Hibernia Husky Energy PETRO-CANADA

Helicopter Operations Task Force (HOTF)
S-92 Return to Service Assessment

Joint Occupational Health & Safety Committee (JOHSC) Q&As

2. Correlated GBO Responses

The answers to questions 2, 3, 15, 18, 53, 66, 75, 76, 77, 78, 79, 80, 81, 82, 85, 86, 87, 93 and 117 have been redacted as they are not within the jurisdiction of the OHSI and/or within the exclusive jurisdiction of the TSB.

Return to Service

Questions and Answers

Alerts and Bulletins

Q1. Will operators and/or passengers be made aware of future mechanical/safety bulletins issued regarding our helicopters? (Questions 2, 62, 114, 135, 154, 252, 253, 284, 285, 288, 293, 304)

A. The helicopter manufacturer, Sikorsky, issues Alert Safety Bulletins (ASB) and other updates to the owners and/or operators of Sikorsky helicopters including Cougar. There is a Transport Canada regulatory audit process in place to verify ASB compliance. Cougar is also required by Transport Canada to maintain their aircraft in airworthy condition and is licensed to operate on that basis. In addition to the regulatory requirements, the Grand Banks Operators conduct their own regular audits which include testing for ASB compliance. Cougar shares important ASB information with Operator representatives when they deem it relevant. Individual passengers will not be briefed on future ASBs.

Q2. Why wasn't the issue with the titanium bolts dealt with in a more timely manner, knowing they had failed on a previous flight elsewhere? Why were the bolts not replaced immediately? (Question 309, 52, 104, 243, 320, 295)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q3. Why should it have to take a year or hundreds of hours to fix a recall? Why aren't ASBs addressed immediately? (Questions 18, 21, 126, 146, 246, 310)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

REDACTED

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Q4. Are there any other manufacturer's advisories that have not been acted upon with these choppers? (Question 50)

A. All ASBs have either been addressed, or are included in Cougar's preventive maintenance system for implementation as per established ASB timelines. [redacted] The Aviation Safety Review Team confirmed that Cougar consistently meets timelines for addressing ASBs.

Q5. Are there other issues with the S-92A's and what has been done about those issues? (Questions 203, 307)

A. This is a very broad question. Cougar is licensed and required by Transport Canada to operate and maintain their aircraft in airworthy condition. The review conducted by the Aviation Safety Review Team has confirmed that Cougar has appropriate processes and procedures in place to deal with all manufacturer and regulatory advisories, and to maintain their aircraft in airworthy condition.

Q6. What procedure does Cougar follow when receiving documents such as ASBs? How are these documents tracked to ensure completion? (Question 229)

A. Cougar's Quality Assurance department reviews each bulletin for applicability, arranges for implementation within the designated timeline and tracks each ASB within their maintenance management system until complete. These processes are subject to regulatory and Grand Banks Operator audits. When the Aviation Safety Review Team assessed this component of Cougar's operations, they found that Cougar met the timelines for addressing ASBs.

Q7. What was Cougar's interpretation of the alert on the mounting studs? Did Cougar intend to complete the repairs as per the directive or had they planned to do the repairs earlier than identified? (Question 247)

A. Cougar had ordered the required parts and tools to complete the work and had scheduled the mounting stud change-out well within the required ASB timeline.

Helicopter Underwater Breathing Apparatus (HUEBA)

Q8. Will re-breathers be placed on the flight suits before resumption of flights? (Question, 80, 89, 91, 99, 137, 216, 219, 266, 340)

A. A compressed air Helicopter Underwater Emergency Breathing Apparatus (HUEBA) was already scheduled for introduction in Q2/Q3 2009 and this timeline has not changed. Operators are in the process of finalizing the detailed training and communication plan with the Marine Institute and Cougar. The introduction of HUEBA to the flight suits will not be completed prior to return to service.

Q9. Would the HUEBA have made any difference in this incident? (Question 100)

A. This is unknown at this time; the Transportation Safety Board investigation may ultimately shed some light on this.

Goggles

Q10. The goggles currently in use would not give you a good seal in the event of an emergency. A new type of mask or goggles should be sourced to protect your eyes from seawater / heli-fuel. Also, the location of the goggles should be reassessed. (Questions 33, 39, 41, 190, 197, 234)

A. Operators will review the type of goggles, location and related training. The results of this review will be shared with each operator's JOHS committee. This review will be completed after the resumption of flight.

PLBs

Q11. Is there any information on the PLB's? Did they work as designed? What are the limitations on the PLB's? (Questions 101, 212, 265)

A. All personnel traveling offshore are required to have a Personal Locator Beacon attached to their flight suit to facilitate search and rescue of personnel on the water surface. PLB's use a VHF radio signal and are automatically activated when in contact with water with a signal that can last from 20 – 30 hours. They are designed to operate in water depths less than 20 cm. Emergency response vessels and aircraft are equipped with base unit receivers that can locate PLB signals, facilitating rescue of personnel on the water surface.

The TSB has confirmed the PLBs of the two individuals who were recovered from the surface were activated and were working properly.

Q12. Why don't locator beacons work under water? (Question 79, 129, 138)

A. The purpose of Personal Locator beacons is to facilitate surface search and rescue operations.

Q13. Offshore operators in the North Sea have decided to STOP using PLB's because they were found to interfere with emergency equipment on helicopters? This was from a report after a helicopter ditched in February of this year. Have any alerts / bulletins / concerns regarding this been issued by Cougar? (Question 136)

A. There is no directive from Canadian authorities to stop using PLBs. Cougar has reviewed the concerns raised in the UK and has confirmed that there is no requirement to change existing procedures.

