L. /MIAMI, U., CORAL GABLES, FLA./. The performance of multi-man monitoring teams. (Multiman team performance for visual monitoring task). HUMAN FACTORS, VOL. 6, APR. 1964, P. 179-184. 12 REFS. PUBLIC HEALTH SERVICE; Apr. 1964. Note: Contract No.: PHS-G-AC-00126 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA6501 Source of Abstract/Subfile: AIAA/TIS.

208. WIENER, E. L. (Results of human performance in a monitoring task). Miami Univ., Coral Gables, Fla; Aug. 1962. Note: Report No.: AMRL-TDR-62-82 Language: English Document Type: THESIS Documents available from AIAA Technical Library Journal Announcement: STAR6301. MIAMI U., CORAL GABLES, FLA. KNOWLEDGE OF RESULTS IN A MONITORING TASK <FINAL REPORT< EARL L. WIENER /PH.D. THESIS, OHIO STATE U./ WRIGHT-PATTERSON AFB, OHIO, BEHAVIORAL SCIENCES LAB., AUG. 1962 51 P 41 REFS /SUPPORTED BY GRANT FROM OHIO STATE U. ENGINEERING EXPERIMENT STATION/ /AMRL-TDR-62-82/ OTS- $1.50.

209. WIENER, E. L. (Miami, University, Coral Gables, Fla.). Stimulus presentation rate in vigilance. In: Human Factors, vol. 19, June 1977, p. 301-303; Jun. 1977 5 Refs. Note: Contract No.: PHS-R01-OH-00346 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7717 Four groups of 12 subjects were run for two sessions to determine the influence of stimulus presentation rate in a monitoring task. Two stimulus rates were used, 12 and 60 per minute. Stimulus rate significantly affected detections on both days, but no transfer effect was found. ((Author)).

210. WIENER, E. L. (Miami Univ., Coral Gables, Fla.); CURRY, R. E. Flight-deck automation: Promises and problems. National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif; Jun. 1980 27P. Note: Report No.: NASA-TM-81206; A-8210 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A03/MF A01 Journal Announcement: STAR8016 The state of the art in human factors in flight-deck automation is presented. A number of critical problem areas are identified and broad design guidelines are offered. Automation-related aircraft accidents and incidents are discussed as examples of human factors problems in automated flight. (R.E.S.) Source of Abstract/Subfile: NASA STIF Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations.

211. WIENER, E. L. (Miami, University, Coral Gables, Fla.); CURRY, R. E. (NASA, Ames Research Center, Moffett Field, Calif.). Flight-deck automation - Promises and problems. Miami Univ., Coral Gables, Fla; Oct. 1980 31 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8105 The paper analyzes the role of human factors in flight-deck automation, identifies problem areas, and suggests design guidelines. Flight-deck automation using microprocessor technology and display systems improves performance and safety while leading to a decrease in size, cost, and power consumption. On the other hand negative factors such as failure of automatic equipment, automation-induced error compounded by crew error, crew error in equipment set-up, failure to heed automatic alarms, and loss of proficiency must also be taken into account. Among the problem areas discussed are automation of control tasks, monitoring of complex systems, psychosocial aspects of automation, and alerting and warning systems. Guidelines are suggested for designing, utilising, and improving control and monitoring systems. Investigation into flight-deck automation systems is important as the knowledge gained can be applied to other systems such as air traffic control and nuclear power generation, but the many problems encountered with automated systems need to be analyzed and overcome in future research. (B.R.K.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). Ergonomics, vol. 23, Oct. 1980, p. 995-1011.

