



Australian Government

## Joint Agency Coordination Centre

### MH370 Operational Search Update

11 February 2015

This operational report has been developed to provide regular updates on the progress of the search effort for MH370. Our work will continue to be thorough and methodical, so sometimes weekly progress may seem slow. Please be assured that work is continuing and is aimed at finding MH370 as quickly as possible.

#### Key developments this week

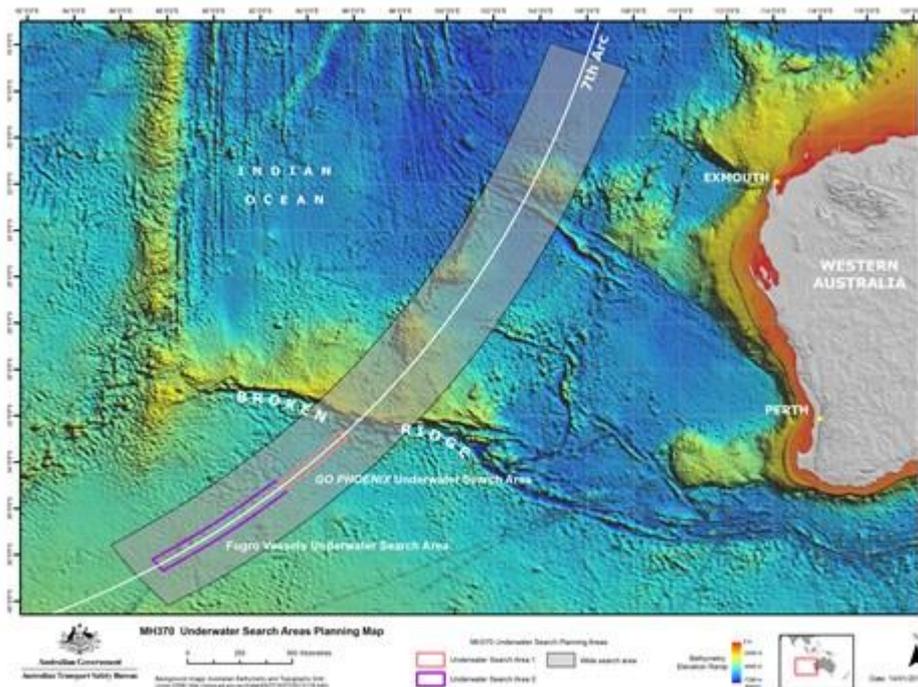
- *GO Phoenix* arrived in the search area and recommenced search operations on 10 February.
- *Fugro Equator* resumed underwater search operations on 5 February following the suspension of search operations due to weather conditions associated with Tropical Cyclones Diamondra and Eunice since 1 February. On 11 February the vessel departed the search area to conduct resupply in Fremantle.
- *Fugro Discovery* experienced some difficulties with its towfish communications after re-launching on 8 February. The towfish was recovered to deck once weather conditions permitted, repairs were undertaken and the underwater search then resumed.
- *Fugro Supporter* used a break in the weather to conduct an AUV mission on 6 February. The vessel resumed regular underwater search operations on 9 February.
- Over 22,000 square kilometres of the seafloor have now been searched.

#### Underwater search

In addition to locating the aircraft, the underwater search aims to map the MH370 debris field in order to identify and prioritise the recovery of specific aircraft components, including flight recorders, which will assist with the Malaysian investigation. The ATSB has utilised the data from the bathymetric survey work to prepare the initial plan for the underwater search, to be followed and referred to by all parties involved. The plan includes search timings, methods, procedures, safety precautions and the initial search areas for the various vessels.

Over 22,000 square kilometres of the seafloor have been searched, which is around 36 per cent of the priority search area.

Assuming no other significant delays with vessels, equipment or from the weather, the current underwater search area may be largely completed around May 2015.



## Ship movements

*GO Phoenix* arrived in the search area and recommenced search operations on 10 February.

*Fugro Equator* suspended underwater search operations on 11 February in order to travel to Fremantle for a scheduled port visit. The vessel is anticipated to arrive in port around 17 February.

*Fugro Discovery* is scheduled to suspend underwater search operations around 12 February in order to travel to Fremantle for a scheduled port visit. The vessel is anticipated to arrive in port around 18 February.

*Fugro Supporter* is scheduled to suspend underwater search operations around 14 February in order to travel to Fremantle for a scheduled port visit. The vessel is anticipated to arrive in port around 20 February.

## Weather

Following bad weather associated with two tropical cyclones in the area, conditions prevented the safe launch/retrieval of search equipment between 1 and 5 February. The vessels evaded the storms and resumed search operations in the following days.

Weather conditions will continue to improve over the next four days, with sea states in the search area anticipated to range from 1 to 5. This is a significant improvement on last week's weather conditions.

Overall conditions are expected to continue to be generally favourable during the warmer months.

## Equipment used in the underwater search

The underwater search is being carried out using two different types of subsea vehicles.

*GO Phoenix*, *Fugro Discovery* and *Fugro Equator* are equipped with towed vehicles (towfish) equipped with synthetic aperture sonar, side scan sonar and multi-beam echo sounders. The vehicles are towed behind the vessel on very long cables (up to 10 kilometres) at an altitude between 100 and 150 metres above the sea floor. The length of tow cable deployed is used to control the altitude of the

towfish. The sonar instruments on the towfish collect data which is relayed in real time to the vessels, where it is processed and analysed to determine if there is any evidence of debris on the seafloor associated with MH370.



'Dragon Prince', the EdgeTech DT-1 towfish that is being used to search the seafloor for MH370, on the deck of *Fugro Discovery*. Source: ATSB, photo by ABIS Chris Beerens, RAN.



'Dragon Prince' deep tow fish is recovered onto the back deck, as *Fugro Discovery* completes the first stage of the search for the missing Malaysia airlines flight MH370. Source: ATSB, photo by ABIS Chris Beerens, RAN.

A video showing the launch of the towfish can be viewed at:  
<http://www.jacc.gov.au/media/video/dragon-prince.aspx>.

*Fugro Supporter* is equipped with a Kongsberg HUGIN 4500 autonomous underwater vehicle (AUV). AUVs are self-propelled underwater vehicles (often shaped like a torpedo) which are very manoeuvrable. They can turn, ascend and descend rapidly to maintain a constant altitude above the seafloor in areas of challenging bottom topography. For this reason the HUGIN 4500 on *Fugro Supporter* is being used to search areas which are difficult or inefficient for the towed systems to search.

The HUGIN 4500 AUV is equipped with instruments identical to the towfish on *Fugro Discovery* and *Fugro Equator*. The AUV is launched from the vessel, dives to the correct altitude above the seafloor and then spends up to 24 hours gathering sonar data in a pre-programmed search pattern. When the mission is complete, the AUV surfaces and is recovered by the vessel, where the data is downloaded and the batteries changed, ready for the next mission.



The HUGIN 4500 AUV in the water. Source: ATSB, photo by Fugro.

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