Advice provided by the C-NLOPB's Offshore Helicopter Safety Inquiry (OHSI) Implementation Team to the C-NLOPB Board

Advising Document

OHSI Phase I, Recommendation 2

Regarding performance-based goals for first response

In November 2010, the Honourable Robert Wells, QC, submitted the Report for Phase I of the OHSI to the C-NLOPB, containing 29 recommendations for enhancing the safety of helicopter travel offshore. Each Advising Document contains the text of the recommendation for which the advice is offered.

The Team's advice for Recommendation 2 was accepted in principle by the C-NLOPB Board at their meeting on June 24, 2011. At that time, the C-NLOPB took responsibility for developing its strategy to implement the recommendation.

The OHSI Reports, other Advising Documents, C-NLOPB OHSI Action Plans, and more can be found on the C-NLOPB website: **http://www.cnlopb.nl.ca/ohsi_main.shtml**

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Recommendation

It is recommended that the Regulator begin work and consultations to establish performance-based goals for first response and that, when goals have been established, operators' responses should be discussed with the appropriate stakeholders, including workers. The final statement of goals and how they are to be achieved should be made public.

Method

A working group of the OHSI Implementation Team reviewed the recommendation and information contained in the OHSI reports, and conducted research into similar operations in other jurisdictions.

A high-level hazard identification and risk analysis was completed with members of the working group and representatives from the Cougar Search and Rescue (SAR) Team. From the results of the assessment, the working group identified the system safety deficiency and developed an implementation plan.

System Safety Deficiency (SSD)

The nature and expected performance of helicopter First Response in the C-NL Offshore Area have not been formally defined by the Regulator or the Operators.

Background

In order to understand the role of the offshore industry in the context of SAR, the working group:

- Reviewed responsibilities for Canadian SAR operations;
- Reviewed the role of Transport Canada (TC);
- Conducted a hazard identification session that focused on helicopter recovery operations after a ditching; and
- Researched civil SAR operations supporting offshore oil operations in other offshore operating areas.

In Canada, SAR is provided by the federal government. The Joint Rescue Coordination Centre (JRCC) Halifax is responsible for the coordination of all SAR operations associated with aircraft and marine emergencies in eastern Canada. JRCC controls and directs all SAR responses, and has the authority to command any vessel or aircraft to support SAR missions, including the flight service provider's First Response helicopter in the event of an offshore emergency.

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The Canadian Aviation Regulations (CARs) govern all civil air activity in Canada. The CARs are enabled by the Aeronautics Act, and both are enforced by TC. The CARs define national minima, and TC expects air operators to supplement their policies and procedures to suit their local circumstances. TC has not published regulations or standards that govern non-military SAR operations.

In January 2011, the working group completed a hazard identification session that validated many of the Inquiry's recommendations.

During the session, the working group identified hazards associated with flight operations offshore, with a specific focus on a controlled ditching on water with recovery by helicopter and supply vessel. The working group identified existing safeguards that mitigate these hazards, gaps in the existing mitigation, and potential methods to address the gaps. Thirty-four performance deficiencies were noted in the following categories:

- BST Training and Fidelity;
- Survival/SAR Equipment and Procedures;
- Pilot training;
- Personnel Physical Fitness;
- Communication of Information;
- Environmental Conditions; and
- Flight Planning.

Until recently, most helicopter SAR operations around the world have been conducted by individual states using government assets and personnel. In recent years there has been a gradual increase in the use of secondary SAR services of private SAR providers to support offshore oil and gas operations.

The civilian capability has been greatly enhanced by the introduction of modern aircraft, including the Sikorsky S-92A and Eurocopter EC-225. These helicopters offer features previously unavailable to the civilian helicopter market, such as auto-hover capability, extended range and Night Vision Goggle (NVG)-compatible cockpits.

Improvements in non-military SAR response in the C-NL Offshore Area were initiated in as a result of a 2008 SAR review, OHSI proceedings and subsequent OHSI report. Changes to the program were made to address the following deficiencies:

- Constraints associated with the requirement to re-configure a dual purpose aircraft from passenger transport mode to the SAR role;
- Lack of dedicated SAR pilots and associated SAR-focused training program;
- A SAR fitment standard that impeded the capability to conduct SAR missions in darkness, including the absence of FLIR, night sun, NVGs, and auto-hover;
- A four-person crew (two pilots and two technicians) after it was identified by Cougar that that a five-person crew was preferred;
- A lack of dedicated ground resources for the SAR program (E.G Hanger, living quarters for crews, dedicated office and training facilities); and

- A response time of one hour.

