HUMAN PERFORMANCE ASPECTS OF NEW DRAFT EUROPEAN STANDARDS FOR LIFEJACKETS AND PERSONAL FLOTATION DEVICES

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In a period of less than six months, a working group of experts from many of the member states of the EEC and EFTA set out to produce draft standards which would satisfy all requirements for lifejackets and personal flotation devices (PFDs) excepting for those circumstances in which IMO standards or FAAs or CAA legislation is effective. These encompass many offshore workers who work on or in water in other circumstances, and the ever-increasing number of leisure users in power and sailing craft. This paper discusses some aspects of these standards, and considers what developments therein may be to that nature.

STANDARDS

It was agreed that no single standard could satisfy the needs of every user. It was therefore necessary to set down basic requirements for lifejackets and PFDs in terms of minimum levels for adults and children and to provide for specific requirements for children, the very young, the disabled, and those in which FAA or CAA legislation is effective. These encompass many offshore workers who work on or in water in other circumstances, and the ever-increasing number of leisure users in power and sailing craft. This paper discusses some aspects of these standards, and considers what developments therein may be to that nature.

The aim with the three high level standards is to produce a lifejacket that is capable of self-righting during the initial 10 seconds. After much discussion, it was agreed that a measurement of freeboard between mouth and water surface would be included, although the minimum set as a standard, 80 mm, is clearly too low. The aim was to develop standards which will be legally binding within Europe from 1993 onwards.

Another area of controversy has been the requirement for display of retro-reflective tape. In the past it had been argued successfully that the great majority of users would not be likely to be immersed during darkness or poor visibility. However, the EEC Council Directive recently published Iorc forcing the countries of the EEC to develop and agree a set of standards which will be legally binding within Europe from 1993 onwards.

Counter to these tendencies to produce large, high performance lifejackets was the experience of the Nordic countries, which indicated that the cheaper lifejackets were more acceptable to the wearer. It was argued successfully that the great majority of users would not be likely to be immersed during darkness or poor visibility, and that the additional cost of such tape would be passed on to the prospective purchaser, but that a minimum amount of retro-reflective tape will be required for all devices from the 100 N standard upwards. Lights and other location aids are the subject of a separate document (which also provides standards for multi-chamber buoyancy systems, safety harness and line compatibility, splash screens, and industrial protection). The standards prescribe series
of minimum buoyancy levels for devices for children, when appropriate, although it has been agreed that evidence as to what is necessary is sadly lacking. Finally, great attention has been paid to the labelling of lifjackets and buoyancy aids, in order to ensure that no matter who uses them, they can be well informed about their use and limitations.

DISCUSSION

Although it is many years since the pioneering work of Macintosh and Pask, remarkably little scientific work has been carried out until the recent studies suggesting that there may be problems when lifjackets are worn in conjunction with immersion protective garments. At present, there is no simple performance test which can be carried out with good reproducibility in all test houses, to ascertain whether or not a suit and jacket combination is safe. Efforts to do so are to be encouraged and any resulting test should be included in future revisions to these Standards.

Another area in which there has been very little work is that of the buoyancy and other performance indicators for devices for children. As body proportions and density of children of different ages are quite unlike those of adults, it could be suggested that the current guessed extrapolations are erroneous, but in the absence of any good evidence, it is not possible to set different values. Work on this is urgently required.

Labelling of many other safety items is now being carried out using pictograms and other clear non-verbal means. The CEN Working Group has been unable to devise clear pictograms which are suitable for indicating the subtle differences between the different performance standards, but would like to be able to use some. Further work and the input of ergonomics research would be valuable.

If the whole of Europe is to adopt and enforce these standards — one of the provisions of the directive — it is that it will be illegal to produce or sell items which do not comply with them — then there is also a need to base more international standards, such as those which ISO must eventually produce, on them. This does present an unusually difficult situation, in that previously, ISO has been in advance of CEN, and it has been easy for CEN to adopt an existing ISO standard. With regard to lifjackets, the process must be reversed, which could cause conflicts with non-CEN nations. However, it is hoped that the latter may see in these draft European standards very close parallels to their existing national ones, and that compromise may be reached.

Finally, it would be only logical if the existing international standards maintained by the IMO, and the FAA and CAA, could be incorporated in some way too. Those responsible for the European Standards believe that they have created good standards which will result in major safety improvements, and will be beneficial to both users and manufacturers. It would be even better if the world could move away from the many dozens of often conflicting national standards to a simple, functional and universal system.

REFERENCES


ABBREVIATIONS

CAA = Civil Aviation Authority; CEN = European Standards Committee (EEC); EEC = European Economic Community; EFTA = European Free Trade Association; FAA = Federal Aviation Authority (USA); IMO = International Maritime Organisation; ISO = International Standards Organisation.