Protective Equipment

Q14. Military helicopter flights require that crew and passengers wear helmets for head protection. Has this been considered as a requirement by the steering committee? (Question 156)

A. This is not required for passengers or crew on civilian helicopters. Some of Cougar's pilots do wear helmets, but it is a personal preference. There are no plans to consider the use of helmets for passengers.

Search and Rescue

Q15. Why isn't there a 24/7 Search and Rescue base located in St. John's? (Question 6, 163, 261, 336, 60, 66)

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Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q16. Why did it take so long for the first rescue helicopter to arrive? Was the Cougar Helicopter covering for Search and Rescue on the day of the incident already equipped with winching equipment or did it have to be configured after the call? (Questions 150, 225)

A. Cougar maintains its aircraft in a multi-role capability and is required by the Grand Banks Operators to be in a first response mode and airborne in less than 1 hr. The Cougar helicopter was reconfigured for search and rescue and underway within this time.

Q17. Should this kind of event ever happen again, I need to know that rescue is minutes away, not hours. A dedicated SAR team and helicopter standing by fueled up, kitted out and ready to go is a must. (Questions 3, 305, 323)

A. The current first response time available for the Grand Banks Operators by way of contractual requirement of Cougar is wheels up within 1 hour. The Grand Banks Operators will require that Cougar keep at least one airframe on the ground at the base available to be equipped for First Response. This changes our previous procedure which allowed helicopters to leave St. John's once inbound flights were within 30 minutes of base. This may assist in reducing "wheels up" time.

Q18. Can a SAR helicopter be deployed to accompany any helicopter returning to shore base due to malfunction or alarm? (Questions 4, 184, 226, 306)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Flight Suits

Q19. The flight suits are very restrictive with regards to movement; there is no way these suits can be zipped up in case of emergency. (Questions 82, 85, 87, 145, 170, 214, 347)

A. The E-452 Survival Suit System was introduced in late 2007 and features significant enhancements over the previous suit system. The standards met by the suits (CAN/CGSB-65.17-99 and CAN/CGSB-65.16-2005) include requirements for donning time, field of vision, mobility and hand dexterity, however the primary goal of the suits is to ensure thermal insulation and to prevent water ingress with overall comfort being a secondary consideration. That said, because some users have experienced discomfort with zipper stiffness and tight seals Helly Hansen is evaluating ways to address these issues while ensuring that the integrity of the suits (i.e. ability to keep water out) is not compromised.

The province's Medical Examiner confirmed that all survival suits were intact, in the appropriate position and zippered in the appropriate fashion.

After flights resume, Helly Hansen will be available for a period of time following return to service to provide briefings to outbound crewmembers, and help address any issues related to fit.

Q20. The boots on the new suits are too buoyant and impede escape from an over-turned helicopter. (Questions 88, 174, 351)

The thermal protection and buoyancy of the suit meets the Canadian General Standards Board (CGSB) standard, which carries specific requirements regarding buoyancy, A certification testing program confirms this requirement is met. HUET training is currently completed using this suit.

Q21. Can there be modifications to the suit currently in use to allow easier zipping of the hood by having a friction area or grab handle. (Question 171, 343, 218, 220, 267)

A. A survey was completed by Helly Hansen on incoming/outgoing passengers in mid 2008. One of the main issues raised was zipper stiffness. Helly Hansen is reviewing means of improving zipper operation while still complying with the CGSB standard.

Q22. Are the exact model of suits being used here the same as the rest of industry in other parts of the World. (Question 268)

A. No, the suits used by the Grand Banks Operators must meet the aviation and marine standards set by Transport Canada. During the technical

evaluation of the suit selection, suits not complying with the standard were not considered. The standards reflect the operating conditions of the offshore Atlantic Canadian environment, and therefore differ from the standards in effect in other operating environments around the world. Transport Canada, the offshore petroleum boards, the suit manufacturer, and the Grand Banks Operators have agreed to fund and participate in the review of the current CGSB standard beginning later this year.

Q23. Are flight suits for pilots adequate for cold water ditching (Question 215)

A. Yes, Cougar advises that Transport Canada requires that the suits provide adequate hypothermic protection. The pilots' suit meets this requirement They are a dry suit specifically designed for pilot operations.

Q24. Are suits one size fits all? Can custom suits be ordered? (Questions 81, 84, 86, 172, 341, 342, 344, 345, 346, 349, 350)

A. No, suits are not one size fits all. There are currently 7 suits sizes approved for use (XS, S, M, L, XL, XXL, and XXXL). Operators and Helly Hansen are now in the process of evaluating adding an additional standard size (XXS). Individuals who are uncertain of whether their suit size is appropriate should identify that concern to Cougar personnel for assessment. Customized suits may be developed if an individual's sizing issues indicate this to be appropriate. Each individual custom suit requires certification testing in order to confirm it meets the CGSB standard.

Q25. We understand that Robert Decker had hypothermia after 45 minutes in the water. Will the company provide the proper thermal clothing to employees to wear inside the flight suits to better our chances for survival against hypothermia? (Question 83, 213, 352, 353)

A. The TSB has advised that passenger suits will be assessed regarding egress and survivability as part of their accident investigation.

The GBO has committed to a review of the CGSB standards to identify improvement opportunities.

Survival training includes recommendations on appropriate clothing to be worn under the suit. The GBO will not be issuing thermal clothing to be worn under the suits.

Q26. Who chooses the suits used offshore? What features do they have? (Question 358)

Operators select the survival suits used in the offshore in Atlantic Canada. These suits must meet the Canadian General Standards Board standards and must be approved by Transport Canada.

All Eastern Canada offshore operators use the Helly Hansen E-452 survival suit. This suit was built to meet both marine immersion suit and aviation flight suit standards. All personnel traveling offshore are required to wear this suit for every trip. The suit is designed to provide insulation, flotation, and other survival at sea features. The offshore workforce is trained on the suit and its features.

