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June 28, 2010

COMMISSIONER:

Q. Good morning, ladies and gentlemen. Good morning, Ms. Turner.

MS. TURNER:

Q. Good morning.

COMMISSIONER:

Q. Just a word or two, not directed so much at the people who are within the room because they know perfectly well the procedure, but a word for the workers who work offshore, their families, and the public generally because the public certainly of Newfoundland and Labrador have shown a keen interest over the months in the work of this inquiry, so what I would say to them this morning is the experts that will be examined, i.e. questioned in the next days are experts that have been engaged by the Commission, by me, in consultation with counsel, Mr. Roil, and Ms. Fagan, and so they are our consultants, my consultants, and have been engaged by me, and this is the opportunity for those who have a direct interest in the matter, the players, shall we say, to examine these experts and ask them

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questions, and, of course, counsel will ask questions of the experts and at the end of the day I will probably ask questions of the experts also. So that is the reason that we're here, and as I said, saying this for the benefit of the workers, their families, and the general public. There will be some changes in the format this time, and Ms. Fagan will explain these to you.

MS. FAGAN:

Q. Thank you, Commissioner. A couple of the changes that the parties would already be aware of is that the hours are different. We will be going to 5 o'clock and we will only be taking one hour for lunch between 1 and 2, and the breaks are slightly different. So we'll start at 9:30 and we'll go until 11. Then we'll take a fifteen minute break, and we'll go from 11:30 to 1, start again at 2, break at 3:30 to 3:45, and then continue on until 5 o'clock. The July 1st holiday is Thursday, and, therefore, we have brought in these experts, the NRC is local here in St. John's, but the other three experts have travelled and we'd like to try and get this information in

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in the three days. Before I ask to have Ms. Turner sworn, I'd like to just take a short safety moment because it's been quite some time since everybody has been here and to remind you there are three exits in the room which you can see, there are also three stairwells. There is the stairwell that you came in and there are also two stairwells at either side of the building. They exit onto the rear of the building and they are fairly steep, so if you're going to take the stairwells on either side, just be a little careful with your step and don't use the elevator. Beyond that, the procedure will be that I'll introduce Ms. Turner and she will be sworn, we'll have the exhibits entered. Then I will lead evidence as to Ms. Turner's expertise, and then the parties will have the opportunity to question Ms. Turner on her expertise if they wish. Once that has been completed, I will then lead Ms. Turner through her three reports. She will deal with all three reports at once, and when she has completed the direct presentation, then each of the parties will have the opportunity to

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question Ms. Turner on all three reports. That will be it from a procedural perspective. Now I would ask to have Kimberley Turner introduced. Registrar, could you please have the witness sworn.

MS. KIMBERLEY TURNER (SWORN) EXAMINATION-IN-CHIEF BY MS. FAGAN:

MS. FAGAN:

Q. Thank you, Ms. Turner. There are five documents which Ms. Turner will be referring to. The first one will be marked Exhibit 207, or 00207, and that's the CV of Ms. Turner. The CV of Ms. Turner was circulated to the parties some time ago, however, I asked Ms. Turner to add some information with respect to her publications and activities, and, therefore, the CV that was circulated has been revised to add additional information. The first page is fine, but there are three additional pages. We have hard copies here for those that have not already received a copy. Some of the lawyers who were here earlier this morning did receive copies, and Ms. Williams has a number of copies that, if she wants, I can take them and pass them

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around. As well, there is the exhibit list. So Mr. Roil will circulate that. Thank you. The other exhibit will be 208, the Passenger Worker Survey. Exhibit 209 is the report on Best Practises and Organizational and Safety Culture. Exhibit 210 will be a Review of Selected Offshore Petroleum Regulatory Regimes, and the last Exhibit 211 is the PowerPoint. The PowerPoint has been changed slightly in that we will not refer to the last three slides. So we didn't bother to make copies. When we get to where we're finished, we'll finish, and we just won't bother with the last three slides. We've just changed the sequence a little bit and we'll cover that information as Ms. Turner presents. If that's acceptable, Commissioner, could we have those five entered.

COMMISSIONER:

Q. Yes, absolutely.

MS. FAGAN:

Q. Mr. Roil is also circulating an exhibit list for the group. Now the first order of business is to examine and explore your expertise, so I would ask to have Exhibit 207

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brought forward on the screen so the parties can see it, and this is the CV of Ms. Turner. I would just like to explain the areas that Ms. Turner will be covering. Ms. Turner is an expert with respect to topics of aviation safety and risk management, noting that these topics are fundamental to the material covered in the three reports. Therefore, I will ask her to refer to her CV. I will have you note that with respect to the regulatory review report, I am asking to have Ms. Turner declared as an expert in aviation safety oversight, not as an expert in offshore oil regulators. That's not her area. What she did in that report is she reviewed and took a high tabletop review of what is going on with some selected oil regulators, but once she moved past just a very, very general quick overview, she then focused on aviation oversight which is her area of expertise and which is the subject matter of this inquiry. So I wouldn't want people to be misled and to think she's an expert in how all these oil regulators operate. She is not. Ms. Turner, can you please provide a brief summary of your

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background, a summary of your consultancy's team expertise because your reports have been prepared by your company, and a description of your company, Aerosafe Risk Management.

MS. TURNER:

A. Yes, thanks, Ms. Fagan, and good morning, Commissioner. In terms of my background, I've been working in the field of aviation safety and risk management for just on 14 years. I founded Aerosafe Risk Management in 1997 and our head office is in Sydney, Australia. Over the last 14 years we've grown as an organization and now have representative offices in Washington, DC, here in North America. In August, it will be five years since we've been operating in Canada and the US, New Zealand, and partner offices in India and China.

In terms of my professional background, I have an aviation operations management background. I commenced in the military, but very early in my career got involved in the risk management field. I'm a certified practising risk manager and have also held a number of appointments in the developmental

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area, in the standards area, and certainly in education.

In terms of our team, we have a fairly specialized group of people. We had five or six consultants on the Aerosafe team work on the various reports in a team effort. The first consultant, senior risk advisor, Robin Graham, has an aviation background in accident investigation. He's also an air traffic controller and a pilot. Our second consultant, Mr. Michael Barron, he's our company's chief risk officer. Michael has a background in governance, risk management and compliance, and holds two Masters Degrees and has commenced his PhD this year. His role was really to do a technical review and ensure our methodology was sound. Our third risk advisor, Sarah Fitzgerald, is an aeronautical engineer and has a research background, and two of our other risk advisors in our Washington, DC office, Ms. Elaine (Unintelligible), and Mr. Michael Roberts, both coordinated and assisted with the worker's survey.

MS. FAGAN:

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Q. Can you provide a review of the process because what you're here to speak about are three reports? So what we're interested in, as not only the people who created the reports, but what was the process before they were issued and provided to the Commissioner?

MS. TURNER:

A. Sure. I will cover this in a fair bit of detail as I walk through the three reports, but just as a high level summary, the first report we were asked to do was to conduct a helicopter safety passenger survey of the workers, and in order to undertake that work there was three key areas that we looked at.

First was looking at the survey distribution and how to actually administer the logistics of that survey. The second was actually the design and development of the survey itself and so we do have experience in survey development and the development and issuing of surveys is a key risk identification tool, so we've been using that quite extensively throughout our whole company's history. The third aspect was actually the compilation of the results and

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the publishing of that, and I'll speak when I get to that report in particular detail about that because we did take a very open transparent approach, and I'll explain the structure of that report.

Our second report was basically a research paper, as Ms. Fagan mentioned. It was an examination of selected regulatory frameworks around the world, and we did a tabletop review with publicly sourced information, and then we were able to draw some observations and synopsis from that. Our third report in organizational and safety culture was really based on the theories and concepts that are well known and accepted right across the aviation industry, and so we have taken that angle and approach in that work. The reports were all compiled with various consultants working on that. We then went through an internal review. They were signed off internally by our Chief Risk Officer, and then I released those to the Commission.

MS. FAGAN:

Q. From your own personal perspective, do you

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have any appointments to any boards, and I'm referring now to page 2 of the CV?

MS. TURNER:

A. Yes. I'm currently a Director of the International Graduate School of Risk Management, which is an education body designed to conduct risk management training.

MS. FAGAN:

Q. Could you briefly review or just give us a list of your qualifications and awards?

MS. TURNER:

A. Sure. My primary qualification is a certified practising risk manager's license which is very similar to the CPA for accounts, but for in a risk management discipline. I've also held a number of appointments including an assessor on the CPRM Panel for the Risk Management Institute of Australasia. I've also held various senior lecturing positions at the post-graduate level at two universities in Australia. I have published three books in this field, aviation safety and risk management, and have certainly developed and designed various safety management programs, etc.

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MS. FAGAN:

Q. Could you give us an overview of some of the products and services that your company has provided and some of the clients who you have acted for as an expert?

MS. TURNER:

A. Sure. In essence, our organization conducts three different areas of work or products and services. Firstly, it's consultancy work. So working on a range of projects in the risk management governance and aviation safety field. So that may include developing industry risk profiles, undertaking risk assessments, designing and developing risk management frameworks, programs, and systems, and really the implementation side of things. So that's our consultancy area.

The second part of our organization is in education and training, and I would estimate approximately 40 percent of our work is in the training area and in terms of numbers, we conduct everything from short courses all the way through to post-graduate training and issue various qualifications in collaboration with higher education institute.

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The third aspect of our organization and our business runs a program called the Aviation Safety Network. This was founded in 2003 and that's an ongoing implementation program, a coaching and facilitation service to work with organizations to implement and enhance their risk and safety management programs. We currently have 23 organizations in three countries that have been on that program for a number of years, and in the last 18 months the Australian aviation regulator, CASA, has actually picked up that model and the Aviation Safety Network Program is currently delivered to 47 percent of the Australian aviation industry.

MS. FAGAN:

Q. I asked a question about the client base, and now I've turned to page 4 of your CV, and it takes up an entire page starting with the A's and going to the Z's. So could you just highlight a few of your clients that may be of interest or relevance to this inquiry?