212. WIENER, E. L. (Miami, University, Coral Gables, FL); CURRY, R. E. (NASA, Ames, Research Center, Moffett Field, CA); FAUSTINA, M. L. (San Jose StateUniversity, San Jose, CA). Vigilance and task load - In search of the inverted U. Miami Univ., Coral Gables, Fla; Apr. 1984 14 Refs. Note: Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8421 The 'Inverted-U Hypothesis' states that for a given task, there is an optimal level of workload or demand that yields the highest level of performance. A departure in either direction will result in a monotonically lower performance level, hence

an inverted-U-shaped relationship between task demand and quality of performance. Most studies to date have failed to demonstrate the left-hand branch of the curve, that is, the regime in which performance presumably rises as load increases. The purpose of this study was to explore whether low-level additional demand on the monitor would result in improved performance. Four groups of subjects performed a visual monitoring task for 48 min, then two of the four groups were given additional tasks, and a third had potentially distracting information on its display. Results indicated that the two groups with additional demand detected more signals than did the control group or the control-plus-distraction group. There were no significant differences in false alarms. (Author) Source of Abstract/Subfile: AIAA/TIS. Human Factors (ISSN 0018-7208), vol. 26, April 1984, p. 215-222.

213. WIENER, E. L.; KEELER, F. L. (Miami, University, Coral Gables, Fla.). Adaptive strategies in vigilance research. Ergonomics, vol. 18, July 1975, p. 403-414; Jul. 1975 9 Refs. Note: Contract No.: PHS-R01-OH-00346 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA7520 In an adaptive, or self-adjusting vigilance task, numerous variables combine to define an adaptive strategy, a set of decision rules which govern the adjustments in task difficulty. This paper discusses several possible adaptive strategies, particularly variations in the number of scored signals and the amount of change in task difficulty (gain factors). A model by which the signal detection rate can be predicted is developed, and three experiments test the accuracy of this model, and the ability of an adaptive task to hold a constant detection rate over a 48 min vigil. ((Author)).

214. Wiener, Earl L. (U Miami). An adaptive vigilance task with knowledge of results. Human Factors; 1974 Aug Vol 16(4) 333-338; 1974. Note: Human. Groups of undergraduates performed a 48-min, computer-controlled, visualwatch-keeping task. 2 groups of 14 Ss each were run under fixed, nonadaptive conditions, one with immediate knowledge of results (KR) and the other without (NKR). The KR group showed the usual superiority in detection rate over the NKR group and made fewer commissive errors (false alarms). 2 groups of 18 Ss each, also KR and NKP., ran under adaptive conditions wherein the size of the signals they watched for was adjusted during the vigil according to past performance, so as to maintain a preset detection rate. Resulting curves for the adaptive variable closely resemble the traditional performance measure, detection rate. Various adaptive strategies are discussed. (PsycLIT Database Copyright 1975 American Psychological Assn, all rights reserved) .

215. Wiener, Earl L. (U Miami, Coral Gables, FL, US). Application of vigilance research: Rare, medium, or well done? Special Issue: Vigilance: Basic and applied research. . Human Factors; 1987 Dec Vol 29(6) 725-736; 1987; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Suggests that the failure to implement vigilance research may be attributed to insufficient interest in bridging the gap between the laboratory and the work world and lack of data from the latter. It is argued that the situation will probably remain unremedied until more effort is made to understand the nature of complex systems and their dependence on human monitors and until the myth that automation of functions diminishes the need for human vigilance is abandoned. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved) .

216. WIENER, EARL L. (Miami, University, Coral Gables, FL). Application of vigilance research - Rare, medium, or well done? Miami Univ., Coral Gables, Fla; Dec. 1987 37 Refs. Note: Contract No.: NCC2-377 Language: English Country of Origin: United States Document Type: JOURNAL ARTICLE Documents available from AIAA Technical Library Journal Announcement: IAA8809 In the years since Mackworth (1950) initiated research into problems of human vigilance, automated systems have become more complex and costly, with greater repercussions upon failure; this has led to a paradoxical enhancement of human monitoring's importance. Applications of vigilance research to well-designed systems that take human monitoring into account are rare, although the outlook for future systems is improving. Attention is presently given to problems encountered in considerations of signal rate, length of vigil, time decrements, and two examples of implementation from commercial aviation. (O.C.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). Human Factors (ISSN 0018-7208), vol. 29, Dec. 1987, p. 725-736.

