



**Passenger Survivability in Offshore Helicopter
Ditchings & Water Impacts**

Briefing for 14-16 October EASA RMT.0120

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Contents:

- Introduction
- Action A5 – overall sea state 6 operational limit (rescue)
- Action A6 – limiting operations to certificated helicopter ditching capability
- Action A7 – arming of emergency flotation systems (EFS)
- Action A8 – restricting passengers to seats immediately adjacent to authorised underwater escape exits unless EBS implemented
- Action A9 – requiring the size of underwater escape exits to be compatible with passenger body size
- Action A10 – mandate of CAP 1034 Cat A EBS or side floating EFS scheme

Introduction

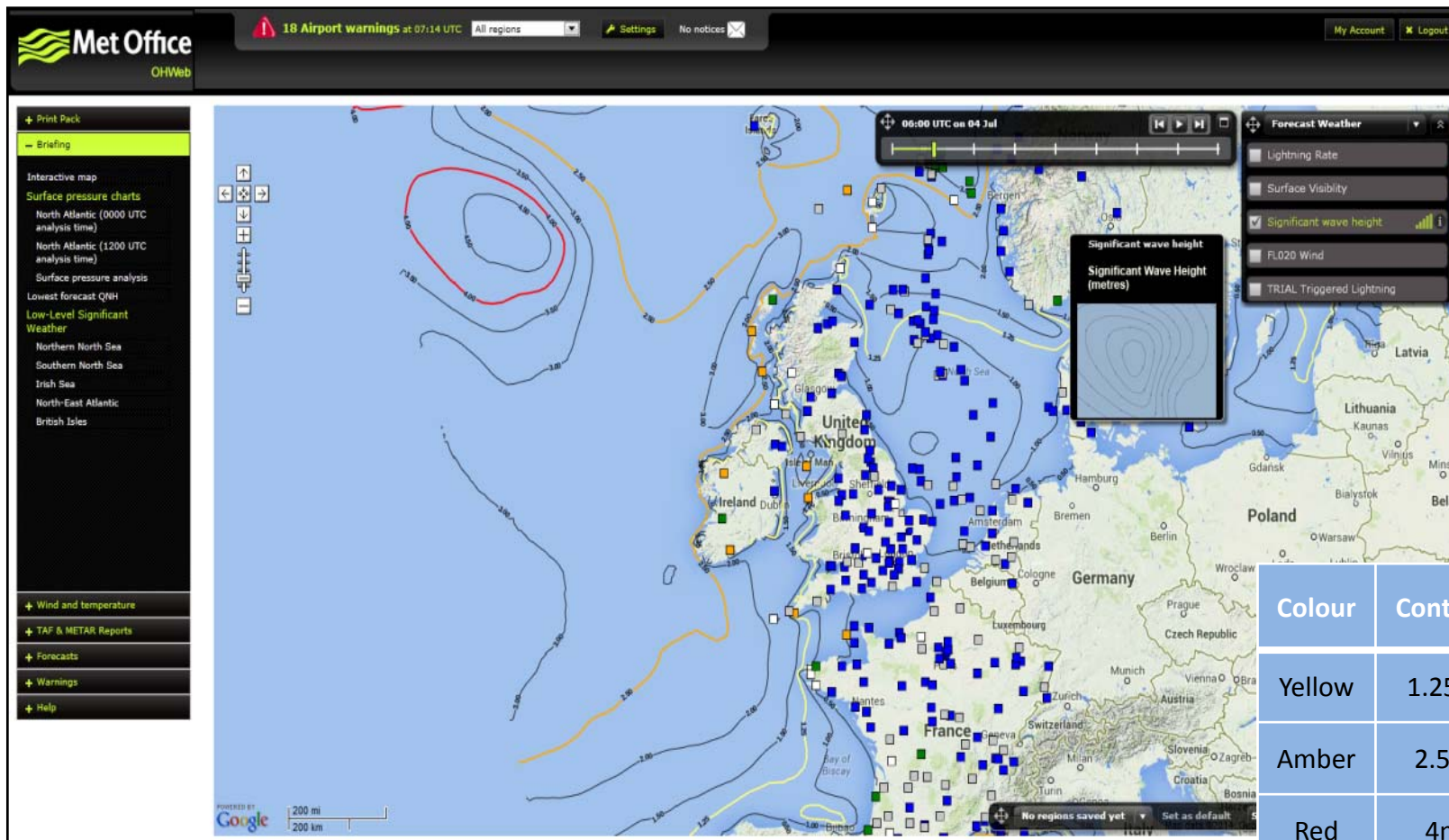
- Accident to Airbus Helicopters AS332L2 G-WNSB on approach to Sumburgh Airport in the Shetland Islands on 23 August 2013.
- CAP 1145 - Safety review of offshore public transport helicopter operations in support of the exploitation of oil and gas.
- Offshore Helicopter Safety Action Group (OHSAG).
- Mandates applied via Operational Directive under CAA Safety Directive SD-2014/001 & 002 issued in accordance with Article 15 of the ANO 2009.