MS. TURNER:

A. Sure. Over the course of the last 14 years our organization has worked with over 260

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organizations in 14 countries around the world. So we really are a consultancy specializing in this field. The client list that you see is just a selected client list and that was provided to give you a bit of an overview of the areas that in particular I've been involved in. So you'll see that there's a fairly heavy military and defense background there. I have worked on the design and development of risk management programs for the Australian Defense Force, have advised the Canadian Defense Forces, and we've just commenced our first contract with the US Department of Defense.

A couple of other areas there you'll see in terms of other industry sectors that aren't necessarily aviation related, such as the Department Primary Industries and Integral Energy. Both of those organizations are from other industry sectors, but have aviation assets, and so my role in those projects has really been to look at aviation contract management on either side. You will see a few familiar names there from the Canadian industry such as Transport Canada, and CHC,

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etc. CHC, as you know, is a fairly global company and has a very large presence in Asia Pacific region, and members have attended our training courses down in Australia. More recently we've been working with Transport Canada and have conducted a number of safety management system forums to train the regulators and inspectors on the implementation of that philosophy and practise.

MS. FAGAN:

Q. Okay, thank you. That would be all I would like to ask Ms. Turner with respect to her expertise and I would like to have her declared an expert, however, the counsel for the parties with standing may have some questions for Ms. Turner.

COMMISSIONER:

Q. Yes, okay. Well, ladies and gentlemen, you've heard Ms. Turner. Are there any counsel for the parties with standing who would like to ask her any questions on her - further questions on her expertise? No. All right then, Ms. Fagan.

MS. FAGAN:

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Q. I don't know if you need a formal declaration. I think she's covered her area fairly well.

COMMISSIONER:

Q. Well, I did engage her as an expert, so I guess I need only repeat that.

MS. FAGAN:

Q. Thank you. We would now refer to the PowerPoint presentation which is Exhibit 211, and I understand that once the Registrar gets the PowerPoint on the screen, Ms. Turner will move the mouse and control the pace of the slides. So can we refer to Slide 2, and Ms. Turner would you give us an overview of how you're going to tackle the presentation of the three reports?

MS. TURNER:

A. Sure. Thank you, Ms. Fagan. In terms of this presentation, I've got a little bit of a task to undertake to cover three expert reports in the time this morning. First of all, I thought I'd cover our terms of reference just to really clearly articulate what our scope of work was. In terms of each report, I'll then walk through each one one at a time. I'll provide a background as to how we came to

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develop the report. I'll highlight some of the key areas and key content in those reports that might be of interest to the public and certainly to this inquiry, and throughout that I'll make some comments from my perspective as to what I believe those results mean.

MS. FAGAN:

Q. So before you actually give us the terms of reference, can you describe your involvement with the inquiry leading up to your assignment because the terms of reference are dated April of 2010.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. However, you started in the fall or summer of 2009. Can you just give us a brief overview of what led up to the eventual terms of reference?

MS. TURNER:

A. Sure. In the summer of 2009, I was approached by Inquiry Counsel and we met and discussed the opportunity to provide some consultancy support to the Commissioner and to the Inquiry, and we were retained around that

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period in September last year. I did provide evidence to the Inquiry in November, 2009, and covered a range of topics, but in essence looked at aviation governance and oversight, also looking at the application of risk management principles and techniques, and then aviation contract management and safety management systems. While I was here in St. John's, I had the opportunity to have some meetings with legal counsel from most of the parties, including HMDC, Suncor, Husky, CAPP, C-NLOPB, and I also had the chance to go and spend about half a day out at Cougar Helicopters inspecting their facilities, understanding the scope of their safety programs, and their assurance regimes.

In addition to that, I met with representation from the unions and have met a number of workers, both formally and informally here in St. John's. Over the last ten months, I have been fairly interactive and have had a range of e-mail correspondence, telephone meetings, etc, and so I do believe I have a fairly good understanding of the context of the industry here and the issues

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that are being addressed by the Inquiry.

MS. FAGAN:

Q. Now your terms of reference, for the record, they were assigned, I believe, on April 23rd, 2010, and what were you asked to do?

MS. TURNER:

A. That is correct. These terms of reference cover the development of the three expert reports that we were asked to undertake, and in terms of the requirements, there was four requirements in our terms of reference.

Firstly was to provide a written report to the Commissioner, which included a passenger survey and a written report containing the tabulation of those results.

The second report was a written report to detail information on oil regulated regimes in other areas of the world. The third report was a report that contains an overview of best practise in organizational and safety culture, and our fourth was a possible list of reading material that may be of interest to the Inquiry.

COMMISSIONER:

Q. Just to interrupt for a moment, you're going

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to control the - so you could bring that up really as people want to see it, you know.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. Now we are, I believe, ready to get into the first report, is that where we're going?

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. Okay. The slide that you just skipped over was the team, and I believe we've covered the team and all the various members that went into the reports through the examination on expertise. As we go through each report, you may draw some more information on how these various people played a role in developing the reports. So the first report that we're going to deal with is the passenger survey.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. We're then going to go through the review of the selected offshore petroleum regulatory regimes, and the last report that we'll cover

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is the one on organization and safety culture. So the survey report, which I believe is - well, it's the larger report, in any event, from pure paper. I can't say, and you'll have to speak to which one took the most work. You can now start with what you want to tell us about how the survey - I believe we should start with the survey itself.

MS. TURNER:

A. Yes, thank you. I thought I might just give you a brief overview of how we actually distributed the survey. Then I'll come to the actual structure and the development, and then we'll spend the majority of our time really looking at some of the key results that may be of interest.

First of all, can I just say I was absolutely blown away with the response from the workers. We had 991 workers respond to the survey in just over a six week period. That is a very, very large response rate for any survey, and I really believe it gives us an excellent foundation for these results to really communicate the views of the workers in the various areas. So I'd just like to thank

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everybody for taking the time to do that. In terms of the three reports, they really do fall into the topics of aviation safety and risk management, but have specific application in some sub-topics that I will cover.

In terms of the worker's survey, it really was designed to gauge the views of the workers, their perceptions, their concerns, their areas of interest, and certainly some ideas for improvement, and it does give us a snapshot as to the culture at a particular point in time. In terms of the worker's survey itself and the distribution, in looking at the timelines, we chose a period of six weeks as that was representative of a normal cycle of travelling offshore and we felt that that would give us the maximum coverage to cover the most amount of people in that time.

In terms of how it was distributed, ideally with surveys in this modern day and age, the best way is actually to distribute them electronically, get everybody's e-mail addresses, send them out, and then you've got validation as to exactly who has undertaken a survey. Just given the context and the setup

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here and people's access to the internet and also contact details, we had a lot of discussion with the Inquiry and with the parties with interest, and certainly from our perspective made a decision to issue the survey in hard copy. Now the survey was a four page survey, as you can see here. Each survey was actually numbered and had a serial number and was printed in colour. Now in terms of how to distribute this to the workers, after consultation with the various parties, and given that there was an acknowledgement that this could be undertaken, we identified that the check-in area at Cougar was the best place as it as a single gateway of the workers travelling to and from the installations to actually issue the survey. In terms of how that was undertaken, there was letters provided to inform the workers from their employer that the survey was to take place. The main reason for that was to validate the legitimacy of this activity, and the Commissioner released a letter, an individual letter to the workers that was placed with the survey in an envelope and

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provided and given out by hand as the passengers checked in at the heliport.

The survey itself takes about approximately 10 to 15 minutes to complete and the workers were asked to arrive at the heliport approximately ten minutes early so they could undertake this activity. When the workers came to the check-in area, they were provided with the envelope, with the Commissioner's letter, and with the survey itself. Pens and clipboards were out there and what we did is we placed a secure locked box at the heliport so that on the completion of the survey the workers could drop their survey, put it in a sealed envelope, and actually pop it in that secured box. We then had an Inquiry's representative clear that box regularly which happened in the early days in a daily basis, and then later in the six week period approximately every two days or so.

One of the other things to note, given that we were anticipating 1000 to 1500 surveys to be distributed, they were actually drip fed to the Cougar check-in staff so that there wasn't a large box of unsecured surveys

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sitting there, and so we actually did have visibility of the actual volume and numbers of surveys going through. When I get to the report itself, I will cover a couple of limitations because obviously if you're on the very early flight of the day, getting to the heliport ten minutes early, you probably may or may not be as motivated to fill in a survey as those that arrive at 10 or 11 o'clock in the day, and we did see a bit of a dip in the response rate for various factors such as that.

A couple of the areas of integrity that really needed to be maintained was firstly to do the best possible to ensure that the workers only received one survey, and we really did intrust that into the distribution process. Where there was cancelled flights or delayed flights due to weather and people had already been issued with the survey, the actual number of surveys provided to the check-in staff took that into account. It is a voluntary survey and although it's ideal to ask people to fill it in individually, we recognized that some people may have had a

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discussion or really talked through some of the issues, but certainly from my perspective, I'm not concerned that that jeopardized the integrity of the survey, given that this has been a very, very open topic for the last six to twelve months. So the report - sorry, the surveys themselves were then collected, they were couriered to our office in Washington, DC. Upon receipt, they were registered, opened, serial numbers marked, and then the results collated by our two risk advisors there in DC.

MS. FAGAN:

Q. Were envelopes provided with the survey and letter?

MS. TURNER:

A. Yes, they were. So as you can see, an envelope to put the survey in after it was complete to actually keep it confidential and private so that the workers had confidence that it was the survey collators that would be seeing that was actually issued.

MS. FAGAN:

Q. Did you have any of your staff attend at the Cougar heliport to observe the activities,

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such as you've mentioned, discussion -

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. You know, it was a free survey, there was nothing to stop somebody from discussing it with other workers or with family members either before or after they completed it or while they were completing it.