217. Wiener, Earl L. (U Miami, FL). Beyond the sterile cockpit. Special Issue: Automation. Human Factors; 1985 Feb Vol 27(1) 75-90; 1985; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Examines the role of automation in airplane technology and how this movementmay affect pilot performance and the safety and reliability of commercial air travel. Certain dramatic accidents and incidents in recent years, as well as the destruction of Korean Airlines Flight 007, have been interpreted as automation-induced by many observers. The pros and cons of this trend are discussed in terms of economy, reliability, and

maintenance; workload reduction; display flexibility; and economy of space. The changing nature of piloting is described, and it is argued that humans must be brought back into a more active role in the control loop aided by decision support systems. (59 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

218. WIENER, EARL L. (Miami, University, Coral Gables, FL). Cockpit automation. Miami Univ., Coral Gables, FL; 1988 58 Refs. Note: Contract No.: NCC2-377 Language: English Country of Origin: United States Document Type: ANALYTIC OF COLLECTED WORK Documents available from AIAA Technical Library Journal Announcement: IAA8914 The aims and methods of aircraft cockpit automation are reviewed from a human-factors perspective. Consideration is given to the mixed pilot reception of increased automation, government concern with the safety and reliability of highly automated aircraft, the formal definition of automation, and the ground-proximity warning system and accidents involving controlled flight into terrain. The factors motivating automation include technology availability; safety; economy, reliability, and maintenance; workload reduction and two-pilot certification; more accurate maneuvering and navigation; display flexibility; economy of cockpit space; and military requirements. (T.K.) Source of Abstract/Subfile: AIAA/TIS. IN: Human factors in aviation (A89-34431 14-54). San Diego, CA, Academic Press, Inc., 1988, p. 433-461.

219. WIENER, EARL L. (Miami, University, Coral Gables, FL). Fallible humans and vulnerable systems - Lessons learned from aviation. Miami Univ., Coral Gables, Fla; 1987 41 Refs. Note: Contract No.: NCC2-377 Language: English Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8819 It is suggested that the problems being experienced in complex automatic systems are essentially due to the failure of information management and communication. The failure covers the entire spectrum: display devices and techniques, coding information so as to reduce human error, and information economy, i.e., resisting the temptation to bombard the operator with unlimited information simply because the system possesses the capability to do so. Since there has been great progress in hardware engineering, it is suggested that further attention is needed in the 'soft' side of systems. The approach should focus on (1) preventing human cognitive slips and (2) making the systems less vulnerable to such slips when they do occur. Most of the examples are taken from studies of cockpit automation. (B.J.) Source of Abstract/Subfile: AIAA/TIS. IN: Information systems: Failure analysis; Proceedings of the NATO Advanced Research Workshop, Bad Windsheim, Federal Republic of Germany, Aug. 18-22, 1986 (A88-46506 19-66). Berlin and New York, Springer-Verlag, 1987, p. 163-181. Country of Origin: United States Country of Publication: Germany, Federal Republic of.

220. WIENER, EARL L. Human factors of advanced technology (glass cockpit) transport aircraft. Miami Univ., Coral Gables, FL. Dept. of Management Science; Jun. 1989 222P. Note: Report No.: NASA-CR-177528; NAS 1.26:177528 Contract No.: NCC2-377 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A10/MF A01 Journal Announcement: STAR8920 A three-year study of airline crews at two U.S. airlines who were flying an advanced technology aircraft, the Boeing 757 is discussed. The opinions and experiences of these pilots as they view the advanced, automated features of this aircraft, and contrast them with previous models they have flown are discussed. Training for advanced automation; (2) cockpit errors and error reduction; (3) management of cockpit workload; and (4) general attitudes toward cockpit automation are emphasized. The limitations of the air traffic control (ATC) system on the ability to utilize the advanced features of the new aircraft are discussed. In general the pilots are enthusiastic about flying an advanced technology aircraft, but they express mixed feelings about the impact of automation on workload, crew errors, and ability to manage the flight. (Author) COSATI Code: 1C Aircraft.