Action A5

With effect from 01 June 2014, the CAA will prohibit helicopter operators from conducting offshore flights, except in response to an offshore emergency, if the sea state at the offshore location that the helicopter is operating to/from exceeds sea state 6 in order to ensure a good prospect of recovery of survivors.

- Limit revised from sea state 6 to 6m significant wave height (SWH) :
 - Sea state definition 'archaic' and indeterminate; marine industry uses SWH.
 - 6m SWH is equivalent to upper end of sea state 6 (WMO table).
- Limit revised to apply to the whole journey, not just at the destination:
 - Original limit assumed information available only from wave buoys at offshore locations.



Colour	Contour	Sea State
Yellow	1.25m	3
Amber	2.5m	4
Red	4m	5
Purple	6m	6

- UK Met Office OHWeb forecasting to be used :
 - Model-based forecasts validated for accuracy over several decades.
 - To be used for planning and at departure decision stage only, i.e. updates while en-route not required.

Action A6

With effect from 01 September 2014, the CAA will prohibit helicopter operators from conducting offshore flights, except in response to an offshore emergency, if the sea state at the offshore location that the helicopter is operating to/from exceeds the certificated ditching performance of the helicopter.

- Limit revised to apply to the whole journey, not just at the destination per Action A5.
- Sea keeping performance claimed by OEMs accepted:
 - Not ideal as likely to be based on regular wave testing.
 - Being addressed by EASA RMT.0120.
- EASA Airworthiness Directives issued covering helicopters manufactured in the EU and non-EU helicopters operating in the EU.

Action A7

With effect from 01 June 2014, the CAA will require helicopter operators to amend their operational procedures to ensure that Emergency Floatation Systems are armed for all overwater departures and arrivals.

- Significant proportion of EFS ‘failures’ in survivable water impacts due to EFS being either not armed or not activated.
- EFS only armed on approach to and departure from offshore locations.
- EFS was not armed on G-WNSB approach to Sumburgh – armed at last minute thanks to quick thinking/action by co-pilot.
- EASA RMT.0120 considering automatic arming/disarming.

Action A8

With effect from 01 June 2014, the CAA will prohibit the occupation of passenger seats not adjacent to push-out window emergency exits during offshore helicopter operations, except in response to an offshore emergency, unless the consequences of capsize are mitigated by at least one of the following:

a) all passengers are wearing Emergency Breathing Systems that meet

Category 'A' of the specification detailed in CAP 1034 in order to increase underwater survival time;

b) fitment of the side-floating helicopter scheme in order to remove the time pressure to escape.

- Required to address mismatch between escape time and underwater survival time (without suitable EBS).
- Target date revised to 01 September following representations from oil & gas industry.

- CAA required to authorise underwater escape exits under JAR OPS 3.837(a)(4) & (6).

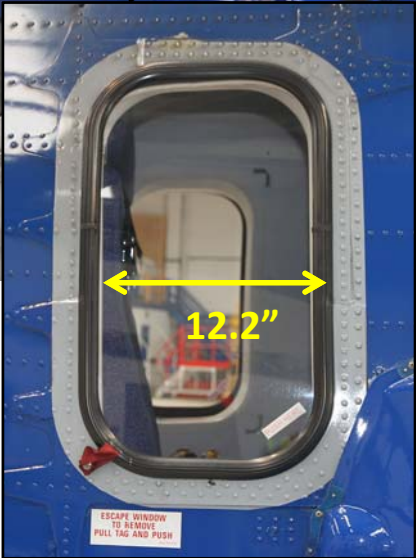
- Modified (from CAP 562 Leaflet 44-30) guidance adopted:
 - The minimum width of the underwater escape exit required is 14". This dimension is to reflect the aperture available to the passenger following operation of the exit as briefed.
 - The minimum diagonal diameter of the underwater escape exit required is 22". This dimension is to reflect the aperture available to the passenger following operation of the exit as briefed and is to be taken between the corner radii.
NB: The minimum diagonal diameter may be reduced to 21" provided that no part of the adjacent seat encroaches into the aperture.
 - An underwater escape exit may be considered large enough for two passengers to exit simultaneously provided that it is at least 28" wide and 19.5" high.