MS. TURNER:

A. Yes, sure.

MS. FAGAN:

Q. So what observations, if any, and who attended the heliport on Aerosafe's behalf?

MS. TURNER:

A. Sure. Part way through the survey distribution at about week four, our Chief Risk Officer, Michael Barron, actually came to St. John's and conducted some observations of the survey distribution process, and he was very satisfied that the process ran very smoothly. His observations when he came back here to brief myself and the Commissioner were very positive. He mentioned that the workers were all quite engaged and enthusiastic with

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the process, people took the survey, filled it in quietly and handed that survey back in. So Michael actually reviewed that process over a couple of different shifts, from the early flight on a couple of days here in St. John's.

Early on in the first four days, the Inquiry also had another representative out there to really get the process moving and administer that and received some good feedback there as well.

MS. FAGAN:

Q. Thank you. Once the -- the distribution was one of the issues. You mentioned that the oil companies or oil operators provided letters or notice.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. To the workers about the survey; one, to confirm it was legitimate.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. The other to encourage involvement and to show up at the heliport ten minutes early so that

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there would be enough time to complete it. Are those letters or notices that each of the oil operators sent, are they contained within your report?

MS. TURNER:

A. Yes, they are. We had included those as an appendix to the survey report, so that the whole workforce regardless of what organization they worked with could actually see the notices from the parties.

MS. FAGAN:

Q. Okay.

MS. TURNER:

A. Sorry, one other thing. Given that it was a six week period, we did acknowledge that there would be a group of people that may not travel through the heliport over that period, and in the notices there was an opportunity for people to contact us direct to complete the survey. We had approximately 15 inquiries that came direct to our e-mail account or our phone number in DC requesting that, and the surveys in those instances were post to the employee and were returned and the serial numbers validated. So a small percentage of

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people that missed out with that process that still undertook the survey.

COMMISSIONER:

Q. You haven't mentioned, but I think it is correct that all blank copies of the survey had a differing serial number?

MS. TURNER:

A. That is correct.

MS. FAGAN:

Q. The survey itself, the questions, can you tell us how you came up with the questions? I mean, I think we've covered how it was distributed. There were 36 questions?

MS. TURNER:

A. That's correct.

MS. FAGAN:

Q. So what - how did you come up with them.

MS. TURNER:

A. Sure.

MS. FAGAN:

Q. What information went into it?

MS. TURNER:

A. Our first starting point was within a couple of days of the release of the Commissioner's issues list, we examined that issues list,

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took that into account to really base the survey on the structure and the content to cover off on a number of those topics, and that issues list is posted on the Inquiry's website. So that was our initial starting point. Following that, you'll see with the survey itself there are four parts of the survey. Part I is the demographic information. Most surveys have that, and we're looking at age, gender, job role, etc. The second part was focused around helicopter operations themselves and a few questions around confidence in the safety of helicopter passenger transportation, and there is Question 7 through to 21 in Part II, and that goes get into some of the technical aspects such as equipment, training, flight briefing, and confidence and a feeling of confidence to travel.

The third part was really delving into elements that give indicators around the safety culture and I will talk to that particularly when I reference report three around organizational and safety culture. So we selected a number of questions to just

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gauge the level of knowledge, understanding, awareness, in various topics under that safety culture aspect and you'll see Question 22 through to 34 around that. Now the first 34 questions of the survey were check boxes and were either "yes" or "no" questions, or provided the participant the opportunity to pick something on a scale of 1 to 5.

Obviously, that provides us good stats and data, but it doesn't necessarily give the workers the opportunity to put their thoughts and specific comments forward, and so Question 35 and 36 were designed as open free text to allow the workers to highlight any particular concerns that they had. So Question 35 asked the survey participants to list their top three concerns in relation to helicopter transportation, and in the survey we thought it was important to really capture the thoughts and the ideas of any opportunities for improvement or good ideas about how things could be potentially fixed, enhanced, or improved. So Question 36 asked, "What improvements would you like to see in helicopter operations", and we had

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approximately 2000 open field response in Question 35 and 36. So that really does give you an indication as to the level of interest in this whole area.

MS. FAGAN:

Q. When you were deciding on the structure of the survey, have you conducted surveys in the past or was there a methodology or a reason - I mean, was this deliberate or did you just come up with it?

MS. TURNER:

A. Yes, sure. I guess there's a bit of a methodology and theory of how you build surveys to ask similar questions in different ways to validate the answer, and I'll take you through a few of those as I talk through the results. So firstly we looked at the list of the Inquiry's issues list. We then developed that structure into four parts. Then drilling down into some standard questions that are asked quite consistently across the various brackets. Obviously, the helicopter transportation was designed predominantly using the issues list. We did validate that through a number of other worker surveys that

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had been conducted in the 1996 and 2000 period in offshore safety areas, and also aviation safety culture surveys have been very, very big and prominent in the aviation industry in the last 20 years, so we did leverage off some of that work conducted in the past.

Finally, with that I did bring the draft survey back to the Commissioner and had a good discussion about whether or not the pitch, the tone, and the areas of focus really would deliver on the areas that the Commissioner was interested in, and he was satisfied with the structure of the survey.

MS. FAGAN:

Q. Before we moved into the - one area is the limitations, but you have mentioned the Commissioner, and this was something that he asked you to do. So in addition to the notices from the oil operators, which is contained in the report, I also understand the letter you refer to, the Commissioner's letter which was addressed to the workers, I would like you to please refer to that letter and read it because I think that best speaks to why this was done, and that was what was said

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to the workers prior to them embarking on actually giving their answers. So before we get their answers, I'd like to know what was said to them.

MS. TURNER:

A. Thanks. This letter is in the leading pages of the survey report, and it was dated March 30th, 2010. The letter reads, "Dear helicopter passenger; As part of the Inquiry process, I have engaged a company called Aerosafe Risk Management to conduct a survey of offshore worker's opinions on helicopter travel safety issues. This survey will be conducted over a six week period commencing in early April. The oil operators and Cougar have agreed that the survey may be conducted as the helicopter passengers prepare to take flights to the offshore installations. When you check in at Cougar Helicopters you will be given an envelope containing the survey and a cover letter from me. The survey can be completed in about ten minutes. Once the survey is complete, it can be placed in a secure box at Cougar's heliport. It is important for the Inquiry to have your

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cooperation in the survey because it is important that I know what you think. Yours sincerely, Robert Wells, Commissioner."

MS. FAGAN:

Q. Thank you. Now you mentioned there were some assumptions and limitations. Have you fully covered that topic? Because I think the next thing is what were the responses.

MS. TURNER:

A. Sure. In terms of any survey that is voluntary, one of the assumptions and limitations is that people will fill it in to the best of their ability and will provide true and accurate information. The fact that we received just under one thousand surveys really does give us a very solid sample base, as opposed to maybe only surveying 100 workers, and so as I talk through the results, you'll see some validation of topics that were already covered in the Inquiry, certainly validation of areas of concern and some interesting results that I'll draw your attention to that may be worth considering in further detail.

In terms of a chance for duplication, I

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believe that through the surveys being issued in hard copy, the serial numbers, the distribution process, we did reduce the risk of having people fill in that survey twice. Obviously, you know, there is probably a handful of people that may have travelled to and from the installations in that period a number of times, but one of the observations that was made by both the Inquiry's representative and our chief risk officer whilst down at the heliport was if people had completed it, it was "no, thanks, I've already done that" and certainly I'm confident with the results that we've had.

The other thing to note in the assumptions and limitations, in looking at the numbers of workers offshore, we had a lot of discussion about how many surveys really needed to be distributed. In the early days, we were talking that there was approximately 12 to 1300 workers offshore and the C-NLOPB provided, just prior to the release of the survey, validation that there is approximately 1800 positions on those installations out there at the time. So that affects the actual

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response rate or percentage.

MS. FAGAN:

Q. I believe now you should be at slide seven, okay. So we're going to get into the survey itself. What do you want to tell us about what's on this slide?

MS. TURNER:

A. Sure. So just to recap, we received 991 survey responses, which is a great result. The survey was distributed over a six-week period, so a fairly short turnaround time in that. I have covered the process for distribution and collection and throughout the report, certainly in those leading pages, you'll see some explanation around the integrity and survey objectives, et cetera. As I talk you through this, I'd love to spend the time to actually go through every single question and every single answer, but what I have done, just in the interest of time is I'll just draw our attention to a number of those different aspects, and what I would ask is that you keep what I say in perspective because I think we all know with surveys, you can put an emphasis on the data to actually

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create a certain message. For every positive focal point I'll bring out, there'll be those that have concern and for every question where I focus on those that concern, there are certainly those that have confidence in the system and so I'll try and be quite balanced in the approach, but certainly the report needs to be read in its entirety.

MS. FAGAN:

Q. The results themselves, they were compiled at your office in Washington, D.C.?

MS. TURNER:

A. That's correct.

MS. FAGAN:

Q. So just to finish and round out the creation of the report, as I understand it, once the Inquiry representative collected the sealed envelopes from the secure box, they were couriered to your office in Washington, D.C.?

MS. TURNER:

A. That's correct.

MS. FAGAN:

Q. That's where they were opened?

MS. TURNER:

A. Correct.

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MS. FAGAN:

Q. And then the results were keyed into a computer?

MS. TURNER:

A. That's right.

MS. FAGAN:

Q. That's what generated all these pie charts and graphs. Is that correct?

MS. TURNER:

A. That's correct. So the report data entry and compilation was conducted in Washington, D.C. All of the original survey reports are still stored and registered in our office and then, Sarah Fitzgerald and Michael Barron and myself actually worked on the actual compilation of the report itself.

MS. FAGAN:

Q. Could you pull up the report now, which I believe is Exhibit 208? And as Ms. Turner indicated, we're not going to go through every question. It's on the website. People can read the survey themselves. We're just going to have a snapshot and cover a few of the questions to get a sense of what some of the key issues and concerns were, and there were

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some positives. It was a very balanced approach.