221. WIENER, EARL L. Human factors of the high technology cockpit. Miami Univ., Coral Gables, FL: Oct. 1990. Note: Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Other Availability: NTIS HC/MF A12 Journal Announcement: STAR9102 The rapid advance of cockpit automation in the last decade has outstripped the ability of the human factors profession to understand the changes in human functions required. High technology cockpits require less physical (observable) workload, but are highly demanding of cognitive functions such as planning, alternative selection, and monitoring. Furthermore, automation creates opportunity for new and more serious forms of human error, and many pilots are concerned about the possibility of complacency affecting their performance. On the positive side, the equipment works as advertized with high reliability, offering highly efficient, computer-based flight. These findings from the cockpit studies probably apply equally to other industries, such as nuclear power production, other modes

of transportation, medicine, and manufacturing, all of which traditionally have looked to aviation for technological leadership. The challenge to the human factors profession is to aid designers, operators, and training departments in exploiting the positive side of automation, while seeking solutions to the negative side. Viewgraphs are given. (Author) Subject Classification: 7554 Man/System Technology & Life Support (1975-) COSATI Code: 5H Man-machine Relations. In NASA, Langley Research Center, Aviation Safety/Automation Program Conference p 83-90 (SEE N91-10936 02-03).

222. WIENER, EARL (Miami University, Coral Gables, FL). Management of human error by design. Miami Univ., Coral Gables, Fla; 1988 9 Refs. Note: Report No.: SAE PAPER 872505 Contract No.: NCC2-377 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA8901 Design-induced errors and error prevention as well as the concept of lines of defense against human error are discussed. The concept of human error prevention, whose main focus has been on hardware, is extended to other features of the human-machine interface vulnerable to design-induced errors. In particular, it is pointed out that human factors and human error prevention should be part of the process of transport certification. Also, the concept of error tolerant systems is considered as a last line of defense against error. (V.L.) Source of Abstract/Subfile: AIAA/TIS. IN: Human Error Avoidance Techniques Conference, Washington, DC, Dec. 1-3, 1987, Proceedings (A89-10693 01-53). Warrendale, PA, Society of Automotive Engineers, Inc., 1988, p. 7-11.

223. Wiener, Earl L. (U Miami). On simultaneous monitoring and tracking. Journal of Applied Psychology; 1975 Feb Vol 60(1) 100-105; 1975. Note: Human. Conducted a study of 72 undergraduates to examine the effects of time-sharing between a tracking and monitoring task presented on the same visual display and to evaluate the possibility that knowledge of results on the monitoring task might offset any harmful effects due to time-sharing demands. Ss first performed a visual monitoring task with no knowledge of results; 2 days later they were assigned to 1 of 6 groups and performed the same task with or without knowledge of results under 1 of 3 levels of secondary task loads: high-frequency input compensatory tracking, low-frequency tracking, and no tracking. In addition, a 7th group (n = 12) performed the tracking task only. Results show that time-sharing between monitoring and tracking degraded performance on both tasks, but tracking input frequency did not affect monitoring performance. Groups which received knowledge of results neither improved nor declined in monitoring performance when the time- sharing load was imposed. (PsycLIT Database Copyright 1975 American Psychological Assn, all rights reserved).

224. WIENER, EARL L. (Miami, University, Coral Gables, FL). Reflections on human error - Matters of life and death. Miami Univ., Coral Gables, FL; 1989 21 Refs. Note: Contract No.: NCC2-377 Language: English Country of Origin: United States Document Type: CONFERENCE PAPER Documents available from AIAA Technical Library Journal Announcement: IAA9012 The last two decades have witnessed a rapid growth in the introduction of automatic devices into aircraft cockpits, and elsewhere in human-machine systems. This was motivated in part by the assumption that when human functioning is replaced by machine functioning, human error is eliminated. Experience to date shows that this is far from true, and that automation does not replace humans, but changes their role in the system, as well as the types and severity of the errors they make. This altered role may lead to fewer, but more critical errors. Intervention strategies to prevent these errors, or ameliorate their consequences include basic human factors engineering of the interface, enhanced warning and alerting systems, and more intelligent interfaces that understand the strategic intent of the crew and can detect and trap inconsistent or erroneous input before it affects the system. (Author) Source of Abstract/Subfile: AIAA/TIS. IN: Human Factors Society, Annual Meeting, 33rd, Denver, CO, Oct. 16-20, 1989, Proceedings. Volume 1 (A90-31326 12-54). Santa Monica, CA, Human Factors Society, 1989, p. 1-7.