- Modified guidance based on research performed by RAF IAM (Report No.528) and University of Loughborough Report on body size for the Joint Aviation Authorities (JAA) in 2001:
 - Key fit/no fit parameter is shoulder width.
 - Diagonal of exit aperture needs to be > shoulder width.
 - 99th percentile shoulder width for Britain/Europe = 22.2”.
 - Existing minimum width of 14” retained.
- CAA independently measured all exit apertures.
- Helicopter operators submitted exit measurements and seating configurations for all aircraft to CAA.
- All exits authorised except:
 - Sikorsky S76 front and rear windows (too narrow – addressed by modified seating config.).
 - Airbus Helicopters AS332L (Tiger) rear windows (too narrow – addressed by removing from UK operations).

S76



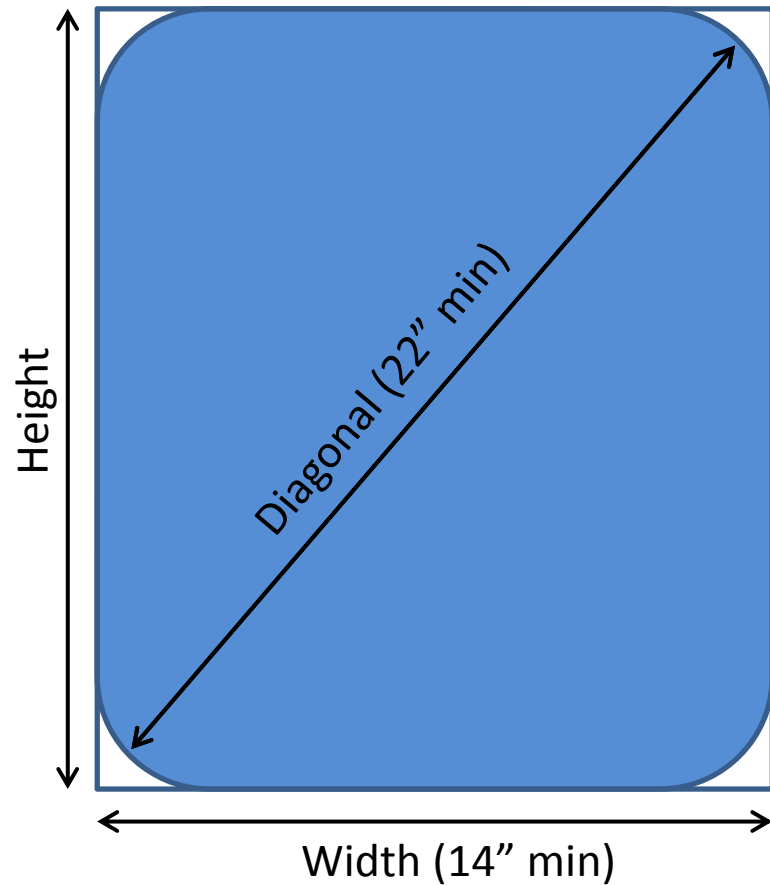
AS332L/L1



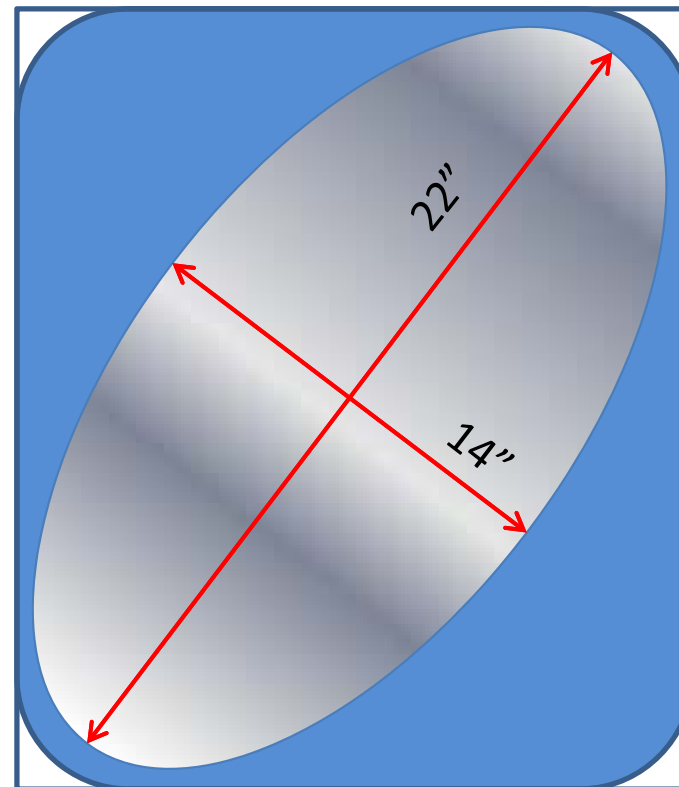
Action A9

With effect from 01 April 2015, the CAA will prohibit helicopter operators from carrying passengers on offshore flights, except in response to an offshore emergency, whose body size, including required safety and survival equipment, is incompatible with push-out window emergency exit size.

- Principles of Action A8 applied, but refined as follows:
 - RGU workforce survey data confirmed minimum width of 14” relating to maximum chest depth to be appropriate (approx. 99%ile).
 - RGU workforce survey data established minimum diagonal of 22” suitable for approx. 90% of passengers.
 - Ellipse test (22” x 14”) to be applied to non-rectangular exits and partially obstructed exits (e.g. by seat backs).



Unobstructed Regular Exit



Partially Obstructed and/or Irregular Exit

- All exits expected to comply except Airbus Helicopters AS332L2 non-Type IV exits (diagonal <22"):
 - Diagonal meets 22" minimum with rubber seal removed.