MS. TURNER:

A. Absolutely.

MS. FAGAN:

Q. As you say, for every one who had confidence, there was somebody who didn't.

MS. TURNER:

A. That's right. Well, just to start off with, based on 1800 workers being offshore at the time of the survey and the 991 participants, that's a survey response rate of 55 percent. Interestingly enough, if we're looking at 1200 workers being offshore at the time and we understand that the numbers of workers fluctuates depending on the activity out there, based on 1200, that would give us a response rate of 83 percent. So it really does depend on how you'd like to look at the survey, but overall, just on 1,000 people or just under is very very good in a six-week period.

For ease of moving through the results, you'll find that I may just round up or down, just to move quite quickly, and in terms of

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part one, looking at the general information, the demographics, in terms of the 1,000 workers, approximately 800 of those were age between 35 and 59. 96 percent of the survey respondents were male and out of the survey respondents, 750 of those classified themselves in the worker category. 154 as a supervisor or in supervisory and the remaining 100 in other categories. So a fairly large percentage of workers, 150 plus supervisors, and then 100 other, which is a fairly balanced response there as well.

Moving to page 17 on Question 5, I thought this was worthy of note to really put some context and perspective around the discussions that will take place over the next few days. Approximately 650 make around seven to nine trips offshore per year and so we took a trip to actually be being on duty to go out to work and so we could look at the trip there and back, or as we know, the helicopters do jump from installation to installation and so in terms of this question, it was really how many trips to the rig or platform do you make. So seven to nine, on average, you know, once

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every six to eight weeks. You'll see there that there's still quite a large percentage, 90 people responded that they conduct over 12 trips a year. So you can just see the spread three of frequency of travel.

MS. FAGAN:

Q. Now can you move to part two and highlight some of the keys points?

MS. TURNER:

A. Sure. Part two, as I mentioned, was really designed to focus on the helicopter operations itself and it is important to note that after any organization experiences an accident, there certainly is a change in the level of confidence and perception around safety and this set of questions was really designed to gauge that level of confidence, capture concerns or areas of interest. So part two, it is important with any type of survey, you really are getting people's opinions and some of these issues will be real and others will be perceived, but the thing that is important to note that even perception should be addressed and actioned as much as reality.

Overall the results are fairly balanced,

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and I'll just take you through page 19, Question 7. This was the first question that was asked in part two around helicopter operations. The question reads "what is your level -- what is your confidence level in respect to the safety of helicopter transportation?" and you can just see by the bar charts there the normal distribution bell curve that you see in survey responses. 37 percent of people indicated an overall confidence in helicopter travel safety by rating it a four or a five on a one to five scale. However, 35 percent of people indicated the middle bracket and 27 percent of respondents scored a one or two out of five, which indicated the not confident aspect. So you can really see a fairly balanced spread of those that are confident, those that are in the middle and those that have indicated that they are not confident.

Question 8 is similar in its intent and you'll see a very mirror image response in terms of the results to Question 7.

MS. FAGAN:

Q. So would this be one of these questions where

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it's the same idea but asked two different ways?

MS. TURNER:

A. Yeah, absolutely, and one was about confidence and the other one was about how people felt and so it really is worthy of note, if you have 300 of your employees saying that they feel unsafe or they feel -- they believe that they're not confident, there's ways to actually address those issues that are raised in the part 30 -- Question 36 with those answers.

MS. FAGAN:

Q. And 36 is the ways for improvement?

MS. TURNER:

A. Absolutely.

MS. FAGAN:

Q. So not only -- there's an indication, you know, that there is a group that could have -- you know, could help with the confidence and in the survey, they've also provided a way of improving that situation?

MS. TURNER:

A. Yes, that's correct. In terms of the context, it's also important to draw attention to the

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timing of this survey and it being nearly 12 months from the actual experience of the accident itself, and so this does demonstrate the residual confidence level at this point in time.

MS. FAGAN:

Q. Also, would one of the factors perhaps be that the Transportation Safety Board has not released its report yet on the cause of the accident? So perhaps there's a little -- there may be a little uncertainty because some of the issues haven't fully -- I guess fully resolved or fully worked its way through the system. Would that have an impact?

MS. TURNER:

A. Yeah, I think that is a fair assumption. In terms of confidence and feeling, the biggest thing that can combat a lack of confidence is communication of information. So whether that's the TSB's report on the technical details of the accident itself or whether it's just an understanding and familiar -- being familiar with helicopter operations and how that works can certainly provide confidence with that information.

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I will just draw our attention to page 20, Question 10. Page 20, Question 10, this actually asks survey respondents to indicate whether they've noticed any safety improvements or changes since the accident itself and this was quite encouraging, 65 percent of people said that they had actually noticed an improvement in safety, and so these results do need to be looked at, in terms of the confidence rating back in Question 7 or 8 and it would have been interesting to have asked Question 7 or 8 directly after the accident and whether or not the safety improvements have actually increased confidence there as well.

I will just go back one question to Question 9 and I do know that the media picked up on this question out of the 36 questions when the survey report was released a number of weeks ago. "Would you" -- the question reads, at Question 9, "would you prefer to travel to the rig or platform by an alternate means of transport, for example, by boat?" and again, you can see a fairly balanced response. 37 percent answered yes, 38 percent answered

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no, so almost exactly the same, and 21 percent were undecided, and certainly this question wasn't put in to be a motive or to drive down any path, but I note in the early days, it certainly was a topic of interest of whether or not an alternate means of transport needed to be considered.

Moving on to the next bracket of questions, Question 11 to 15, this bracket of questions really is focused around emergency procedures and I won't go into that in too much detail, but as a general rule of thumb, two-thirds of people felt that they could respond to an emergency situation fairly confidently and in terms of training and the frequency of that training, there were questions asked along those lines that validate the evidence that has already been heard by the Inquiry in terms of training being received every three years.

Moving on to Question 16 to 20, this bracket of questions is predominantly focused around HUET training, which is the helicopter underwater escape training, and this has been a topic of huge interest right across the

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Inquiry and certainly these results validate that topic of interest. So just moving to page 25 and Question 17, you'll see here that the question asked was "how effective is the HUET training?" and the bell curve is actually skewed to the higher level in terms of the four and five, in terms of very effective, and so you'll see 54 percent of passengers have actually indicated that they find that that's effective training.

In this bracket of questions following on from the HUET and the training, we asked a number of questions, for example Question 19, around the suits. This has been another very large area of interest and concern and Question 19 asked "do you have any concerns with your survival suit?" So moving to page 26, Question 19, you'll see that unlike some of the other questions that have a normal bell curve shape, this is a little bit more flat in its response and so you'll see that in terms of these results, 34 percent of respondents, if we're looking at number one and two, indicate that they're not concerned, but then we have a similar amount of people, 38

Page 50

percent, that indicate that they are. Now these results were actually validated by the open answer responses, where we received 204 individual comments on suits themselves, and that was the highest rating frequency in terms of response. So again, you can get a really good feel as to where the areas of interest or concern are with the workers.

MS. FAGAN:

Q. So when you say the highest frequency, the open-ended question was designed to just list your concerns?

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. And then you recorded all the raw date of everything that was said?

MS. TURNER:

A. Um-hm.

MS. FAGAN:

Q. And if -- are you saying that suits sort of topped the chart as far as from a discussion perspective, either concerned or whatever, but it was the area where all the comment -- the most comments were received?

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MS. TURNER:

A. Yeah, that's right, and I'll just take us to that and maybe we can work through some of those top frequency answers because it really does provide a validation as to some of these checkboxes and the collection of the stats. Now one of the decisions we made in compiling this survey was to actually transcribe every single written response and place that in an annex or an appendix to the survey report. Now although it has bolstered out, as you say Ms. Fagan, to a very lengthy report, we thought that that was really important so that workers could, number one, have confidence that the results weren't doctored or weren't summarized to the point where their comments were lost, and secondly, to give people the raw data so that as you maybe cruise through the information, it really does give you a feel for the topics of concern. So those 204 responses around suits, some people clearly just wrote suits, where others actually wrote suits, discomfort, zippers, size, you know, et cetera. So some people actually went into a further explanation. Now there are quite a

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number of pages, both on the areas of concern and the areas of interest, but it's really excellent information that really does provide the view of the workforce at this snapshot in time.

MS. FAGAN:

Q. Now is there anything else in this section that's -- it's all worthy, but what you would like to point out?

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. This is just an overview. Everybody can read the entire report.

MS. TURNER:

A. Yes, sure. One of the last areas of note in this part two is we've asked throughout the survey, a couple of questions around access to information and communication and on page 27, Question 21, this question was asked to ask the workers "when you're travelling by helicopter, how satisfied are you that you get the right amount of information regarding helicopter operations?" and as you can see here, almost 400 people said that they were

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satisfied, yet approximately 300 people indicated that they were not satisfied and they're fairly large numbers and as you can see, you can go either way, but if 300 of your workers are saying that they're not satisfied that they're getting enough information, well that's certainly something that can be addressed and be addressed fairly easily. The type of information is still open for discussion, but that does give you a good indication and you certainly can't ignore 30 percent of your workforce.

MS. FAGAN:

Q. Okay. Can you now move on to part three, which I believe you indicated dealt with safety culture or at least gave some indications of culture?

MS. TURNER:

A. Yes. In part three, I just wanted to make a few comments before we start. In terms of culture, and this is explored in our third paper, some people believe that it's quite a simplistic topic where it's just the way things are done around here, but there certainly is a depth of theory about how you

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define a culture, the traits and characteristics of behaviour, values, how people make decisions, et cetera. In this part three, we just asked a number of questions that touched on a few different aspects around reporting, about their view on culture, around whether people felt comfortable to highlight areas of concern, and you'll see a handful of questions asked around the structures of their safety management systems and risk management and really the organization's policies around these topics and whether there's an understanding and an awareness around those things.

The culture paper, as I mentioned, does go through these accepted theories and provides a grade of maturity. We have not done an analysis on where this industry fits in terms of its cultural maturity, however, the information is provided so that maybe that work can be undertaken at a future stage.