Q27. Is there going to be an outside review of the current suits (including gloves) we use? Will there be involvement of the offshore workforce in the improvement of this standard and/or possibly in the trial/testing of new suits? Are there other suits available with higher ratings? (Question 90, 103, 141, 173, 348, 217)

A. It is important to stress that the current flight suits are designed for the offshore oil and gas industry in Atlantic Canada. These suits have been approved by Transport Canada and provide significant enhancements over previous suit designs.

Transport Canada, the offshore petroleum boards, survival suits manufacturers and the offshore operators have agreed to fund and participate in the review of the current CGSB standards beginning later this year. The CGSB has in place a committee to provide advice and input into this standard. The operating companies are represented on this committee, along with the C-NLOPB, the Canada-Nova Scotia Offshore Petroleum Board (C-NSOPB), various Federal and Provincial Government bodies, and non-governmental agencies (e.g. training providers, suit manufacturers). This review is expected to take 12 - 18 months.

Operators will periodically update the JOHS committees on the review of the standard and look for other opportunities to involve committee representatives in this process.

Seats and Seatbelts

Q28. The suits are so bulky the seat belt shoulder straps often fall away and end up on your arms. (Question 93)

A. Seat belts need to be correctly fastened. Upon resumption of helicopter operations, Cougar and offshore helicopter operations flight crews will ensure

that seat belts are properly fastened prior to flight departure. If passengers feel the seat belts are not correctly fastened, they should bring this to the attention of Cougar staff.

Q29. The seat belts sometimes lock preventing you to bend forward to access goggles. (Question 48)

A. Just like in a car, if your seatbelt locks, you should lean back and allow the shoulder harness to recoil back into the seat, and then lean forward again. Cougar is re-evaluating the location of the goggles on the aircraft.

Q30. The four point harnesses do not seem to tighten and slide down over the shoulders. Are they effective? (Question 233)

A. It is important that seatbelts be properly adjusted. They should be snug around the hips and have the shoulder restraints recoiled so the straps are not loose. Cougar and offshore helicopter operations flight crews will ensure that seatbelts are properly fastened prior to flight departure. The Operators believe there is value in having the HUET more closely match the features of the S-92A, including use of a four-point harness, and will request the Marine Institute to report on the steps necessary to modify the HUET.

Q31. Why does each seat belt not have a seat belt cutter attached to it in case of entanglement? (Question 237)

A. The quick release four point harness is considered a better solution than attempting to find and use a belt cutter in an emergency. Cougar and offshore helicopter operations flight crews will ensure that seatbelts are properly fastened prior to flight departure.

Q32. Can the configuration of the seats be modified to allow more room for forward movement and/or escape in the event of a crash or the addition of padding on the rear of the seats to provide impact protection? Should each person have a window seat to make escape easier? (Questions 14, 155, 188, 296, 36, 57, 302)

A. Seating arrangements for S-92As are certified according to FAA regulations. The primary egress system is intended to be through the emergency exits, of which there are three, plus the main cabin door. The S-92A has more cabin volume per passenger than other similar class helicopters.

Q33. Engineer a seat that incorporates a shock absorption system that can aid in survival of hard impact. (Questions 316, 31)

A. The main impact for helicopters is in a downward motion, and the seats are designed to absorb shock. The TSB has stated that the impact was in excess of 20Gs, which is beyond the capacity of the rated seat shock absorption.

Q34. Should the chairs be facing backwards? (Questions 194, 238)

A. No, the design philosophy is based on a downward force rather than forward.

Q35. Upon impact did the seats on the chopper come out of the deck, if so why? (Question 242)

A. No, the TSB has advised us that the seats were attached to the deck.

Q36. Donning gloves is difficult? (Question 217)

A. Helly Hansen and Cougar will be providing refresher briefings for a period of time following resumption of helicopter travel regarding suit system donning, including gloves. The Canadian General Standards Board in consultation with industry stakeholders will identify if improvements to the standard are advisable. The Operators are committed to working with Helly Hansen to determine if improvements can be made to the gloves.

Q37. Flight suits currently being used do not have self righting capabilities until the vest is inflated manually. Is this being investigated? (Question 221)

A. A self righting capability is not part of the suit standard. The Canadian General Standards Board in consultation with industry stakeholders will review and determine if improvements to the current standard are recommended. However, it is important to stress that the suits designed for the offshore oil and gas industry in Atlantic Canada meet the regulatory requirements and provide significant enhancements over previous suit designs. These suits have been approved by Transport Canada.

Q38. Have they determined why the PFD's did not go off and the cause? (Question 169)

A. The integrated inflatable lifejacket does not automatically inflate so that egress from the helicopter is not impeded.

Q39. Why was Robert Decker's core body temperature down and he was suffering from hypothermia after only a little over an hour in the water? (Question 092)

A. Mr. Decker has spoken to the TSB and RCMP and the TSB is evaluating this question as part of their investigation. Any additional information from the investigation will be reviewed as it becomes available.

Q40. Did people have their hoods and zippers up and were they found that way? (Question 199)

A. The Transportation Safety Board has confirmed that the passengers had their hoods and zippers up.

Flying Operations

Q41. Why was it flying at 9000 ft. high? (Questions 1, 227, 275)

A. 9000 ft was deemed to be a preferred altitude for this flight. Altitude decisions are based on considerations of icing conditions, turbulence, fuel efficiency, and to reduce total flight time. The full range of altitudes approved by the FAA, Transport Canada and Sikorsky for the S-92A is up to 15,000 feet, however subsequent to the accident, Cougar provided guidance to pilots to restrict altitudes to 7,000 feet in the future. Cougar advises that this provides an additional safety margin on the time required to make an emergency landing.

