NOVEMBER 1998

Current aeromedical risks in U.S. military aviation – Army: (USA Aeromedical Research Laboratory, Fort Rucker, AL): "30% of class A to C accidents involved SD as a significant factor, while…78% of aircrews have been disoriented… [There was] a significant increase in SD associated with combat operations… 90% of the reviewed accidents were thought to involve type I (unrecognized) SD compared with only 43% of the reported incidents; both pilots in a particular aircraft were considered to have been disoriented in at least 59% of accidents compared with 23% of incidents; sudden loss of visual cues… accounted for 25% of SD accidents compared with 13% of incidents; and 62% of the accidents occurred at night compared with only 36% of incidents."[1]

Navy: (Naval Operational Medicine Institute, NAS Pensacola, FL): "[A]ll aviation personnel with a diagnosed personality disorder or those with maladaptive personality traits that have had a documented effect on safety of flight, crew coordination, or mission completion, are determined to be Not Aeronautically Adapted (NAA)… NAA dispositions were made on the basis of personality disorders and maladaptive personality traits in 29% and 35% of the cases, respectively… Obsessive-compulsive features were present in 58% of officer and 10% of enlisted NAA dispositions. Dependent and avoidant features were present in excess in comparison to psychologically healthy aviators, suggesting the incompatibility of these features with aviation."[3]

Air Force: (USAF School of Aerospace Medicine, Brooks AFB, TX): "Maneuvers found to cause the Push-Pull Effect (PPEM)… were found in 11 to 67% of engagements reviewed, depending on the nature of the training mission, with an overall average of 32%. The PPEMs that were observed contained segments of less than +1 G_z, ranging on average from 0.0 to 0.5 G_z for an average of 3.5 to 5 s duration… PPEMs…represent an operationally significant source of risk for accidents."[6]

NOVEMBER 1973

Human Systems Integration (Department of Physiotherapy, Queensland, Australia): "As part of a project concerned with the determination of arm reach boundaries for placement of manual controls within a cockpit, a questionnaire was distributed to a random sample of Australian male and female pilots of light aircraft… Analysis of the responses revealed that, as well as the discomfort experienced in their accommodation, some pilots have definite reaching problems within their cockpits… The facts which have emerged from the questionnaire analysis indicate that some modifications to the aircraft or to its installations need to be made to ensure the provision of safe restraint for pilots while allowing them to reach all controls."[2]

Flying postmyocardial infarction (Ohio State University, Columbus, OH): "The empirical approach to the problem of the airman with a cardiac disease history has been effective with respect to its selectivity… The accident rate does not appear to have been significantly affected by the policy of allowing selected post-infarction pilots to return to active flying. The problem of determining high-risk from reasonable-risk pilots has not compromised aviation safety or the public interest."[7]

NOVEMBER 1948

Human Systems Integration (Civil Aeronautics Administration): "Aviation medical research interests can be represented as a composite of two major areas, one covering aviation in the armed services, the other civil aeronautics. These areas have a common fiducial point, i.e., the combination of man and the aircraft…

"It is concluded that additional quantitative descriptions of man are required, and that a vigorous campaign must be instituted to indoctrinate the aeronautical engineer in the use of biotechnological data."[5]

Bouncing heads (Aero Medical Equipment Laboratory, Naval Air Experimental Station, Philadelphia, PA): "With the advent of jet planes and other types of highspeed aircraft, additional problems in protecting the human organism from the effects of increased velocities and related phenomena have arisen. One such problem concerns the protection of the heads of airmen, flying jet planes, from what has been termed 'buffeting.'

"Buffeting may occur as a result of such events as accelerated take-offs, violent acrobatic maneuvers or flights through turbulent air. It consists essentially of the pilot's head bouncing against the adjacent canopy, which, in the case of jet planes, is in close proximity to this part of the body. The forces involved in such buffeting have been stated to be from 4 to 5 g during level flight at a low altitude on a hot day. Presumably, the applications of these forces are of very short duration."[4]

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