



## REASSESSMENT OF THE RESPONSE TO AVIATION SAFETY RECOMMENDATION A11-03

### Safe ditching and successful evacuation

#### Background

On 12 March 2009, at 0917 Newfoundland and Labrador Daylight Time, a Cougar Helicopters' Sikorsky S-92A (registration C-GZCH, serial number 920048), operated as Cougar 91, departed St. John's International Airport, Newfoundland and Labrador, with 16 passengers and 2 flight crew, to the Hibernia oil production platform. At approximately 0945, 13 minutes after levelling off at a flight-planned altitude of 9000 feet above sea level (asl), a main gearbox (MGB) oil pressure warning light illuminated. The helicopter was about 54 nautical miles (nm) from the St. John's International Airport. The flight crew declared an emergency, began a descent to 800 feet asl, and diverted back towards St. John's. At 0955, approximately 35 nm from St. John's, the crew reported that they were ditching. Less than 1 minute later, the helicopter struck the water in a slight right-bank, nose-high attitude, with low speed and a high rate of descent. The fuselage was severely compromised and sank quickly in 169 metres of water. One passenger survived with serious injuries and was rescued approximately 1 hour and 20 minutes after the accident. The other 17 occupants of the helicopter died of drowning.

The Board concluded its investigation and released report A09A0016 on 09 February 2011.

#### Board Recommendation A11-03 (February 2011)

Overwater helicopter operations transporting passengers to and from offshore oil and gas installations occur with the knowledge that an emergency situation may arise requiring a forced landing or ditching. In such circumstances the first priority must be preservation of life and safety of the passengers and crew.

Most helicopters in use to support the global offshore oil and gas industry, including the S-92A, have an emergency flotation system (EFS) which provides adequate ditching stability in "reasonably probable water conditions" of at least sea state 4 World Meteorological Organization (WMO) <sup>1</sup> and is intended to keep the helicopter upright while occupants escape to the life rafts.

However, helicopters frequently operate over water where the conditions exceed sea state 4 WMO. For instance, in the waters off Newfoundland, statistics from Environment Canada

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<sup>1</sup> WMO Sea State Code defines sea state 4 as being moderate with waves of 1.25 to 2.5 metres, sea state 5 as being rough with waves of 2.5 to 4 metres, and sea state 6 as being very rough, waves of 4 to 6 metres.

indicate that sea state 4 is exceeded approximately 50% of the time over the course of the entire year, and 83% of the time between December and February. Sea state 6 WMO, by comparison, is exceeded much less frequently; 3.3% over the year and 8.9% between December and February.

Twin-engine helicopters typically have a high center of gravity because of the weight of the engines and the main rotor gearbox located on the cabin roof. Consequently, there is a strong likelihood that these helicopters will capsize after ditching unless they are equipped with an EFS which is appropriate for the prevailing sea state.

When EFS systems do not operate successfully, twin-engine helicopters invariably turn upside down, leading to complete flooding of the cabin and immersion of all doors and windows. Escape is very difficult because all escape routes are submerged and occupants who do not escape from the cabin within a matter of seconds will drown.

Although some steps have been taken in Newfoundland to ensure EFS capability for sea states beyond sea state 4, helicopter crews and passengers in Canada remain at risk where helicopters are operated over sea states exceeding the capability of the EFS.

Therefore, the Board recommends that:

Transport Canada prohibit commercial operation of Category A transport helicopters over water when the sea state will not permit safe ditching and successful evacuation.

**TSB Recommendation A11-03**

### **Transport Canada's response to Recommendation A11-03 (June 2011)**

"Transport Canada (TC) is initiating a focus group during the summer of 2011 with industry stakeholders to review the recommendations related to when the sea state will not permit safe ditching, and successful evacuation as well as mandatory supplemental breathing apparatus be made mandatory for all occupants of helicopters involved in overwater flights who are required to wear a Passenger Transportation Suit System (PTSS).