225. Wiener, Earl L. (U Miami, Coral Gables). Stimulus presentation rate in vigilance. Human Factors; 1977 Jun Vol 19(3) 301-303; 1977; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Attempted to determine the influence of stimulus presentation rate in amonitoring task performed by 4 groups of 12 undergraduates over 2 sessions. Two stimulus rates were used, 12 and 60/min. Results indicate that stimulus rate significantly affected detections on both days, but no transfer effect was found. (PsycLIT Database Copyright 1978 American Psychological Assn, all rights reserved).

226. Wiener, Earl L.; Curry, Renwick E. (U Miami, Coral Gables). Flight deck automation: Promises and problems. Ergonomics; 1980 Oct Vol 23(10) 995-1011; 1980; CODEN: ERGOAX; ISSN: 00140139. Note: Human. Discusses the state-of-the-art in human factors in flight-deck automation,identifies critical problem areas, and offers broad design guidelines. Automation- related aircraft accidents and incidents are discussed as examples of human factors problems in automated flight. (French & German abstracts) (31

ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved).

227. Wiener, Earl L.; Curry, Renwick E.; Faustina, Mary L. (U Miami, FL). Vigilance and task load: In search of the inverted U. Human Factors; 1984 Apr Vol 26(2) 215-222; 1984; CODEN: HUFAA6; ISSN: 00187208. Note: Human. The "inverted-'U' hypothesis" states that for a given task, there is an optimal level of work load or demand that yields the highest level of performance. A departure in either direction will result in monotonically lower performance level, hence an inverted-'U'-shaped relationship between task demand and quality of performance. Most studies to date have failed to demonstrate the left-hand branch of the curve, that is, the regime in which performance presumably rises as load increases. The present explored whether low-level additional demand on the monitor would result in improved performance. 52 college-age Ss were divided into 4 groups and asked to perform a visual monitoring task for 48 min. Two of the 4 groups were given additional tasks, and a 3rd had potentially distracting information on its display. Results indicate that the 2 groups with additional demand detected more signals than did the control group or the control-plus-distraction group. There were no significant differences in false alarms. (14 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

228. Wiener, Earl L.; Keeler, F. Laurence (U Miami, FL). Adaptive strategies in vigilance research. Ergonomics; 1975 Jul Vol 18(4) 403-414; 1975. Note: Human. Discusses several possible strategies, particularly variations in the number of scored signals and the amount of change in task difficulty (gain factors). A model by which the signal detection rate can be predicted is developed, and 3 experiments test the accuracy of this model and the ability of an adaptive task to hold a constant detection rate over a 48-min vigil. (French & German summaries) (PsycLIT Database Copyright 1976 American Psychological Assn, all rights reserved).

229. WIENER, EARL L. (Miami, University, Coral Gables, FL); NAGEL, DAVID C. (NASA, Ames Research Center, Moffett Field, CA), EDS. Human factors in aviation (Book). Miami Univ., Coral Gables, FL; 1988. Note: Language: English Country of Origin: United States Document Type: COLLECTED WORK Journal Announcement: IAA8914 The fundamental principles of human-factors (HF) analysis for aviation applications are examined in a collection of reviews by leading experts, with an emphasis on recent developments. The aim is to provide information and guidance to the aviation community outside the HF field itself. Topics addressed include the systems approach to HF, system safety considerations, the human senses in flight, information processing, aviation workloads, group interaction and crew performance, flight training and simulation, human error in aviation operations, and aircrew fatigue and circadian rhythms. Also discussed are pilot control; aviation displays; cockpit automation; HF aspects of software interfaces; the design and integration of cockpit-crew systems; and HF issues for airline pilots, general aviation, helicopters, and ATC. (T.K.) Source of Abstract/Subfile: AIAA/TIS Subject Classification: 7554 Man/System Technology & Life Support (1975-). San Diego, CA, Academic Press, Inc., 1988, 704 p. For individual items see A89-34432 to A89-34450.