Q42. Why do we fly in adverse weather? How come regulations aren't followed? (Questions 007,028, 298, 299)

A. All flights are conducted in accordance with Transport Canada regulations. Adverse weather conditions are not uncommon on the Grand Banks. As such it is critical that weather related limits are established for safe flight operations under these conditions. Transport Canada has set weather limits and guidelines which are complied with by Cougar. Cougar and the Operators have established additional limitations specific to each installation.

Q43. We should not have any flights at night. Flying in adverse weather conditions and darkness should be reviewed for ditching and recovery of personnel. (Questions 005, 007)

A. There are no regularly scheduled flights in hours of darkness. The need for flights after dark is assessed on a case-by-case basis. The aircraft and the pilots are certified and prepared for night flights. For night flights, Cougar maintains its 1-hr First Response capability and SAR coverage is available

from JRCC resources with a 2-hr wheels up commitment after business hours.

Q44. What are Cougar's protocols with respect to landing on the sea? (Question 11, 19, 25, 106, 131, 228, 283)

A. The Pilot will make a decision based on the nature of the emergency, current environmental conditions, and compliance with the Cougar cockpit emergency checklist which is based on Sikorsky's Rotorcraft Flight Manual (RFM).

Q45. Are there any considerations for lowering sea states for offshore travel.? (Question 187)

A. No, not at this time. Transport Canada does not set sea state limits for the S-92A. Cougar's S-92A helicopters exceed the requirements of the C-NLOPB with regard to sea state. Cougar's S-92A helicopters are equipped with sea state 5 rated flotation equipment. The GBO has requested that Cougar upgrade to a sea state 6 capability that is available for retrofit. This should be completed in late 2009 / early 2010. Each Grand Banks Operator has established sea state limits with Cougar for helicopter flights to their offshore facilities. The limitations are related to the facilities and the capability of their standby vessels to rescue personnel from the sea.

Q46. What conditions, i.e., warning lights would warrant ditching in a controlled manner on the ocean? Questions 13, 26, 117, 118)

A. Emergency landing is as directed by Cougar's Standard Operating Procedures (SOPs) and related cockpit emergency checklist. Cougar's procedures and checklists are consistent with the related emergency procedures specified in Sikorsky's Rotorcraft Flight Manual (RFM).

Q47. The risks taken in the past with trying to land during heavy fog has to cease offshore. (Question 289)

A. Instrument flight rules ("IFR") are regulations and procedures for flying aircraft by referring only to the aircraft instrument panel for navigation. Even if nothing can be seen outside the cockpit windows, Cougar Pilots are IFR-trained and certified to fly while looking only at the instrument panel. Even with IFR approaches, there are landing restrictions offshore requiring one-half mile visibility, 150 foot ceiling and winds of less than 55 kts.

Q48. Stops on multiple installations in one flight should not continue. Is this safe? (Questions 058, 075, 334)

A. It is safe. While the majority of offshore flights are dedicated to a particular installation, stopping on another installation may be required in order to maintain operational flexibility.

Q49. Need more transparency around the standard operating procedures for Cougar. (Question 024)

A. SOPS are developed by Cougar based on the FAA approved S-92A Rotorcraft Flight Manual and are reviewed and accepted by TC. The Operator's aviation audit teams review Cougar's SOPs during periodic audits. Specific concerns can be raised with your supervisor for follow up with Cougar and information will be shared through JOHS committees.

Q50. Are there too many flights on the east coast for the 4 dedicated helicopters? Should there be more flights with less passengers? How is that determined? (Questions 105, 273, 255)

A. No, in actual fact the number of flights have decreased with the introduction of the S-92A and Cougar is now flying fewer hours overall. Flying less inherently reduces risk exposure and passenger delays.

Q51. Contractually, Cougar helicopters are obligated to fly passenger flights until 1700hrs each day. After that they are on standby for technical emergencies and medivac flights. Are they going to stand by this in the future to ensure that all aircraft are given ample time at night to be worked by the technicians at Cougar? (Question 186)

A. Core flight hours are from 7:00am until 7:00pm. Accordingly, most maintenance is conducted on the night shift. Maintenance is completed as required by the manufacturer, Sikorsky, and in accordance with all applicable regulations, and is audited regularly by Transport Canada. Aircraft are removed from service for longer maintenance routines as necessary to ensure full compliance with the required maintenance program.

Q52. The "game" of how Cougar & Petro-Canada play against each-other after 4:00pm (if the flight doesn't leave due to weather / helicopter problems). If Cougar cancels the flight, Petro-Canada doesn't have to pay them for that day's flight, they were the one who cancelled it. But if Petro-Canada cancels the flight, Cougar gets reimbursed whereas they are "ready" to fly. (Question 67)

A. This is inaccurate. Cost is not a consideration in the decision to fly due to weather or helicopter problems. Core hours for flights are from 7:00 AM to 7:00 PM and pilots are available during that time. Most helicopter costs are paid by the month whether Cougar flies or not. Each flight hour carries an additional charge for variable costs (e.g. fuel). Flights arriving after 19:30 carry a flat charge to cover overtime for Cougar ground staff which will be shared among all operators with flights in that time period.

Q53. Will there be any changes to helicopter operations because of this incident? Will we all be made aware of these changes? (Questions 107, 9, 22, 144, 176, 228, 278, 291)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q54. Will there be another helicopter to replace the one that crashed to take the strain off the 3 existing helicopters? (Question 123)

A. Yes, Cougar has sourced another S-92A helicopter to replace the one involved in the incident.

Q55. It is understood the mechanics and pilots are qualified individuals; however a question was asked how much experience they have with the S-92A. (Question 224)

A. Cougar is among the most experienced operators with the S-92A aircraft. They have been flying since 2005 as one of the aircraft launch customers. The Aviation Safety Review Team found that the Cougar Pilot Training Program meets regulatory requirements. Sixteen of Cougar's pilots have acquired more than 9000 hours of helicopter experience each. On the S-92A specifically, three pilots have more than 1,400 hours, nine have more than 900 hours, and 17 have more than 500 hours.