If I can take you to page 28? Page 28, Question 22, this was one of the responses that really peaked my interest and the question reads "do you believe there is an

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adequate level of overseeing of safety, safety oversight for helicopter transportation?" and you'll see here that 48 percent of respondents have said yes, they believe there is an adequate level of safety oversight. 26 percent have said no, and 24 percent have said that they don't know or they're unsure. The thing that really peaked my interest in this was the 24 percent that said that they didn't know, and I guess I put that down to a couple of reasons, either one, because people may not have knowledge as to what safety oversight activities are undertaken or that they actually don't know what safety oversight is, and so I think that's really important to keep in perspective in looking at these results. Again, communication or education on what safety oversight is could possibly reduce that 24 percent of those that are indicating here that they are unsure or don't know.

The topic of safety oversight, particularly in the aviation industry, is an extremely defined discipline. It actually outlines structures, accountabilities, safety assurance, assurance regimes, compliance, the

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management of risk. So I just put that out because some people may or may not be aware of that discipline, but it's certainly an area of growing interest and focus globally in every industry is the issue of oversight.

Okay, the next question that I'd like to draw your attention to is on page 29. Page 29, Question 25. This question reads "do you consider your organization or employer to have an open reporting culture?" Now the reason why this question was actually asked is in culture, one of the key measures or traits or characteristics is all about the openness of reporting, and I'll talk to that when we get to paper number three, and you'll see here again, the bell curve is slightly skewered to that higher end that it's an open reporting culture, but there are those that believe that it is closed. So 40 people, so a small percentage indicated a one. 122 indicated a two on that scale. But then there is a large percentage of people that indicated that they believed it was open.

The next set of questions in this part three of the report cover safety management

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system and again, highlight a few other areas around reporting. In terms of the safety management system, a question was asked "does your organization have a safety management system in place?" A high percentage of the respondents actually indicated that they were aware that the safety management system is in place. 59 percent of those people indicated they had received training and 55 percent said they regularly use their safety management system. So again, you can see these questions were asked to validate people's understanding of the policies, processes and application of practice, which in turn correlates with some of the cultural traits and characteristics around behaviour.

MS. FAGAN:

Q. Now safety management system, do you know if these responses were in connection with a safety management system generally or for helicopters in particular?

MS. TURNER:

A. My assumption, given the questions asked around their organization or their employer, would be the safety management system

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generally, and as opposed to the aviation safety management system that is in place at Cougar.

MS. FAGAN:

Q. Okay, thank you.

MS. TURNER:

A. The next bracket of questions in this part three relate to risk assessment and I'll just draw your attention to page 32, Question 30, and there's three questions I'd like to walk us through here in sequence. In this question, it asks "does your organization or employer do risk assessments?" So as in line with the last question, the intent of this was really general question about "does your organization use the risk management process to undertake these type of assessments?" A very, very high response rate. 90 percent of respondents indicated that their organization did undertake risk assessments.

The next question, Question 31 on the same page, then brings our attention more into the risk assessments on helicopter operation. So it reads "does your organization or employer have a risk assessment on helicopter

Page 59

transportation?" and I found these results of particular interest. We had 24 percent say yes, 22 percent say no, and 51 or 52 percent say that they didn't know or were unsure.

In order to validate this question, on the next page, page 33, Question 32 then asked the question "have you seen a copy of the risk assessment on helicopter transportation?" So you can see the flow of question. Does your organization undertake risk assessments? Does your organization have a risk assessment on helicopter transportation, and have you seen a copy? And so you'll see here that 76 percent were unanswered or invalid. 10 percent said yes, they had seen a copy. 12 percent said they hadn't seen a copy and two percent said they didn't know.

This is an area I just wanted to draw comment on because I guess we all recognize that there is a range of different risk assessments that can take place, from the risk assessment undertaken on the procurement of a helicopter all the way through to quantitative assessments on helicopter reliability rates, right through to the engagement of a

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contractor in helicopter -- to undertake helicopter activities, all the way through to operational risk management and the risks associated with loading passengers onto an aircraft, escape, emergency procedures, communication, landing, taking off, et cetera, and so I just really wanted to draw our attention to that there is this continuum or style of context. We didn't define in these questions exactly where the questions sat on that continuum and it may be an area of further exploration.

In terms of the use of operational risk management, and I just wanted to coin that term. Operational risk management or ORM is a fairly standard term used in the aviation industry associated with a dedicated risk assessment around the task profile or the mission profile. For example, flying to and from an oil rig, conducting a public relations flight, conducting a training site or maintenance test flight. So the use of operational risk assessments or profiles is actually a standard tool and we weren't able to validate whether the ten percent of people

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saying in the survey that they've seen a copy of the risk assessment, whether it was that type or whether it was something different.

MS. FAGAN:

Q. Now there is a large number that unanswered or invalid.

MS. TURNER:

A. Um-hm.

MS. FAGAN:

Q. Can you explain what that would mean?

MS. TURNER:

A. Yeah.

MS. FAGAN:

Q. Because in almost all of the questions, there might be, you know, one percent or half a percent that would fall into the invalid.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. But in Question 32, 96 percent, what does that mean or can you explain why that would have occurred?

MS. TURNER:

A. Yes, sure. In Question 32, it's 76 percent of participants left the question unanswered or

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invalid. So people didn't check the box. Now that would make sense if they answered the previous question of "does your organization have a risk assessment on helicopter operations?" If they answered no there, there is correlation with this unanswered question in the next one.

MS. FAGAN:

Q. Yeah, and there was 22 no and 51 don't know, so that's 73 percent that could possibly fall into the 76 that just didn't answer the next question.

MS. TURNER:

A. Yeah, that's correct.

MS. FAGAN:

Q. Would you expect -- I mean, you've done -- and maybe you can't answer this. You have conducted work for organizations where helicopter transportation is not their core business.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. And this survey is being answered by workers, you know, commuting back and forth to work.

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MS. TURNER:

A. Yes.

MS. FAGAN:

Q. This is not a survey of the workers at Cougar Helicopters or at an aviation company.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. So would you expect workers to know about the helicopter component or the helicopter risk assessment?

MS. TURNER:

A. Yeah, that's a really good question, and we do have experience in working with other industry sectors that use or contract aviation assets, be that fixed wing or rotary, to undertake a specific task. So the mining industry uses helicopters to move around say drill parts. The power line industry uses helicopters to inspect their power lines and would put their observers in the back of aircraft. The medical industry put doctors and nurses in the back of aircraft, but the contract may be with the hospital itself, the same with law enforcement. So there's many industries where

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aviation is not their core business and as you rightly indicate, the workers of this survey are non-aviators. They don't have necessarily an expertise in the aviation industry.

In terms of the level of knowledge and being familiar with helicopter operations, there is a fairly defined definition in the aviation industry of whether people are passengers or whether they're crew, and so it is important to note, in this context, the workers are actually passengers and are not deemed crew members. As opposed to the power line industry where you might have an observer get in the back of an aircraft that is undertaking a task using the helicopter to inspect the power line, it gets a little bit grey as to whether they're a passenger or whether they're actually participating in activities that contribute to the safe operation of the aircraft.

Now if we're just looking at passengers, and this goes back to one of the earlier survey questions about what is the frequency of travel, so a large percentage travel to the offshore installation seven to nine times

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a year, so they're frequent flyers, so to speak. So one could shape a case that for those that have that level of frequency in helicopters and it is part of their job, maybe there is merit in considering increasing their level of aviation awareness or basic knowledge so that they understand how a helicopter works, how communication works, what happens when things go wrong, all the way through to emergency procedures, HUET training, equipment, access and egress activities.

MS. FAGAN:

Q. So whether they should or shouldn't have more information is really not your job. That is for the Commissioner or another undertaking.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. What you can say is this, as a snapshot, is what they say they know or don't know?

MS. TURNER:

A. That's correct.

MS. FAGAN:

Q. So if--this survey, you know, is a large percentage and so what we're hearing is they

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don't know about these particular safety mechanisms, risk assessments -

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. When you drill down and get into the helicopter operations, they don't have this information.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. Whether they should or should not or what level is not for you to say, you can just tell us this is the result.

MS. TURNER:

A. That's correct.

MS. FAGAN:

Q. Would that be fair?

MS. TURNER:

A. Yeah, that is fair and that is the result and in terms of this issue about passenger and crew, there's a continuum, so you can put Air Canada on one end where we buy a ticket and get on a plane; you've got then, I guess people who that travel regularly with routine

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and then you have all the way through to crew and it is important to note that in this survey, we're really dealing with that mid section of demographics.

MS. FAGAN:

Q. Thank you. I believe there is only one question left and I think that's the effectiveness of the safety committee because we did hear evidence through the fall and winter about the safety committees -

MS. TURNER:

A. Yes, at our operating with the workers.

MS. FAGAN:

Q. And what was the question and the results.

MS. TURNER:

A. The question here was how effective do you believe your safety committee is in addressing safety concerns. And the reason why this was included in Part III under "Culture" was really about getting that flow of information and action to address safety concerns and you'll see here 153 people out of the 991 indicated very effective, a large percentage, approximately 350 indicated a four on that scale, and then we have a smaller percentage,

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approximately 19 percent of respondents answered either a one or a two on that scale.

MS. FAGAN:

Q. Is there anything else in this part of the survey that you would like to comment on before we move to the free sections?

MS. TURNER:

A. No, that's all I'd like to draw attention to in Part III. Obviously there's a lot of information in all of these questions and you can sit down and draw parallels, et cetera.

MS. FAGAN:

Q. Questions 35 and 36 are the free areas. I would just ask you to review the top seven because there's 2000 pieces of raw data and as I've said a number of times, people can download the survey and read these results if they wish.

MS. TURNER:

A. Yes. I'll just draw your attention to page 35, Question 35 and so what we've done here is as was just mentioned there is over 2000 individual comments that were made in Question 35 and 36 and so we did actually collate and theme that information and you can see how

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that was done in the back annexes. Just running through the top handful there, you'll see as previously mentioned 204 are individual responses highlighted six, the second issue based on frequency was around helicopter maintenance and the technical aspects there. Number 3 was around passenger seating, including loads, arrangements, seating patens, etcetera, with 172 people. 164 people indicated the auxiliary fuel tank location or issues around the fuel tanks. Search and Rescue is also on that top list of seven at No. 5. Flying in bad weather and conditions around visibility, sea states and limitations on a aircraft, again getting into some of the operational risks around an aircraft there, and then No. 7 is really around communication and transparency of information around helicopter operations with just over 100 responses received from that.