230. Woods, D. D.; Roth, E. M. (Westinghouse Research & Development Ctr, Pittsburgh, PA, US). Aiding human performance: II. From cognitive analysis to support systems. Travail Humain; 1988 Jun Vol 51(2) 139-172; 1988; ISSN: 00411868. Note: Human. Explores issues about building various types of performance aids, given theresults of a cognitive analysis in a companion paper by the present authors (see PA, Vol 76:10412). The present paper focuses on how the results of analyses of the sources of task difficulties, operator skill, and errors are used to create support systems (e.g., online advisory system, exploratory learning environments). The 2 papers provide a tour of one natural problem solving habitat to reveal the substantive cognitive engineering challenges that arise when attempting to use machine power to improve human performance. (French abstract) (PsycLIT Database Copyright 1990 American Psychological Assn, all rights reserved).

231. WOODS, D. D.; WISE, J. A.; HANES, L. F. Evaluation of safety-parameter display concepts, volume 2 Final Report. Westinghouse Electric Corp., Pittsburgh, Pa; Feb. 1982 224P. Note: Report No.: DE82-902072; EPRI-NP-2239-VOL-2 Contract No.: EPRI PROJ. 891-5 Language: English Country of Origin: United States Document Type: REPORT Documents available from AIAA Technical Library Other Availability: NTIS HC A10/MF A01 Journal Announcement: STAR8314 New control room equipment designed to improve operator performance must be evaluated before adoption and installation. Two experimental concepts for a Safety Parameters Display System (SPDS) were evaluated to assess benefits and potential problems associated with the SPDS concept and its integration into control room operations. Participants were licensed utility operators undergoing retraining on a nuclear power plant simulator. Both quantitative and qualitative data were collected and analyzed on crew response to seven

simulated accident conditions. Data on operator decisions and actions were organized into timelines. Analysis of the timelines and observations collected during testing provide important insights about the potential impact of the SPDS concept on control room operations. (DOE) Source of Abstract/Subfile: DOE.

232. Woods, David D. (Westinghouse Research & Development Ctr, Pittsburgh, PA, US). Cognitive technologies: The design of joint human machine cognitive systems. AI Magazine; 1986 Win Vol 6(4) 86-92; 1986; ISSN: 07384602. Note: Human. Explores the implications of one type of cognitive technology, techniques, and concepts to develop joint human-machine cognitive systems for the application of computational technology by examining the joint cognitive system implicit in a hypothetical computer consultant that outputs some form of problem solution. Some of the problems that can occur in cognitive system design are revealed (e.g., machine control of the interaction, the danger of a responsibility-authority double- bind). Applied cognitive psychology is challenged to provide models, data, and techniques to help designers build an effective combination between the human and machine elements of a joint cognitive system. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

233. Woods, David D. (Westinghouse Research & Development Ctr, Pittsburgh, PA, US). Commentary: Cognitive engineering in complex and dynamic worlds. Special Issue: Cognitive engineering in dynamic worlds. . International Journal of Man Machine Studies; 1987 Nov-Dec Vol 27(5-6) 571-585 ; 1987; CODEN: IJMMBC; ISSN: 00207373. Note: Human. Suggests a cognitive language of description for use in discussing the coupling of human intelligence and problem-solving machines. The 3 elements of this language (the world to be acted on, agents who act on the world, and external representations through which the world is experienced) are illustrated through a discussion of the factors that modulate a world's cognitive demands. The problem of unexpected variability in preplanned problem-solving routes and the question of how cognitive engineering can enhance problem-solving performance are explored. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