Q56. With the increased usage and number of flights each day are the maintenance intervals being exceeded? (Question 230)

A. No, maintenance routines are in accordance with Transport Canada and Sikorsky requirements and industry standards. These routines have been audited and confirmed to be completed in accordance with the Sikorsky maintenance manual and regulatory requirements.

Q57. Why do the Pilots eat and drink in the cock-pit? (Question 130)

A. Currently, there are no regulatory or other restrictions on pilots' consumption of food and liquids in the cockpit.

Q58. How many hours will the choppers fly before they make a scheduled crew change? (Question 151)

A. Prior to carrying out offshore crew changes by helicopter, Cougar will have a extensive S-92A Return to Service program, complete with maintenance test flights and crew re-familiarization flights.

Flight crew changes are based on Transport Canada regulations and are closely tracked by Cougar. The Duty Day is 14 hours. Pilots are permitted to fly up to 10 of these 14 hours.

Q59. Will there be any consideration of increasing the length of rotations in order to decrease the number of times required to fly in the run of a year, as well as reducing the workload of the flight crews and annual flight hours on the aircraft? (Question 164)

A. There are no plans to alter our current 21 day rotation.

Q60. Has anyone considered a flight engineer? A person to monitor the functions of the chopper. (Question 178)

S-92A helicopters are designed to operate without a flight engineer as is common with most modern aircraft. Cougar crews have access to engineers throughout the flight. They are available for consultation via satellite telephone or radio.

Q61. What criteria are there for the recertification of the pilots? Are simulators used? (Question 132, 177)

A. Pilots are recertified annually in accordance with Transport Canada requirements. Pilots at Cougar are also required to complete annual simulator training, which includes emergency procedures such as ditching under a variety of adverse conditions.

The Aviation Safety Review Team reviewed a random sampling of ten pilot training files. The pilots' training meets or exceeds regulatory requirements and the industry standard.

Cougar has had extensive de-briefings and communications with its pilots and is confident they are ready to resume regular helicopter operations. The pilots have been flying test flights with the S-92A for several weeks since the accident.

Q62. Is the testing protocol for flight worthiness to be changed prior to resumption of transportation of passengers, either voluntarily or as a requirement of regulatory authorities? (Question 272)

A. As a part of Cougar's return to flight service plan, it has completed additional inspections beyond those required in the maintenance program and has completed a test flight program. Transport Canada conducted a post accident Special Purpose Regulatory Inspection which has confirmed Cougar is fully certified to resume flight operations.

Q63. If it was reported that there was a red fluid leaking outside the helicopter, and it was loosing oil pressure, why didn't the pilot put the chopper in the water while he was still able? (Question 027)

A. The TSB is investigating the cause of the accident and its only validated significant finding to date relates to the stud failure and loss of gearbox oil. While that investigation is ongoing we are not in a position to comment.

Q64. Why did the black box not communicate after 800 feet? (Questions 049, 139, 239)

A. There are some questions which we will not know the answer to until the Transportation Safety Board has released the results of its investigation. The TSB has committed to advising of any validated significant findings as they come to light.

Q65. Has it been determined as to why the inflation bags of Cougar 491 did not deploy automatically and will there be any modifications to these devices on any supplemental buoyancy devices installed on the S-92A? (Question 102, 317)

A. There are some questions which we will not know the answers to until the Transportation Safety Board has released the results of its investigation. The TSB has committed to advising of any other validated significant findings as they become known. The flotation system on the S-92A is armed by the pilot as required, and will inflate automatically in a controlled ditching on the water.

The GBO has requested that Cougar upgrade to a sea state 6 capability that is available for retrofit. This should be completed in late 2009 / early 2010.

Q66. What was the actual cause of the accident? What happened to bring down flight 491? Did the titanium bolts fail because of excessive vibration? (Question 311, 053, 204, 330)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q67. When will the Root Cause of the incident be released to the public and if we are going to fly before release of findings what assurance will they give that the choppers are safe to fly? (Questions 055, 074, 158, 319, 328)

A. While the TSB final report is still likely months away its practice is to report any validated significant findings as they are uncovered. The TSB has done this by identifying the failure of the titanium mounting studs on the filter bowl assembly as a validated significant finding. This is the only validated significant finding at this time. Transport Canada has completed a post accident Special Purpose Inspection which has confirmed that Cougar is fully certified and ready to resume flight operations. Cougar has resumed flight operations with the S-92A, but not with passengers. An internal review by Cougar into the incident is ongoing, with preliminary findings issued to the operators. A review of Cougar's operations by the Grand Banks Operators, including an independent Aviation Safety Review Team has assessed Cougar's operations for the purpose of determining its readiness to return to service. The Grand Banks Operators also had a number of other committees looking into the technical and operational requirements for a return to flight and have taken the time for a thorough review.

Q68. Will there be a grace period that we can have to decide a helicopter or boat? Can a person be given a choice to continue vessel transport? (Questions 63, 69, 72, 119, 161, 162, 166, 207, 210, 211, 257, 322, 324, 329)

A. We continue to review the conditions required for return to flight on a number of fronts. Our process has no timeline and we will take as long as necessary before returning to flight operations. When flights resume, individuals currently offshore will have the option to return via the mode of transport they arrived. However it is our intention to re-instate helicopter

transportation as the primary means of transport to and from offshore facilities.

Q69. Will there be an Independent aviation specialist involved to state whether these helicopters are min safety spec or are up to the max safety spec. (Question 077, 270)

A. Part of the Grand Bank Operators' process was to have an independent aviation safety review team (ASRT) review Cougar's operations. The ASRT have concluded that Cougar is ready to resume S-92A operations. In addition, Transport Canada completed a post accident Special Purpose inspection and determined that Cougar's fleet is ready to return to service.