MS. FAGAN:

Q. So these were the concerns, was there any correlation or similarities when you looked at the top seven areas for improvement?

MS. TURNER:

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A. Yes, there was. I'll just take us to the top seven areas of improvement which is on page 37 and this is actually quite an interesting result that the top handful of issues that were listed on the concerns are also the top handful of issues that are indicated on the areas for opportunity and improvement and there is a great correlation with those. Number one is around additional helicopters and we've heard a lot about that; number 2, improved communication and frequency of information in regard to all aspects of helicopter operations; three, suits; four, Search and Rescue; five, auxiliary fuel tanks; six, seating; and seven, training crops up. What I've found quite interesting to note which is on areas of concern, the communication and information flight came in at No. 7, but in terms of the areas for improvement, it really is right up there at No. 2. So you'll see that there's a hunger and an interest to get more information.

MS. FAGAN:

Q. In conclusion, because that's about all I have on the survey report itself, could you just

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sum up your thoughts on this report in its entirety, and I know that's difficult without having you slant in one direction or the other.

MS. TURNER:

A. Yes, sure. Overall I would encourage people to actually really look through the results, the raw data in the annexes because it really does give you good insight into people's areas of interest, concern or improvements. The response rate really has demonstrated a very high level to--a very high level of commitment to safety and to being involved in this whole process, which I think is fabulous and certainly not necessarily always there in every workforce around the world. In terms of the results, overall they're fairly balanced. Most questions actually always have a 30/30 split; 30 percent sitting at one end of the extreme; 30 percent at the other; and 30 percent sitting midway. And there's only a small number of questions where the results aren't as balanced and askewed in a different way. From my perspective the workers that have completed this survey are highly trained

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professionals, have technical expertise, they have taken the time to complete the survey and it's really provided some excellent information on the current state of this topic at a particular point in time, so it's really important, particularly as I present through paper No. 3, which could be seen a very theoretical paper, that that theory isn't held in a vacuum. This report actually gives you some good information that could be fed in and combined with some of the cultural theory that I'll talk about later.

MS. FAGAN:

Q. That's all the questions that I have. My colleague here has pointed out that apparently at the beginning I gave us a half hour break, but it is not a half hour break, we're supposed to break at 11:00 but we're coming back at 11:15, so I'm finished with the direct of the survey.

COMMISSIONER:

Q. My schedule says 11 to 11:15.

MS. FAGAN:

Q. Well apparently I may have said 11:30 or something when I started.

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COMMISSIONER:
Q. Oh, I see, okay.
MS. FAGAN:
Q. But just to be clear, it's 11:15, thank you.
COMMISSIONER:
Q. This is the time to take the break then and we will try to keep to our timelines, so we will chase you around if necessary to round you up. Thank you.
(RECESS)
MS. FAGAN:
Q. Thank you, Commissioner. The next report that I'm going to ask Ms. Turner to review is the Regulatory Comparative Analysis, and I believe that we're not going to need to refer to that exhibit, it is there, especially if counsel have questions, but I believe we're just going to speak from the slide show, so we'll call it up if we need it. The second report that Aerosafe was asked to complete was a review of selected offshore petroleum regimes and regulators and the focus was governance and oversight arrangements for aviations activities. So can--how can a review of other petroleum regulators benefit the inquiry, the

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real question is why would you bother, why is that information helpful?
MS. TURNER:
A. There's real merit in reviewing practices of what others do around the world for a number of reasons. You can always learn from what others do and there's great benefit in benchmarking and comparing your practices to those that do a similar job in a different environment. Certainly in undertaking this assessment it's very clear that some jurisdictions are more mature than others and some have very different size in scope and context, some are extremely large, others are very small, but there's definite lessons that could be learned or it's just interesting to understand the philosophical approach and why the different organizations tackle the same issues in different ways. Our report, our findings and observations really need to be kept in perspective, it was a research paper and it was based on publicly available information and it just provides that high level overview of those various approaches around the world, and I'll try and draw that

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out in this presentation.
MS. FAGAN:
Q. Although we have dealt with some of this in the explanation of your expertise, can you explain the scope of your review and why you were suited to do this review, in your opinion because you've always said you're not an expert in how petroleum regulators operate generally.
MS. TURNER:
A. Uh-hm. Yeah, that's right. In the previous report presentation we talked about industries that aviation is not their core business, but they certainly rely on aviation to undertake a particular activity. The offshore petroleum industry definitely falls into that basket. Without expertise and background into aviation safety and oversight, there was logic in undertaking this piece of work to review selected regulatory regimes, understand then how safety takes place and then really narrowing down and focusing on where there any particular practices or approaches in relation to helicopter transportation that could be brought out for this inquiry. It's important

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to note that we didn't conduct site visits, we didn't go to any indepth, you know, point of actually visiting, meeting, interviewing people, we did make contact with a number of the regulators and most were very helpful, including the MMS in the U.S., which considering the BP incident that was going on, we did have some good interaction with them and I'll refer to those conversations and findings throughout the presentation. So, although I will cover the high level overview and structures and context of the industry, drilled down into regulatory oversight, then I will draw our attention to the practices in helicopter aspects.
MS. FAGAN:
Q. Okay, now the selected offshore petroleum regulators, which ones did you select, why did you select them? Were you told, you know, this is who you must go check out? We have a number there, can you just lay all that out for us?
MS. TURNER:
A. Yes, sure. We originally first looked at how many offshore oil regulators there were around

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the world and then in understanding who was around, as a team we actually sat down and with the background and understanding of what was available thought what would be of interest and where would there be key lessons learned that could be drawn out through this inquiry here. The first country or regulator that was selected was the United Kingdom and no surprises there, I guess there's some great practices that have come out of the UK and their oil and petroleum industry is quite mature.

The second was the United States with a particular focus on the Gulf of Mexico, again, before the deep water horizon incident happened back in April, we selected this aspect and predominantly because it was in North America and again, the pure volume of the activity that takes place down there led us to think there might be some practices that would be of interest.

The third country or regulator was Australia and when I actually present on the structural changes that have occurred in the last four or five years, I think you will

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agree with me that there are some really good areas of interest that are worthy of consideration and of note. Norway was also selected and I understand that the Commissioner and Inquiry Counsel conducted a site visit to the various players over there in Norway and so we selected to include that in this research. Nova Scotia, because they're next door and they're the neighbours here of the area and the last one we chose to do, but actually excluded it from our research once we got into that was that of South Africa. The reason why we selected that was we figured that it was a common wealth country, small, fairly small offshore oil industry and we were interested to see how that would compare with the practices here, but unfortunately there was a lot of limitations in accessing information and certainly not enough for us to include that in the body of work.

MS. FAGAN:

Q. Why didn't you include the C-NLOPB, I mean, you've included the labour, but it's pretty clear they're not one of the selected regimes

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or was that deliberate?

MS. TURNER:

A. Yes, that was deliberate given that the Inquiry has already heard evidence from the C-NLOPB and has a good understanding and appreciation we decided not to include that in this table-top review and that information was already available to the Commissioner and we felt because of that, it would be interesting to bring that information that maybe wasn't in this public forum so that it could be compared and considered.

MS. FAGAN:

Q. What was the scope of your research?

MS. TURNER:

A. The scope of the research in the report, the Table of Contents actually gives a very, very good overview of the structure, but a couple of key highlights with each of those six different regulators from the six different areas, the scope of the review, we actually looked at the industry itself, its size, scope, magnitude, how big the oil industry was and really tried to get some figures around the size and scope of the helicopter

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operations and the aviations activities that took place. The second thing that we really drilled into across all six was looking at the organizational and oversight structures. So looking at their organizational structures, the composition of the board, their safety organizations and how that was set up. That then gave us the opportunity to drill into some of the approaches towards safety oversight in general and then finally our fourth area was looking at transportation of workers using aviation assets, in particular helicopters and the oversight that takes place there.

MS. FAGAN:

Q. Now before you take us through your report, what I want you to do is highlight the key areas of interest and we've already acknowledged that your focus is on aviation oversight in helicopter transportation. But I appreciate we need an overview or a context in which for you to pass comment on the helicopter portion, so with all that in mind, can you go through the key points and we'll go through each jurisdiction, so I'll like to

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start with the United Kingdom and what your findings were and we all recognize that this may not be absolutely complete, this is a high level overview of the key points you found.

MS. TURNER:

A. Sure. Before I start, I must say that in undertaking this assignment, it's certainly a very, very interesting task and you can see how there would be great merit in actually doing this in an indepth way of actually, you know, really doing thorough benchmarking, ranking and comparing, looking at the structures, having the site visits, the conversations, et cetera, but I do believe that this report just provides that snap shot which is a value and we would have loved to have drilled even further and got into that, but in relation to the United Kingdom, we all recognize that they're a big player in the offshore oil industry and certainly in the aviation side. Just to give you a bit of an overview of the structure, in the UK the HSE or the Health Safety Executive actually undertakes workplace safety oversight for all industries and it was really interesting

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following the 1998 Piper Alpha incident and the public inquiry conducted by Lord Cullen, there was a bit of a restructure in how the oversight actually took place. A couple of the things that came out of that or followed the inquiry was firstly the establishment of an offshore division within the HSE that falls under the hazardous installations directorate and one of the other key things in the very late 90's, early 2000 following the Piper Alpha incident was this shift in the regulatory approach from a--to a performance and goal based approach. Now I'm going to refer to that because right across all different six jurisdictions there's a bit of a flavour of a shift towards this performance and goal based oversight and regulatory model, but certainly we can see some of the roots established here in the UK. The UK industry is very large and there's approximately 300 installations on the continental shelf there. There's three main helicopter operators, Bristows, Bond and CHC and there's roughly 100 helicopters that actually service that industry there, so you can really get an

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appreciation as to the size and the scope of that industry.

