

## Alcohol and Operational Performance

WG. CDR. P. K. DEY AVSM\*

I AM working at present in an Establishment that conducts flight trials on aircraft, and airborne weapons systems and stores.

We have found that no matter how extensively one tries to simulate flight situations on the ground, the aircraft or the system often behaves differently in the air. The pilot is no more than an airborne system. Being human, this system is undoubtedly more complex and un-predictable than any other system we know, particularly because every pilot is subject to individual psychological and emotional reactions that leave non-living systems unaffected. As a result, no one has yet been able to establish flying aptitude even with the most sophisticated simulators and wastage rates in the flying academies remain high; and no amount of computers, or simulators or mathematical models have succeeded in eliminating the need for flight tests. Perusal of literature has revealed that no attempts have been made to scientifically assess or measure the operational performance of pilots affected in any degree by the intake of alcohol. All tests have been either clinical tests in earthbound laboratories or the checking of the ability to perform stipulated mental or physical exercise on the ground; or checks on the ability to drive vehicles such as motor cars.

There is no doubt that a person who is drunk is unfit to be entrusted with any task that requires concentration, logical thinking, physical co-ordination or fast reactions. Since flying requires all the above, the need to flight test a drunken man's ability to carry out operational flying tasks would be as futile as to flight test an aircraft in which ground tests positively indicate that the flying control system is unstable.

However, what about pilots who consume only small quantities of alcohol either socially or when they are tired or upset or depressed? Is it possible to categorically state that such a person flies without regard to safety, because he has had a bottle of beer or a small whisky five hours before he gets airborne? If judgement or logical thinking are adversely affected in these circumstances, should we not prohibit all people in positions of responsibility from consuming alcohol for at least 12 hours before they do any work or take any decisions?

While Emperor Nero or Field Marshal Yahya Khan drank to the point where alcohol most likely contributed to the disasters that befell their nations, can it be said that Winston Churchill in wartime England or Krushchev in USSR led their nations any the worse because they enjoyed having a drink even in critical situations? On the other hand, physical aspects such as muscular co-ordination, or fast reflexes to unusual situations or the ability to stand 'G' are likely to suffer even with very small quantities of alcohol—and world leaders do not need these qualities as pilots do in the hostile and unnatural environment of the air. Clinical tests under laboratory conditions have shown that physical performance deteriorates even with very little alcohol in the blood. Yet there are so many variables involved in the complex task of flying, that, as a test pilot, I cannot say that I am convinced that small quantities of alcohol consumed under certain conditions would, in all cases, reduce operational efficiency in the air. For instance, what is the effect of alcohol on a pilot undergoing abnormal stress due to physical tiredness, or lack of sleep, or fear or family problems? Is there evidence to prove that

\* Chief Test Pilot, Aircraft and Systems Testing Establishment, Bangalore.

in a war situation pilots who drink perform worse than their teetotaler counterparts? Research on this aspect may well indicate that the best operational pilots and leaders have very often also been those who, though never drunk, have consumed alcohol within the stipulated 8 or 12 hours period before getting airborne.

It can be said, therefore, that all that is proved is that drinking either to excess or to the point where one is addicted to it, is dangerous and unacceptable in the context of operational flying. However, there may be certain situations and circumstances where small amounts of alcohol taken at the right time, may enable a pilot to tackle his operational tasks more efficiently. This might happen if the adverse effects of alcohol in those circumstances are outweighed by any advantages it bestows. What are these circumstances? What exactly are the adverse effects of small amounts of alcohol consumed less than eight hours before flight. How actually is pilot performance affected in such cases? Evidence shows that nobody knows enough to be categorical on this issue. Has every reasonable effort been made to know as much as possible about such an important problem? It is suggested that the situation justifies the undertaking of a scientifically conducted research programme to try and measure pilot performance with and without alcohol in actual flight. The programme could be conducted quite safely by using dual controlled aircraft captained by qualified and experienced pilots. The second seat would be occupied by the person under test who would also be qualified and experienced on type.

The programme would probably be a fairly long one involving several pilots, at least three different types of aircraft-trainer, fighter and transport, and instrumentation enough to record essential medical data of the pilot under test. Exercises selected should be easily assessable such as instrument flying, air-to-ground gunnery, asymmetric

handling or even controlled intercept profiles at night. The task should be to broadly evaluate the following aspects of the subject pilots:—

- (a) Basic performance in a fully fit and rested condition.
- (b) Performance under stress, *e.g.*, when physically tired or with inadequate sleep.
- (c) Performance when fit but with small amounts of alcohol in the system.
- (d) Performance when small amounts of alcohol are taken while under stress.

It is conceded that such a programme will not provide final answers to the questions raised, as no trial can fully reproduce actual conditions.

However, it will undoubtedly be better than using ground simulators. Will such a programme be safe? I would certainly think so, as a qualified pilot with a small amount of alcohol in the system is far less of a safety hazard than a raw pupil pilot. The instructor captain should have no difficulty in coping with any emergency situation.

I would like to stress that my aim has not been to encourage drinking amongst aircrew. Nor do I doubt the results of the valuable work already done by many eminent doctors and others on the subject. Since nobody has ever suggested that all aircrew be forever barred from consuming any alcohol, it is agreed that what is bad is not just alcohol, but an excess of it. The question is:— what actually is an excess? When is it an excess? I do not claim to know the answer and in the absence of reasonably realistic trials, nobody does know the answers. Can the trials proposed give any new or worthwhile information? Will they increase our knowledge or understanding of a problem affecting aircrew the world over? If the answer is in the affirmative, such a trial programme would be worth the effort.