Q70. When will Cougar start to carry passengers again? (Question 124)

A. Our process has no timeline and we will take as long as necessary before returning to flight operations. A recommendation will be made on completion of the Return to Service assessment.

Q71. Which rig will have the 1st Crew Change (suggest it not be the Sea Rose) (Question 160)

A. This is yet to be determined, however, when we are satisfied that the time has come to resume flights, we anticipate continuing with the regular scheduled rotation.

Q72. Has there been agreement by all aviation authorities as well as other users of the S-92A that they should be put back into service? (Question 250).

A. The S-92A helicopters were returned to service around the world once the titanium mounting studs were replaced with steel. It is also important to note that since the incident, Transport Canada has completed a Special Purpose Inspection of Cougar's operations and there are no flight limitations.

Q73. Was there anything in the investigation as to why the pilot did not land on the water sooner (controlled landing) opposed to trying to fly back to town? (Question 152)

A. The TSB investigation may ultimately shed some light on this. While the TSB final report is still likely months away, it is their practice to report any validated significant findings as they are uncovered.

Helicopter Equipment

Q74. Why can we not fly the Puma Helicopter? (Question 262)

A. Before the S92 was selected, there was an evaluation process that GBO conducted. Through consideration of a number of factors, the S92 was deemed best suited for service in our operating environment.

Q75. What is the rational supporting the replacement of a Titanium stud to one constructed of Steel? (Questions 51, 111, 244, 318)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q76. Will the new pins in the gear box be tested and checked prior to flight departures? (Question 142)

Redacted within exclusive jurisdiction of the TSB

Q77. How many more Titanium bolts are being used in other locations on the S-92A? Could there be bolts on other essential equipment that could suffer the same failure? (Question 198)

Redacted within exclusive jurisdiction of the TSB

Q78. Is there a specific maintenance program for these new bolts? How are they checked and what is the frequency? (Questions 201, 245)

Redacted within exclusive jurisdiction of the TSB

Redacted within exclusive jurisdiction of the TSB

Q79. Has there ever been a Gear Box alarm incident before? How was it handled? Was anything different from this incident? Did it happen with the S-92A? (Questions 112, 45, 277)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q80. How will it (gearbox) be fixed so we do not have a repeat incident? (Question 200)

Redacted within exclusive jurisdiction of the TSB

Q81. There has been comments that the gear box should be able to run dry for thirty minutes, if this is the case why did this not happen? (Question 240)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q82. All other systems on chopper seem to have back-up, redundancy. Is there or will there be anything put in place for gearbox? (Question 34, 35, 42, 46)

Redacted within exclusive jurisdiction of the TSB

Redacted within exclusive jurisdiction of the TSB

Q83. Being able to clearly hear the pilots is a problem. (Questions 235, 308, 47, 125)

A. The PA systems on the aircraft are checked regularly. If you cannot hear adequately, you must notify the pilots.

Q84. Could it be an option for the S-92A to have installed AIS (automatic identifier system) on their specific radars? This way the names and locations of vessels would show up on the screen. (Question 185)

A. AIS systems are not certified for aviation use. Cougar and the Operators use a real time satellite tracking system called "Blue Sky" that displays all aircraft and vessels used by the Operators. Cougar's Operations Control Centre relays this information to flight crews as necessary.

Q85. Has the engineering of the failed system changed or will it change? (Question 202)

Redacted within exclusive jurisdiction of the TSB

Q86. Were any fatalities linked to the auxiliary fuel tank being in the cabin with the passengers? (Question 43)

Redacted within exclusive jurisdiction of the TSB

Q87. Passengers are not comfortable flying with the auxiliary fuel tank in place, this is a major obstruction should you have to abandon and at the same time it places a very big fire load right on top of the passengers. (Questions 32, 37, 40, 44, 109, 128, 157, 191, 192, 193, 236, 281,303,312, 314, 315)

Redacted within exclusive jurisdiction of the TSB

Q88. Will personnel have the right to refuse to fly if these mentioned seats [next to auxiliary fuel tanks] are the only ones available? (Question 332)

A. The Operators do not view the proximity of a passenger's seat to the auxiliary fuel tank as a risk to passenger safety. The location of the auxiliary fuel tank has been approved by the regulatory authorities with consideration of egress through emergency exits. In addition, current passenger seating arrangements have been tested and approved in line with all regulatory requirements.

Q89. Can all the windows be made larger to provide an easier egress when trying to get out of the helicopter? (Questions 134, 195, 189, 116)

The design of the S-92As is approved by the FAA and is in compliance with industry aviation standards. It's also important to note that while each window is an egress route, the primary way out of the helicopter is through the three emergency exits and cabin main entrance.

Q90. Why are the windows in the S-92A smaller then the test capsule in Fox Trap? (Question 140)

A. The test capsule, called the HUET (helicopter underwater escape training) is designed to provide general training in helicopter underwater escape for multiple helicopter types. The current training configuration is considered adequate and meets current standard practice; however the GBO believe there is value in having the HUET more closely match the features of the S-92A, and have requested the Marine Institute to report on the steps necessary to comply with this request.

Q91. How hard is it to remove a window in the S-92A? (Question 196)

A. The windows are designed to be pushed out easily in an emergency.

Q92. There are concerns that pumps and other parts are sometimes shipped as cargo within the passenger compartment – is this a regular practice? Will any freight be allowed in the cabin area with the passengers? (Questions 282, 290, 10, 8)

A. Cargo is not to be transported in the passenger cabin. Cougar advises that it does not carry cargo in the passenger cabin while passengers are onboard. If you see any cargo in the passenger cabin in the future, you should bring this to Cougar's and your supervisor's attention immediately.