On the 1st of April, 2008, the Health and Safety Commission actually restructured and it's interesting when you start looking across all the jurisdictions where there's been a restructure take place and you can really track that down in the last five to ten years, the various jurisdictions have re-examined their structure, particularly for oversight and I'll bring out some of those key findings as I talk through. But I'd just like to read the mission statement of the safety executive. It says, "The goal of the mission is to assure safety management and the effective control of major accident hazard risks and prevent catastrophic incidents in offshore oil and the gas industry." The thing that I really liked about that mission statement was the use of the words "to assure safety". In my previous presentation I talked about safety assurance and that it is a very defined discipline, so you can see the philosophy of this assurance based approach creeping in in the last couple of years.

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One of the other key areas to note with the UK is they have adopted an approach to undertake safety cases and there is a regulation that actually covers the scope of how that is to take place. There's 27 assessment principles that support that safety case and when you run through the lists that are actually documented in our report, if you just count the ones that mention risk or risk management, 17 out of the 27 have that risk management based definition or flavour in there. In drilling into the helicopter oversight, when you're talking the oversight of over 100 aircraft, that's a very large fleet and you've got a number of operators, helicopter operators that take place in that area. One of the key things that we found in our research was that there is a memorandum of understanding between the civil aviation authority and the offshore regulator which outlines the lines of accountability and responsibility for aviation activities, and so really a great tool and something worth looking at.

In terms of the helicopter activities, it

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seems to me through the level of commitment, resource and activity that takes place that it's a very proactive approach and there's a lot of interaction with the industry. One of the key outputs of that interaction has been the development, production and distribution of guidance material on aviation and helicopter safety standards and practices. So there's some real tangible resources that have been produced in the UK jurisdiction around aviation matters.

The Civil Aviation Authority and the Health Safety Executive actually meet twice a year and one can only assume that that's to discuss the various issues associated with the helicopter operations and there is an advisory committee which is a helicopter liaison group. So a couple of really key things that have come out and that are documented in that report that are worthy of consideration.

MS. FAGAN:

Q. The advisory committee of the helicopter liaison group, can you give us an indication of what parties or who would be part of that group?

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MS. TURNER:

A. Yes, sure. From our research and you can very easily access the minutes of these meetings. You can see that there's the pilot groups represented, the aviation companies themselves, the oil operators, the regulators, both offshore, oil and petroleum and the aviation regulator, various special interest groups, associations and experts there, so it's fairly balanced in the contribution and approach.

MS. FAGAN:

Q. Do you know if there's any workers or union or employee representatives, your recollection?

MS. TURNER:

A. Yeah, in terms of the research that we went through, it was very, very balanced and a cross section. I'd need to validate and double check whether the unions were represented but there's a very high percentage of involvement and publicity around the findings that come out.

MS. FAGAN:

Q. Okay, thank you. What can you tell us about the structure in the United States?

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MS. TURNER:

A. Okay, moving a little bit close to the home, the United States has an interesting setup, there's basically three agencies or regulatory bodies that have some stake in the offshore oil oversight picture. The main one is the MMS that I had mentioned before which stands for the Minerals Management Service. There's also a very very strong relationship and the US Coast Guard is the second regulator that actually has a level of oversight and responsibility in that area, and the last one is the occupational health and safety administration. Now it's interesting that we have included a table in our research paper which runs through all the functional areas and who actually has the oversight split, that's quite a useful document, but in essence the MMS controls the production, licensing, resourcing et cetera, the US Coast Guard looks at--sorry, and the facilities, the US Coat Guard looks at the marine related activities and the occupational health and safety administration looks at workplace, safety and inspections. It's interesting when you start

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looking at exactly who inspects what and who uses what. It does look like there's some overlap or integration where some standards from one agency may be used and audited by another and that is actually defined in our report.

MS. FAGAN:

Q. The scope of the industry, now are we speaking Gulf of Mexico or are we in other areas? Is this just the Gulf or are there other -

MS. TURNER:

A. Yes, sure. Our review of the United States actually covered all of the--the whole jurisdiction which extends all the way up to Alaska, but a lot of the information was focused around the Gulf of Mexico and when you start looking at the scope and size, you can appreciate exactly why. There's approximately 6,000 oil and gas installations and in terms of helidecks, there's over 4,000 and so you can just, you know, through those numbers get an appreciation of how large the scope is in a fairly small geographical area. In terms of aviation operators, there's a number of big helicopter operators similar to the UK, but in

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the US you've also got the smattering of smaller helicopter operators that ferry VIPs and specialists, et cetera, backward and forwards, so you've really got the big end of aviation with the PHI's or Petroleum Helicopter International, all the way through to small helicopter organizations that just fly a handful of aircraft.

MS. FAGAN:

Q. Who would inspect the helidecks when you talk about the division, this 4,000--there's 6,000 installations, what I'm hearing is they would come under the Minerals Management Service.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. The installation itself.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. The helideck, the 4,000 helidecks, how would that work in the division of power, I suppose.

MS. TURNER:

A. Now it's very interesting when you talk about the division of power, I haven't mentioned the

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FAA yet and the FAA is equivalent to Transport Canada and is the aviation regulator. Now these helidecks are actually considered private heliports, so they don't necessarily come under the inspection regime of the FAA, however, the FAA does have an advisory circular which is guidance material for helidecks, heliports, landing pads, et cetera and as you mentioned, the MMS has that oversight and conducts those inspections.

MS. FAGAN:

Q. Now has there been any changes or restructuring in the United States? You've mentioned after Lord Cullen's inquiry there was some shifts in the UK and then again in April of 2008, the Board of Health and Safety Commission was restructured, so the UK has had some restructuring in the last ten years. Has there been anything in the United States that's noteworthy?

MS. TURNER:

A. Yes, sure. Obviously the biggest thing that is on all of our minds is the recent BP incident and the deep water horizon incident of April this year. It's probably too early

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to tell in terms of the formal structural--sorry, formal structure and any changes there; however, from a philosophical perspective there's been very, very clear directive that there will be a separation of the commercial and the production areas and then the safety standards and oversight and have that separation of functions. When we start looking into the safety oversight and what is currently in place, a couple of key highlights that we've put in our report is each operation is to have a production plan which is similar to the safety case or the safety plans. Currently as it stands there's a voluntary safety environmental management system or an SEMS.

MS. FAGAN:

Q. So is that similar to a SMS?

MS. TURNER:

A. Yeah, it's similar to a SMS which is a safety management system, but the scope covers the environment as well. Now there was moves to actually bring that into become compulsory and there's proposed rule making already in place for that. I have no doubts that that will be

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accelerated and possibly we might even see a separation of the safety management system and the environmental management system, given the outcoming consequence of the current incident down there.

MS. FAGAN:

Q. You had mentioned the FAA and when you discussed the UK, you had said that there were committees and a MOU, an interaction with the Civil Aviation Authority. The Civil Aviation Authority would be, in the UK, would be the equivalent of the FAA?

MS. TURNER:

A. That's correct.

MS. FAGAN:

Q. In all different countries, they all have their own terminology. Did you find any interaction with the FAA or any involvement between the FAA and the oil regulators or the petroleum industry?

MS. TURNER:

A. Sure, sure. The FAA, as I mentioned before, is the aviation regulator. One of their primary tasks is to issue air operating certificates or an AOC. Now that is the same

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case as in every jurisdiction and they do that under ICAO's delegation as such. So the FAA actually registers and licenses the helicopter operators, but its span of oversight and inspection is limited in that aspect. In terms of their interaction, there is a group called the HSAC or the Helicopter Safety Advisory Committee and that has a very large emphasis on the offshore oil petroleum industry. They meet a couple of times a year and I have been fortunate to attend some of those public meetings, most recently in Dallas, Fort Worth in Texas and the HSAC is actually broader than offshore oil, but it's got a heavy emphasis with the, again, representation from the helicopter companies, the regulators, the oil industry, the customer base, et cetera.

MS. FAGAN:

Q. So just for clarification, we heard evidence that Transport Canada in Canada, of course, issues the air operators certificate and regulates the helicopter operator.

MS. TURNER:

A. Yes.

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MS. FAGAN:

Q. You know, the company that operates the helicopter and that's the situation here.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. So the FAA, it's a similar situation, when you had said across all jurisdictions, the air operator's certificate, do you mean all of the ones that you reviewed all have a similar structure because they're part of the international organization?

MS. TURNER:

A. Yes, how it actually works is ICAO which is the International Civil Aviation Organization is the international body, then there are member states that actually subscribe to the conventions of ICAO, those member states then have the regulator, so in the case of Canada, Transport Canada is a member state through ICAO and the associated conventions, the FAA in the US is the member state, in Australia, the Civil Aviation Safety Authority or CASA, so that structure is in place for all member states. Those regulators have the same set up

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and system of issuing air operating certificates and having to set regulations for aviation activities.

Now one of the key things that is consistent across the aviation regulators of the jurisdictions is the regulator is to set regulations and standards, they are to conduct surveillance which is where their audit and inspection regime comes in, and they are to undertake some level of enforcement or to ensure compliance with those regulations, and so there's various scales and continuum of what enforcement activities take place there as well. So the surveillance and the intervention, enforcement being one of them, is actually the same structure around the world for aviation regulators.

MS. FAGAN:

Q. So this would include Norway.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. Because you've already covered the UK, the United States.

MS. TURNER:

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A. Correct.

MS. FAGAN:

Q. You said CASA.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. In Australia, and Nova Scotia, of course, is Canada.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. Or Norway is another member state?

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. We're not going to deal with South Africa, in any event. So this structure that you've laid out would apply to all of the jurisdictions that you've reviewed?

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. So they would be the primary when it comes to regulation and oversight of aviation?