 - Airbus Helicopters working to demonstrate that rubber seal will detach on operation of exit.
 - Alternative solution to brief pax to remove rubber seal prior to egress.

- Industry will measure workforce and classify those with max chest depth >14" or shoulder width > 22" as 'extra broad' (XBR):
 - Classification added to Vantage card.
 - XBR pax allocated to seats with direct access to Type IV (26" x 19", diagonal 27") or larger exit.
 - Expecting approx. 10% of workforce to be XBR.

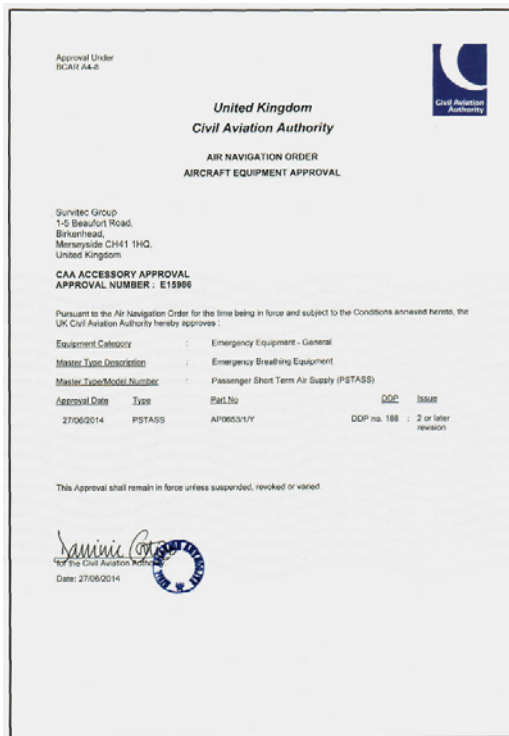
- All helicopters have at least 30% seats suitable for XBR.

- Visual confirmation of correct seating via coloured/patterned arm bands and matching seat covers/head rests.

Action A10

With effect from 01 April 2016, the CAA will prohibit helicopter operators from conducting offshore helicopter operations, except in response to an offshore emergency, unless all occupants wear Emergency Breathing Systems that meet Category 'A' of the specification detailed in CAP 1034 in order to increase underwater survival time. This restriction will not apply when the helicopter is equipped with the side-floating helicopter scheme.

- Target date brought forward to 01 January 2015 for passengers only.
- EASA announced approval of the Mk50 lifejacket with the Cat 'A' EBS fitted on 8 July 2014.
- Survitec passenger Cat. 'A' EBS approved by CAA on 10 July 2014.



- Step Change in Safety EBS Working Group worked to deploy the new lifejacket and EBS from mid-August and achieved full coverage by 01 September 2014 four months ahead of revised target.
- 59,965 people trained (dry training only) between July and 18 September 2014.
- EBS/new lifejacket well received by workforce.



- Flight crew version of Survitec Cat 'A' EBS under development.
- Second CAP 1034 Cat 'A' EBS produced by Hansen Protection being certificated by CAA.

Thank you for your attention...

Any questions?