234. Woods, David D. (Westinghouse Research & Development Ctr, Pittsburgh, PA). Visual momentum: A concept to improve the cognitive coupling of person andcomputer. . International Journal of Man Machine Studies; 1984 Sep Vol 21(3) 229-244; 1984; CODEN: IJMMBC; ISSN: 00207373. Note: Human. Discusses means by which computer display system users integrate data acrosssuccessive displays. It is argued that this problem of across-display processing is analogous to the question of how the visual system combines data across successive glances (fixations). Research from cognitive psychology on the latter question is used to formulate guidelines for the display designer. The result is a new principle of person-computer interaction, visual momentum, which captures knowledge about the mechanisms that support the identification of relevant data in human perception so that display system design can support an effective distribution of user attention. The negative consequences of low visual momentum on user performance are described, and display design techniques are presented to improve user across-display information extraction. These techniques are appropriate for successive views across different units within the database and successive st..ts in the kind of view or representation of a single data unit. The relationship between visual momentum and user mental work load and user data sampling behavior is discussed, and principles of human-machine cognitive performance are outlined. (63 ref) (PsycLIT Database Copyright 1985 American Psychological Assn, all rights reserved).

235. Woods, David D.; Hollnagel, Erik (Westinghouse Research & Development Ctr, Pittsburgh, PA). Mapping cognitive demands in complex problem solving worlds. Special Issue:Knowledge acquisition for knowledge based systems: II. . International Journal of Man Machine Studies; 1987 Feb Vol 26(2) 257-275; 1987; CODEN: IJMMBC; ISSN: 00207373. Note: Human. Describes a problem-driven approach to understanding the cognitive activities performed by joint human-machine cognitive systems. The approach combines an analysis of the domain to determine psychological (particularly cognitive) demands and a psychological analysis of human (especially problem solving) performance given those demands; the basic unit of description is a goals-means or functional interrelationship. Illustrations of the goals-means network are provided. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).

236. Woods, David D.; Roth, Emilie M. (Ohio State U, Columbus, US). Cognitive engineering: Human problem solving with tools. Special Issue: Expert systems. . Human Factors; 1988 Aug Vol 30(4) 415-430; 1988; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Defines cognitive engineering as an applied cognitive science that draws on the knowledge and techniques of cognitive psychology and related disciplines to provide the foundation for principle-driven design of person-machine systems. The

fundamental features that characterize cognitive engineering are examined and the issues it faces are reviewed. An example of how cognitive and computational technologies interact is provided. (PsycLIT Database Copyright 1989 American Psychological Assn, all rights reserved).

237. Woods, David D.; Sorkin, Robert D.; Boggs, George J. (Purdue U, West Lafayette). Stimulus context and duration discrimination. Perception and Psychophysics; 1979 Aug Vol 26(2) 127-132; 1979; CODEN: PEPSBJ; ISSN: 00315117. Note: Human. The ability of human observers to discriminate duration was assessed in 2types of tasks: (1) pulse tasks, in which the observer compared the duration of 2 brief increments in an ongoing sinusoid, and (2) gap tasks, in which the observer compared the duration of 2 brief interruptions in an ongoing sinusoid. Observers were 3 females: 2 experienced graduate students and 1 naive undergraduate. Performance was assessed in 3 contexts: noise alone, noise plus continuous sinusoids, and noise plus continuous sinusoids chosen to induce a pitch segregation effect. Performance in the pulse task was independent of changes in context; in the gap task, it changed as a function of context. There was a large decrement in observers' ability to discriminate duration when the stimulus ensemble induced the pitch segregation effect. (22 ref) (PsycLIT Database Copyright 1981 American Psychological Assn, all rights reserved).

238. Yeh, Yei Yu; Wickens, Christopher D. (Honeywell Systems & Research Ctr, Phoenix Technology Group, AZ, US). Dissociation of performance and subjective measures of workload. Human Factors; 1988 Feb Vol 30(1) 111-120; 1988; CODEN: HUFAA6; ISSN: 00187208. Note: Human. Discusses a theory designed to identify sources that produce dissociations between performance and subjective work load measures (SWMs). The theory states that performance is determined by (1) amount of resources invested, (2) resource efficiency, and (3) degree of competition for common resources. It is argued that subjective perception of work load increases with greater amounts of resource investment and demands on working memory. Performance and SWMs dissociate when greater resources are invested to improve performance, when demands on working memory are increased, and when performance is sensitive to resource competition and subjective measures are more sensitive to total investment. (PsycLIT Database Copyright 1988 American Psychological Assn, all rights reserved).