On the basis of these discussions, Transport Canada will develop an advisory bulletin for publication in the fall of 2011. Transport Canada will also present the results from the focus group to the Canadian Aviation Regulation Advisory Council (CARAC) at the next meeting in fall 2011 as the basis for amendments to the rules that would be consulted using the accelerated process.

Transport Canada has further initiated a comprehensive review of other offshore helicopter operations (such as North Sea operations) and the existing Canadian regulatory framework to determine if other specific regulations are required.

TC will also continue to work with the Canada Newfoundland and Labrador Offshore Petroleum Board (CNLOPB) enquiry (sic) and the resulting recommendations, expected by the fall of 2011 that may need to be taken account of in changes to the rules."

### **Board assessment of Transport Canada's response to A11-03 (June 2011)**

In its response, TC indicated that during the summer of 2011, a focus group will complete a review of the recommendations related to when the sea state will not permit safe ditching, and successful evacuation. Depending on the outcome of these discussions, TC will publish an advisory bulletin. In addition, it will submit the results to CARAC, as the basis for amendments to the rules. TC has also indicated it will be using an accelerated process to consider amendments to the rules.

If rules are put in place to limit overwater helicopter operations when the sea state exceeds the capability of the helicopter's EFS, they will significantly reduce the associated risk.

Therefore, the response is assessed as **Satisfactory Intent**.

### **Transport Canada's response to Recommendation A11-03 (September 2011)**

"Transport Canada completed a Focus Group meeting (August 8th through 12th, 2011) which reviewed TSB Recommendation A11-03. The Focus Group proposed that performance-based regulations be drafted to meet the intent of the TSB Recommendation. These proposals were subsequently examined in depth and agreed-to by TC senior management at a CARC meeting in early September. The process is currently underway to initiate the drafting of appropriate regulations, using an accelerated process.

Target for completion is December 2012."

On 17 January 2012, TC advised that an advisory bulletin, originally planned for publication in the fall of 2011 would be published by the end of March 2012.

On 28 March 2012, TC submitted an update stating the following:

Following the results of the focus group which took place in the summer of 2011, proposed regulations are being developed. A Notice of Intent has been sent to stakeholders for comment on the policy objectives.

Transport Canada (TC) is proposing to amend the *Canadian Aviation Regulations* (CARs) to introduce a new definition of offshore operations in accordance with that from the International Civil Aviation Organization (ICAO) and introduce performance-based provisions in Part 6, subpart 2 to require all helicopters operated offshore be equipped with an emergency flotation system (EFS), that is designed for use in the event of a forced ditching, and its rating is based on the sea state at destination

In addition, TC provided an explanation of its accelerated rulemaking process.

Recommendations A11-06, A11-05 and A11-04, A11-03 are part of a pilot project initiated by TCCA introducing an accelerated rulemaking process. Two risk analysis focus groups were formed (involving industry representatives) resulting in recommended actions. As part of the next steps, CARAC members received a Notice of Intent indicating what regulatory changes are proposed and were invited to provide comments. The drafting of the proposed regulations by the Department of Justice and the public consultation take place simultaneously; the proposed

regulations are finalized only after the public consultation period has closed and comments have been disposed of.

### **Board reassessment of the response to Recommendation A11-03 (March 2012)**

A Transport Canada focus group has proposed performance-based regulations be drafted to meet the intent of the TSB Recommendation and this has been accepted by TC senior management. An accelerated process to draft the new regulations and complete the process is currently underway with a target date for completion set for December 2012. If these new regulations meet the intent of Recommendation A11-03, when fully implemented, they should substantially reduce or eliminate the safety deficiency as described in Recommendation A11-03.

The response is considered **Satisfactory Intent**.

### **Transport Canada's response to Recommendation A11-03 (December 2012)**

"Industry is complying with these recommendations without regulation through the Canadian Newfoundland Labrador Offshore Petroleum Board (C-NLOPB)

As part of the accelerated rulemaking process, a focus group was held in the summer of 2011. Amendments to the regulations will be pre-published in the *Canada Gazette* Part I as soon as possible, likely in early 2013."

