

Consideration of the Number of Seats Allowable for Use on Board an AW139 Helicopter in Offshore Oil and Gas Operations

The Issue

1. Offshore helicopter transportation involves operations over open sea in a hostile environment where, in the event of ditching and capsize, passenger survivability depends heavily on successful underwater escape within a very limited time window. The International Association of Oil & Gas Producers (IOGP), through its publication *IOGP Report 690 Offshore Helicopter Recommended Practices (June 2023)*, recommends that helicopter passengers should be seated no more than one seat away from a push-out window or emergency exit (IOGP 690-3 S5 and 690-5 S14).
2. While this recommendation is made on safety and survivability grounds, it has a direct operational impact in reducing the usable passenger capacity of helicopters. For example, for an AW139 helicopter with a typical 5-5-5 seating layout, the certified seating capacity is 15 passengers, but under the IOGP seating recommendation, the usable seating capacity may be reduced to approximately 12 passengers, representing a reduction of approximately 20%. This represents a reduction in operational seating capacity, even though the certified seating capacity remains unchanged.
3. Stakeholders therefore face a practical question: whether the recommendation represents an absolute safety requirement that should not be deviated from, or whether alternative mitigation measures may be introduced to allow the use of additional seats while maintaining an acceptable level of safety.

Regulatory Background

4. The United Kingdom Civil Aviation Authority (UK CAA), in its *CAP 1145 Safety Review of Offshore Public Transport Helicopter Operations (2014)*, analysed 25 offshore helicopter accidents between 1992 and 2013. The review concluded that many fatalities occurred not from the impact itself but from post-impact capsize and unsuccessful underwater escape. As a result, CAP 1145 recommended that passengers should be seated adjacent to push-out window exits unless additional mitigation measures are provided, such as enhanced emergency breathing systems or improved flotation systems. This demonstrates that seating location is directly linked to survivability.
5. EASA, through AMC1 SPA.HOFO.165(h) and NPA 2016-01 Helicopter Ditching and Water Impact Survivability, further explains that helicopter ditching accidents typically result in capsize and rapid flooding, and that successful escape depends on passengers being able to reach and use an emergency exit within a very short underwater survival time (approximately 60 seconds). The safety objective is therefore to ensure that each passenger has rapid and unobstructed access to an emergency exit, and that no passenger should have to wait for more than one other person to escape before making their own escape.
6. Based on the above, it is clear that the IOGP 690 seating recommendation is derived from well-established survivability research and regulatory philosophy, and its intent is to improve the probability of successful underwater escape following a survivable ditching and capsize event.

Underwater Escape Considerations

7. The probability of successful underwater escape is affected by a number of factors, including:
 - Water temperature;
 - Sea state and likelihood of capsize;

- Passenger clothing and mobility;
- Passenger size and physical agility;
- Level of underwater escape training;
- Availability of emergency breathing systems;
- Distance to exit and exit congestion.

These factors may vary between operating regions (e.g. North Sea vs South China Sea), and therefore the risk associated with seating location should be assessed through a formal risk assessment, rather than assuming that one standard arrangement is universally applicable.

Deliberation

8. The above demonstrates that the seating restriction is based on survivability considerations rather than purely regulatory limitations. However, it also shows that survivability is influenced by multiple factors, and therefore risk may potentially be managed through mitigation measures rather than seating restriction alone.
9. As an independent third-party safety oversight body, the AeroLink Consultancy considers that the most appropriate approach is not to directly challenge the IOGP recommendation, but to use the Management of Change (MOC) process recommended in IOGP Report 690 to formally assess whether additional seats may be used under controlled conditions.

Suggested Way Forward

10. A formal Management of Change (MOC) process should be initiated in accordance with IOGP 690-1 S10 to assess the risks associated with allowing passengers to occupy seats located more than one seat away from a push-out window or emergency exit. The assessment should include:

- Identification of new hazards introduced;
- Risk assessment of the new hazards;
- Identification of mitigation measures;
- Demonstration that risks are reduced to ALARP (As Low As Reasonably Practicable);
- Monitoring and review of the effectiveness of mitigation measures.

11. Possible mitigation measures may include:

- Mandatory Helicopter Underwater Escape Training (HUET) (IOGP 690-3 S11);
- Provision of Emergency Breathing Systems (EBS) (IOGP 690-3 S12);
- Additional passenger safety briefing focusing on exit location and escape procedures (IOGP 690-3 S7);
- Allocation of physically capable passengers to seats further away from exits; and/or
- Restricting the use of such seats to favourable sea and weather conditions.

Conclusion

12. Last but not the least, the final decision should be based on a cost-benefit and risk-reduction analysis.

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