As all of these issues have been addressed, a significantly enhanced SAR Program will be in place in the fourth quarter of 2011 which fulfills the requirement of Recommendation 1.

A primary limitation to the SAR role has been the inability to conduct night hoisting operations due to the unavailability of an approved Enhanced Automatic Flight Control System (auto-hover). The S-92A auto-hover system has recently been approved by the US Federal Aviation Administration (FAA) following an approval process that spanned several years. TC approved the S-92A auto-hover system in April, 2011 with a condition that additional information be added to the Rotorcraft Flight Manual (RFM). The required changes are expected to be completed and approved in the third quarter of 2011.

The S-92A auto-hover certification will be the first such certification in Canada on any type of helicopter.

Discussion

The federal government is responsible for all SAR activities in Canada. For the C-NL Offshore Area, this includes the following events:

- A major installation platform fire or explosion that is beyond the capability of the offshore response teams;
- A life-threatening, off-installation event, such as a helicopter ditching, supply vessel capsizing, or man overboard; or
- A MedEvac from a non-helideck equipped support vessel.

In eastern Canada, JRCC fulfills the federal government mandate by operating fixed-wing and rotary-wing aircraft based in Gander, NL (103 Rescue Squadron) and Greenwood, Nova Scotia (413 Rescue Squadron).

The C-NL Offshore Area Operators are required, as part of the authorization process, to have a First Response capability. However, the term “First Response” has never been defined. Consequently, performance expectations have not been formally developed and tested. The Team determined that there were two components to First Response: MedEvacs and SAR missions. In contrast to the immediate need to launch an aircraft on a SAR mission, MedEvac flights are normally planned and coordinated before the patient transfer commences. The operational, technical and training requirements for the two missions differ significantly. Therefore, the Team determined that the roles should be viewed separately, and that the development of performance requirements should concentrate on the specialized SAR function as the current MedEvac process has proven to be very effective in providing a timely and efficient patient transport service.

As a civilian operator, Cougar must operate in accordance with the terms of its operating certificate issued by TC, as well as in accordance with TC-approved procedures.

Conclusion

The Team concluded that the term "First Response" includes MedEvac and SAR services. They noted that the operations are very different, and that therefore different performance requirements are needed.

Recommendations

1. The Team recommends that the C-NLOPB develop performance requirements for the conduct of MedEvac services, and that Operators maintain a process for MedEvacs that are developed in consultation with the helicopter service provider, medical service provider(s), Regulator and helicopter pool participants (where applicable).

   NOTE
   Each operator currently has a MedEvac process in place to support their individual operations. As such, the intent of this recommendation to identify improvement opportunities in the MedEvac process that currently exist and to ensure that existing good practises are identified and documented

2. The Team recommends that the C-NLOPB develop performance-based requirements for First Response SAR activities. The requirements must take into account of the role of JRCC as the responsible SAR entity and TC as the regulating body for civil aircraft operations. The adoption of the requirements will both define SAR services and guide the development of the performance standard to which First Response SAR services will be measured and evaluated.

   It is recommended that the Team's "Guidance for Performance-Based Requirements – First Response" (Appendix A) be adopted by the C-NLOPB and reviewed and revised to meet the intent of the Inquiry recommendation.

   This will ensure that the non-military First Response SAR program will address the present and future requirements of the C-NL Offshore Area, and will be sustained by all future Operator(s) and flight service provider(s).

3. The Team recommends that the C-NLOPB require the Operators to:

   - Equip First Response SAR aircraft with auto-hover systems, post-certification; and
   - Evaluate the implementation of NVG technology for SAR pilots.

4. The Team recommends that the C-NLOPB require that the Operators ensure that the First Response provider has a proactive system in place to evaluate and manage the risks associated with training and execution of SAR activities.

In making these recommendations, the Team believes that the development of the performance goals associated with each of the performance requirements listed in Appendix A should be treated as a high priority. Additionally, they believe that the flight service provider and the Helicopter Operations and Safety Committee (HOSC) (as proposed in the Advising Document for Recommendation 20) should provide input to the development of First Response MedEvac and SAR performance goals.

Furthermore, the Team supports the suggestion by Commissioner Wells (in the text of this recommendation) that the C-NLOPB make the reference document containing the performance requirements publicly available.

Appendix A

Guidance for Performance-Based Requirements – First Response

A First Response SAR activity is defined as the operation of one or more helicopters to search for and rescue survivors from a life-threatening, off-installation event, such as a helicopter ditching, supply vessel capsizing, or man overboard.