Q93. Chip Indication in gearbox? Is it from actual wear and tear? Or is it false indication. We are after having a number of these. (Questions 16, 38, 286, 339)

Redacted within exclusive jurisdiction of the TSB

Q94. In the last number of weeks there have been occasions where helicopters would not start or another problem, they are put in the hanger and different one is brought out, why aren't these other ones started up before they fly offshore? (Question 17)

A. Procedures to manage helicopter release are very strict and there are specific multiple re-start requirements after some routines. To help reduce passenger inconvenience Cougar plans to return to loading personnel with rotors turning where possible. That is to say, they will have the aircraft running before personnel board.

Q95. We also feel that maintenance has been neglected on these choppers over the past while. (Question 20)

A. There is no evidence to support this view. The independent Aviation Safety Review Team retained by the GBO confirmed that the Cougar maintenance system is comprehensive and fully complied with. Maintenance is normally carried out during the night shift. Cougar is regularly audited by Transport Canada to confirm compliance.

Q96. Is Cougar being pressured to make too many flights, which may be affecting maintenance? Should there be more / a larger number of aircraft in service to allow for more regular maintenance while still meeting the operational demands?(Questions 30, 274)

A. No, Cougar is subject to regulations set forth by Transport Canada, which cover maintenance. The Aviation Safety Review Team's review confirms that the maintenance program at Cougar is comprehensive and complies with all requirements and can be completed with the current schedule and number of aircraft.

Q97. There has been a number of Proacts put in on flights over a period of time going back to Feb. of 06; why wasn't these acted on? (Question 61)

A. All ProActs (Petro-Canada's event and hazard reporting database entries) related to helicopter operations since 2006 have been confirmed as addressed and closed out.

Q98. Are there more or less maintenance issues / mechanical issues with the S-92A helicopters compared to the Super pumas? (Question 110)

A. The GBO have not conducted a detailed comparison of S-92A maintenance with the Super Puma. Cougar has advised they have not experienced more maintenance / mechanical issues with the S-92A in comparison with the Super Puma they flew previously.

Q99. How many hours of maintenance are required for 1 hour flying time? (Question 120)

A. Cougar advises that there are between two and three hours of maintenance for every flight hour.

Q100. Is Cougar's Maintenance Management system adequate? (Question 121, 181)

A. The Aviation Safety Review Team audited the maintenance management system at Cougar and, in their opinion, found it meets or exceeds regulatory requirements and industry norms. Maintenance management is regularly audited by Transport Canada as well.

Q101. Will there be an independent company performing maintenance checks and inspections on the Helicopters? Have a third party vendor do audits on Cougar so as their maintenance is up to date. (Questions 148, 180)

A. Cougar has an audit program, both internal and external. The program includes audits by Transport Canada, as well as by aviation consultants utilized by the GBO.

Q102. What are the qualifications of the people that maintain the choppers? (Question 179)

A. The people that maintain the aircraft are Transport Canada licensed Aircraft Maintenance Engineers (AMEs). All AMEs undergo Cougar-specific and aircraft-specific training, with required recurrent training. Training records

are comprehensive and individual compliance is closely monitored.

Q103. In the last three months there have been a dramatic increase in the number of mechanical delays, can this be explained? (Question 231)

A. Flight delays are a proactive safety precaution. Some Rotor Ice Protection System (RIPS) issues have been experienced. Cougar does not fly if RIPS is not operational when there are icing conditions. During colder conditions there has also been a problem with rotor brakes not releasing and this also has led to delays.

Q104. There has been questions regarding a problem with cracks in the oil tanks, is this true? (Question 241)

A. The helicopter with the SCH registration had a small external leak on the main gearbox several years ago and the gearbox was replaced.

Q105. Who inspects choppers after maintenance work is completed? (Question 294, 133)

A. A certified and authorized Cougar aircraft maintenance engineer (AME) signs off readiness of the helicopter as part of a handover to flight operations. Only certified and authorized personnel are permitted to work on the helicopters.

Q106. There is heavy vibration noted on landing; it is the understanding that you can eliminate this with some modifications. The only impact would be a reduction in cargo. There is always vibration during landings, does this affect the helicopters? (Questions 232, 108, 122, 149)

A. It is standard aerodynamic feature of all rotorcraft to have increased vibration when transitioning from flight to hover (called translation). Vibration data on each flight is collected using a built in system called HUMS. The data is downloaded following each flight and is reviewed by Cougar maintenance personnel. It is also sent to Sikorsky for review of longer term trends. Cougar advises there has not been any recorded HUMS exceedance during translation from flight to hover.

Q107. What are Maintenance issues over the past 4-5 yrs? (Question 23)

A. Some of the primary issues that have come up in recent years have concerned HVAC (air conditioning), RIPS (ice protection), chip sensors, engine inlet heater mats and probes. A post-incident special inspection by

Transport Canada and the industry's Aviation Safety Review team has confirmed that the Cougar maintenance management system is comprehensive and fully complied with.

Q108. How many hours of flying will the helicopters have before personnel are permitted onboard? (Question 143)

A. Cougar has completed an extensive return to service program complete with maintenance test flights and crew re-familiarization flights.

Q109. What information has Rob Decker given to aid in the investigation? Why did he survive, but no one else? (Questions 054, 115, 249)

A. Robert Decker has made a limited public statement, and has been interviewed by the authorities. It is important to keep in mind that his information is just one part of a much broader investigation. The TSB is conducting a very comprehensive review and has committed to informing us of any validated significant findings, as they have already in the case of the titanium stud bolts.

People Questions

Q110. Why is their not a union rep involved on the task force? At least then we would feel there is nothing being covered up or pushed through._(Questions 76, 327, 331, 333)

A. The task force includes worker and management OSH representation. As well, people with offshore experience are participating at the steering committee level.