In an email dated 12 December 2012, TC provided the following clarification:

"TC is expecting the draft regulations to be pre-published in Gazette 1 in early 2013. Should there be no unforeseen issues, TC is anticipating the regulations to be published in Gazette 2 late in 2013."

### **Board reassessment of the response to Recommendation A11-03 (March 2013)**

In its response, TC indicates that the offshore oil industry is following these recommendations without regulation. However, the intent of Recommendation A11-03 was that TC prohibit commercial operation of Category A transport helicopters over water when the sea state will not permit safe ditching and successful evacuation, for all operators, not only Newfoundland operators. Therefore, it is important that progress continues on the new requirement to prohibit commercial operation of Category A transport helicopters over water when the sea state will not permit safe ditching and successful evacuation.

TC anticipates that amendments to the regulations will be pre-published in the *Canada Gazette* Part I in early 2013 and then be published in *Gazette* Part 2 late in 2013.

While in January 2012, TC indicated that an advisory bulletin would be developed for publication in March 2012, as of 18 December 2012, no update on the status of this advisory bulletin was provided.

Therefore, the response is assessed as **Satisfactory Intent**.

### **Transport Canada's response to Recommendation A11-03 (November 2013)**

Proposed regulations that address this recommendation were pre-published in Part I of the *Canada Gazette* on 16 November 2013.

### **Board reassessment of the response to Recommendation A11-03 (April 2014)**

In its response of 04 December 2012, Transport Canada indicated that the offshore oil industry in Canada is already following these recommendations without regulation. TC has also now finalized a new regulation prohibiting commercial operation of Category A transport helicopters over water when the sea state will not permit safe ditching and successful evacuation. This new regulation was published in Part I of the *Canada Gazette* on 16 November 2013. If this regulation comes into effect, the action that TC has taken will substantially reduce the safety deficiency.

Therefore, the response is assessed as **Satisfactory Intent**.

### **Transport Canada's response to Recommendation A11-03 (April 2015)**

TC announced the coming into force of amendments to the *Canadian Aviation Regulations* that will prohibit helicopter operations over water when the sea state exceeds the helicopter's certified limits for ditching.

The objectives of these amendments are to reduce the risks associated with offshore operations flights by ensuring that future offshore flight operators follow a consistent national standard, to further harmonize the Canadian regulations with the International Civil Aviation Organization (ICAO) standards and best practices, and to address the TSB's recommendations.

These amendments will

- introduce a definition of "offshore operations flight".
- introduce a requirement that helicopters cannot be used for the conduct of offshore operations when the sea state reported or forecast prior to departure along the planned flight route, or reported at the destination, exceeds the sea state for which the helicopter is certified for ditching in water (an exemption is provided for emergency operations). The aircraft float manufacturers provide data to specify the maximum sea state level for which the helicopter is certified for ditching;
- introduce a requirement that the pilot-in-command shall proceed directly to a land base if the sea state, at any point along the planned route, exceeds the sea state for which the helicopter is certified

### **Board reassessment of the response to Recommendation A11-03 (May 2015)**

In its response dated 28 April 2015, TC announced the coming into force of amendments to the *Canadian Aviation Regulations* that will introduce a requirement that helicopters cannot be used for the conduct of offshore operations when the sea state reported or forecast prior to departure along the planned flight route, or reported at the destination, exceeds the sea state for which the helicopter is certified for ditching in water (an exemption is provided for emergency operations).

These regulations will come into effect in July 2015 and will align Canadian requirements with international standards and best practices for offshore helicopter operations.

This action will substantially reduce the safety deficiency identified in A11-03 and therefore the Board re-assesses TC's response to the recommendation as being **Fully Satisfactory**.

**Next TSB action (May 2015)**

The deficiency file is **Closed**.