First Response SAR Requirement:

- Fully-crewed, suitably equipped and configured SAR resources shall be available 24 hours a day, 7 days a week to conduct SAR operations in the C-NL Offshore Area.
    - During periods of unplanned maintenance activity, a contingency plan shall be put in place to manage ongoing flight operations, restore First Response SAR service and notify DND (as addressed by Recommendations 3 and 4).
    - The Regulator shall be notified immediately if the First Response helicopter is unserviceable or otherwise while passenger flight operations are ongoing. A subsequent notification shall be made when service is restored, including a brief description of why the First Response capability was interrupted.
- The dispatch time for First Response SAR service shall be "chocks out" within 20 minutes when flight operations are underway, and within 45 minutes at all other times.

NOTE

The 20 minute response time is contingent upon completion of the dedicated SAR hangar in Q4, 2011. Until then, the requirement shall be 30 minutes or less. The terms "chocks out" in the context of this recommendation refers to the point in time at which the aircraft has been fully prepared and is ready to taxi from the hangar of the flight service provider to conduct as rescue mission.

- A suitably equipped helicopter in SAR configuration shall include the equipment listed below, unless an equivalency in capability can be demonstrated by the Operator. Where appropriate, performance requirements for the listed items should be developed to aid in demonstrating equivalency.

  The helicopter shall be a twin-engine, IFR-capable helicopter equipped with:

    - Auto-Hover (once certified by TC);
    - FLIR (Forward Looking Infrared system);
    - Dual Rescue hoist installed and operational;
    - Night sun (or similar);
    - Direction finding/homing system capable of homing 121.5 MHz, based on current model Personal Locator Beacon (PLB)
    - Rotor de-icing system
    - Stretcher stack system

- Enhanced flotation system, to the standard of passenger helicopter in operation
- NVGs (for rescue technicians)
- Communication system at cabin crew station(s)
- First Response rescue equipment such as bill pugh, guidelines, lift collars etc.

The exact configuration and fitment of the SAR resources is to be agreed between the Operator(s) and the Regulator.

- The Operator shall demonstrate that the first response resource is able to:
  - Carry out SAR operations during the entire flight path used for passenger operations to offshore location(s), without requiring offshore refuelling.
  - Accommodate the maximum survivor complement from a passenger aircraft. The maximum Sikorsky S-92A complement is 21 consisting of19 passengers plus 2 pilots.

NOTE

The actual survivor complement will depend on a number of factors, such as availability of other rescue resources, injuries to casualties, location of survivors, search time required, weather and environmental conditions, etc.

- The Operator(s) shall ensure that at least three Survival Kits – Air Deployable (SKADs) are available for immediate use: either at the helicopter terminal or at an offshore facility. The exact configuration and location of SKAD kits shall be agreed to by the Regulator and Operator.
- An ongoing record of First Response service interruptions shall be maintained by the helicopter carrier and reviewed at the Safety Forum (the Forum is proposed in the Advising Document for Recommendation 25).
- The flight service provider, in passenger flight planning, shall consider the dispatch capability of the First Response aircraft. Consideration should be given to such factors as:
  - Actual onshore/offshore forecasted and actual weather; and
  - First Response helicopter serviceability, including any limitations due to equipment serviceability, First Response helicopter capability (in the event of primary and back-up first response airframes being unavailable) and assigned crew proficiency.
- The Operator(s) shall ensure that the First Response provider can demonstrate the ability of the First Response aircraft and crews to effect the following in Day or Night Instrument Meteorological conditions (IMC) conditions:
  - Effect offshore landing and departure;
  - Hoist from an offshore facility;
  - Hoist from water;
  - Hoist from a supply vessel;
  - Hoist from a life raft;

  - Deploy SKAD kits;
  - Provide medical assistance to casualties (post rescue); and
  - Conduct expeditious airborne search for survival craft and personnel in water.

- Operator(s) shall ensure that the First Response provider conducts sufficient ongoing training to meet the First Response SAR requirement on a continuous basis.

- Operator(s) shall ensure that the First Response provider can demonstrate the capability to expeditiously configure a back-up First Response aircraft (to full capability).

- The Operator shall ensue that the SAR provider implements a process to continuously improve SAR activities, including the incorporation of new training techniques and technology.

  - Improvements should be implemented with input from the Helicopter Operations and Safety Committee (HOSC) (as described in the Advising Document for Recommendation 20).