Q111. All should be informed, briefed and kept in the loop, of causes, if and when flights are aborted in flight. (Questions 15, 29, 59, 60, 64, 182, 183, 209, 256, 271, 276, 280, 287, 288, 292)

A. We have heard from the workforce that when there are flight delays, communications from Cougar needs to be more transparent and timely. We will work with Cougar to identify ways to improve communications with the workforce. Any concerns should be raised to Cougar at the time. If not resolved, the concerns should be brought forward to your supervisor.

Q112. Will full disclosure of future issues with any Cougar chopper be released to the passengers affected? (Question 12)

A. Cougar has committed to improve communications with passengers and the Grand Bank Operators. Audits by external agencies take place to verify

that the appropriate processes are in place to manage maintenance issues. If you have specific concerns you are encouraged to bring them forward to your supervisor.

Q113. A Cougar telephone line update indicating status of helicopter flight would be helpful. Question 301, 300)

A. Cougar maintains a flight information line, 758-4888, which lists departure and arrival times. It is only updated with significant changes to departure or arrival details. These can be frequent throughout the day. Currently it is not updated with the flight status as it changes (take off, enroute information, flight location offshore) FIDS (Flight Information Display System) is available on the Cougar web site. It is updated with flight status information as entered by the dispatch department; near real time.

Q114. We should not have to get on more than one chopper to come to work per day. If you are on a flight that has to return to town because of chopper failure, we should be automatically re-booked on the following day. (Questions 65, 297)

A. It is important for the entire workforce that we maintain, as best we can, the 21-day rotation. Not unlike airline travel, the goal is to minimize the impact of the delay on both the outbound passenger and their back-to-back, by re-booking them on the next available flight.

We are working with Cougar to improve communications with the workforce when there are delays.

Q115. In order to increase the confidence of the passengers, is it possible to have a short pre-flight briefing on expected weather conditions and travel time of the flight given by the Captain of the aircraft just prior to boarding the helicopter? (Question 153)

A. Cougar has agreed to assess how best to accomplish this and has committed to improving their communication processes.

Q116. Will we be given additional updates with respect to the mandates, findings, and recommendations of the established Helicopter Operations Task Force, the Industry Steering Committee, the Cougar internal investigation team and the TSB? (Questions 68, 165,168, 183, 263, 321 325, 326)

A. Yes, over the past few weeks, all operators have been providing regular updates to their workforce regarding plans to return to service. The plan going forward is to continue to have dialogue with the workforce as we move toward the resumption of flights.

We will hold town hall sessions onshore and offshore for the workforce where we can answer your questions and share the results of the reviews undertaken to determine the industry's readiness for resuming passenger transfers by helicopter.

Q117. Can you tell us what the cause of death was for the passengers? (Questions 56, 115, 205, 206, 248)

REDACTED

Not within OHSI's Terms of Reference.
Within exclusive jurisdiction of TSB.

Q118. What happens if I don't feel I can go back in a helicopter? What do I tell my kids who don't want me going back in the air? What if I'm not ready? (Questions 73, 113, 147, 167, 258, 260)

A. The operators and their contractors have Employee Assistance Programs (EAP) in place which are available to both employees and family members. Workers and their spouses will also have an opportunity to ask questions at the upcoming town hall sessions to ensure they have all the information they need.

Q119. Where is the Focus on Cougar employee's and pilots and have all the Pilots received counseling and are they released to fly based on doctors and counselors thoughts? (Questions 159, 208, 251)

A. Cougar, the operators and their contractors have Employee Assistance programs (EAP) in place which are available to both employees and family members. Workers and their spouses will also have an opportunity to ask questions at the upcoming town hall sessions.

Q120. Why do we not get paid for flying home on a chopper (being done on my time off)? (Question 70)

A. Compensation and the terms and conditions of your employment will vary by company. You should speak about this with your supervisor.

Q121. Does our life insurance cover Aviation Incidents? Are personnel considered at work when traveling via chopper? (Questions 71, 259, 337)

A. Compensation and the terms and conditions of employment vary from company to company. If you have questions about your individual situation you should discuss them with your supervisor or HR representative.

Individual policies of insurance purchased by you outside of your employment are governed by your contract. You should contact your insurance company

Q122. If the incident has been so traumatic on personnel that they cannot return to work offshore, will any provision be given to work placement and career training? (Question 264)

A. Each individual Company has processes to deal with personnel issues . Each case will be dealt with on an individual basis.

Q123. Will a permanent memorial be erected, and where? (Question 254)

A. Premier Williams publicly announced in the House of Assembly that "At the appropriate time and in the appropriate way, [the provincial government] will be honouring those who lost their lives with a permanent memorial."

Training

Q124. Will a review of the current training we undertake for BST be reviewed? Should the HUET simulator (including seat belts, seat configurations, auxiliary tank) at OSSC reflect the actual helicopters that are servicing the offshore here? Questions 94, 96, 97, 98, 175, 222, 223, 269, 354, 355, 356, 357)

A. Yes, approximately eight months ago a review of Marine Institute and Survival System training, including BST courses, was initiated by CAPP and the GBO. The test capsule, called the HUET (helicopter underwater escape training) is designed to provide general training in helicopter underwater escape for multiple helicopter types. The current training configuration is considered adequate and meets current standard practice, however the GBO believe there is value in having the HUET more closely match the features of the S-92A, and have requested the Marine Institute to report on the steps necessary to comply with this request.

Q125. Will personnel who have not completed the 5day BST be allowed to travel offshore on a chopper (which has happened in the past)? Questions 95, 313)

A. There is an approved exemption procedure for such cases. All cases are communicated to the C-NLOPB.