MS. TURNER:

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A. That's correct.
MS. FAGAN:
Q. So this report focuses on the interaction or the aviation component in an industry - the petroleum industry where it's not its core?
MS. TURNER:
A. Yeah, that's right. Now just on the US and some of the activities, now that intervention regime that I've talked about before, the regulator can adopt to use enforcement activities, such as notices, non-compliance notices, inspections, etc, but there has been a move in the last 10 or 15 years for where there's a hot spot or an area of a high risk profile for the regulator to actually undertake different types of activities to try and address the issue, and a good example of this is in the United States recently with the helicopter medical industry, so the air ambulances, that was a sector, an industry sector that had a higher accident profile.
Of course, the regulator was looking at more defined regulation, etc, but there was also a very, very high level of industry interaction, representation from the FAA

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industry conferences, focus groups, meetings, discussions, etc, and the offshore oil industry does have that same level of involvement and attention, but it's more ad hoc, as opposed to the HSAC, which is more of a structured committee and safety activity that takes place regularly.
MS. FAGAN:
Q. Okay, thank you. The next country is Australia, so your home country. I guess you're very familiar with this - with the aviation world.
MS. TURNER:
A. That's right.
MS. FAGAN:
Q. What did you learn of the petroleum world?
MS. TURNER:
A. Now it's certainly interesting coming from an aviation perspective and seeing what changes in growth is happening in Australia with the offshore petroleum industry, and I'll talk about that in a little bit.
I must say prior to involvement in this Inquiry, and in particular this assignment, I wasn't too familiar with NOPSA, which is the

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National Offshore Safety Petroleum Agency, but it's been interesting actually looking at the practises there and understanding why things have taken shape in the way that they have.
One of the interesting things to note was in 2005 a national oversight entity, and I've used the acronym, NOPSA, was established and prior to that each state and territory that actually had oil and gas activity actually had their own oversight regime, so very much a stake-based approach. This national oversight entity is predominantly focused on safety and you can see that through examining their organizational chart and their charter, so to speak. When you read into the history of how that actually came about, there's comments that the findings out of the UK Piper Alpha accident and the Public Inquiry actually really led to an examination around the structure in Australia and had quite a lot of influence around setting up that national oversight entity.
The division of power really was seen to bolster up the focus on safety, and it is a safety authority or a safety regulator. In

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terms of the scope of the industry, I thought originally it was actually quite small and, you know, a few of the different pockets of different oil fields, but there's actually 166 installations in Australia. There's a number of helicopter operators which include Bristow Helicopters, CHC, Jayrow, and Esso, which is one of the oil operators actually has their own aviation fleet. So you will see, you know, commonality of some of the larger operators operating in different jurisdictions around the world.
MS. FAGAN:
Q. The scope of this industry, is this on the upswing or the downswing?
MS. TURNER:
A. Now my understanding and knowledge of the changes, the forecast changes that are expected to happen in the next year or two, is significant growth in this area, and from a aviation perspective in working with CASA, the aviation regulator, it's very much on the radar as one of those spike sectors that is about to undergo dramatic growth to the point where they're anticipating anywhere from 30 to

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50 more helicopters in that area in the next one to two years.

The interesting thing about that is the aviation regulator is keeping tabs on the changing industry profile that's taking place and last year in 2009, late 2009, a MOU, Memorandum of Understanding was set up between NOPSA and the civil aviation safety authority to again define these roles, relationships, and accountabilities. I believe that that's really in anticipation for the growth that's expected over the coming years.

MS. FAGAN:

Q. Do the Australia regulator, do they have a safety case type approach because we've heard the safety plan, the safety case, and a production plan.

MS. TURNER:

A. Yeah.

MS. FAGAN:

Q. So how is it structured in Australia?

MS. TURNER:

A. Yeah. With the establishment of NOPSA, from day one the underpinning philosophy was very much risk based. There is some strong

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expectations and standards around safety case, so, yes, that is expected. They do also espouse that they have a performance or an outcome-based safety regime and that may be an area worth delving into if people are interested of what is the difference between a compliance or a prescriptive-based regime and performance and outcome-based because again Australia has shifted towards that oversight aspect.

MS. FAGAN:

Q. On the oversight, did you notice anything interesting in their audit process?

MS. TURNER:

A. Yeah, I mentioned a term "assurance" before and safety assurance is a real emerging area. In Australia, it's interesting when you look at the way the audit regime is structured.

Basically, they've got two different audit approaches. One is planned inspections or field audits which is very much compliance-based with the regulation, and the other, which is probably the most interesting, are theme-based audits that take place at an organizational level. So really looking at

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the organizational or systemic issues and those theme-based audits take place there.

MS. FAGAN:

Q. So what would be the difference? I mean, the planned inspection of audit, would that cover the entire system or does it not? I mean, what's the difference?

MS. TURNER:

A. Yeah, it's interesting when you start looking at - your compliance-based audits or inspections are very much looking at a rule or a regulation and determining whether the organization is compliant or non-compliant, whereas a theme or an organizational-based audit is more looking at the structures, the frameworks, the systems, the accountability, and whether or not it's suitable.

Now in the field of audit and risk based auditing, you've got compliance-based audit, and then you have risk-based audit, which is more like an evaluation and a grading and a synopsis of how effective something is as opposed to a "yes" or "no" answer, and so the approach to the whole audit setup is reflective of that concept.

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MS. FAGAN:

Q. We have heard about the United States is looking at a safety management and environment system.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. It has the environment in there. What is the status of safety management systems in Australia?

MS. TURNER:

A. There is a mandated requirement for all activities to come under a safety management system within Australia, and it's a little bit broader than just a pure safety case or a safety plan. It really is looking at the organizational structures and systems that are in place to manage that safety risk exposure, and it's fair to say that Australia does have a level of expertise in safety management system and probably started a number of years before, you know, other countries around the world and does have a vent in that area.

MS. FAGAN:

Q. The MOU is one area where the civil aviation

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authority interacts with the petroleum authority.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. Did you see any other evidence or did you find anything else with respect to aviation or interaction? We've heard about committees.

MS. TURNER:

A. Uh-hm.

MS. FAGAN:

Q. Anything else you can comment on?

MS. TURNER:

A. Yes, sure. One of the other things, NOPSA has periodically engaged aviation expertise and consultants to undertake various reviews, and I found that that was quite interesting given that they don't hold the aviation expertise in house or internally. So you can see that they've taken the approach of getting their own independent aviation advice as well as connecting with the regulator as such.

I don't have visibility, given the size, the current size of the aviation industry, as to whether there's forums and connectivity in

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the same way that the HSAC or the UK take place, but I'm sure that that will grow over time. I am aware, though, through the old Helicopter Association of Australia and the various conferences, aviation conferences that take place every two years, that there's a subset that really tackles the offshore oil flying activities, etc, but it's not big enough to have its own committee at this stage.

MS. FAGAN:

Q. The next jurisdiction is Norway, okay, and they are, we've heard, a very - from others, that it's a mature petroleum industry. So can you first give us the structure and the scope, the size?

MS. TURNER:

A. Yes, sure. It's interesting in Norway, and Commissioner, I understand that you've visited and met with the people there, it's interesting in terms of the scope and the size of the industry itself. Some interesting stats, 34 percent of the nation's income is actually derived from this industry, and that was stats from 2008. So obviously a very high

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profile industry in terms of the national interest. There's 57 oil and gas fields, 73 permanent installations comprised of 2862 wells. So again a fairly comprehensive industry for a pretty small country.

The oversight for regulation takes place by the PSA, or the Petroleum Safety Agency, and this is an independent agency that again undertook some level of restructure and separation from other government departments and agencies in 2004.

MS. FAGAN:

Q. Now what do you mean by an independent agency, and you've mentioned restructuring - we've heard of some restructuring in the UK.

MS. TURNER:

A. Yeah.

MS. FAGAN:

Q. And you've heard - we're hearing on the news of a potential restructuring in the United States. Can you describe -- and you've just described Australia.

MS. TURNER:

A. Yes.

MS. FAGAN:

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Q. So now Norway's restructuring?

MS. TURNER:

A. Yes, sure. It's interesting in the reading and the research, this change happened in early 2000's, 2004. The PSA is profiled as an independent safety agency as opposed to where the commercial activities take place for production, royalties, etc. One of the things that became very apparent in the research was a very slow, yet progressive, shift towards this performance-based oversight that's really been in training for about the last 15 plus years, and so each time the regulations are updated, there is a maturity built into that practise, and they're expecting their regulations to be updated and re-released next year in 2011, and again with another shift towards a greater level of focus on risk management.

MS. FAGAN:

Q. What about the transportation of workers to and from the installation, is there any regulation to cover that because you've said they are part of the international organization.

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MS. TURNER:
A. Yes.
MS. FAGAN:
Q. So they have their civil authority.
MS. TURNER:
A. Uh-hm.
MS. FAGAN:
Q. What about the regulator in Norway?
MS. TURNER:
A. Yeah, one of the things that really jumped out in the research were the regulations for Norway from the petroleum side actually did provide a level of detail and requirements that were specific about covering the transportation of workers to and from the installation, and so that was one of the things that was a little bit different or not as obvious in the other jurisdictions, not to say that it's not there, but certainly in Norway that jumped out as one of those key focal points or observations.
MS. FAGAN:
Q. How do they approach safety and assurance?
MS. TURNER:
A. Yeah, as I mentioned before, this thing about

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safety assurance is really developed. Norway have taken a fairly innovative approach to their checking function, and in particular their enforcement. They have this concept called a stepped enforcement regime, and it's like a picture of stairs and where there's an issue identified, the very, very first step is to actually engage with the industry in dialogue.

So you can see that in their philosophy it really is about having the conversation first, having that consultation and dialogue before it's escalated to, you know, the full extent of penalties and the other spectrum of enforcement. So that stepped enforcement regime is fairly key. It does show a bit of a shift in the philosophy, and one of the other things in terms of the consultation, it seems that Norway has a very transparent approach.

When you look at their website, there are results from audits, there is a lot of material, and so it seems very public and very open and transparent, which makes sense. If 34 percent of your nation's income is derived from that sector, I think there would be a

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high level of interest in that industry.
MS. FAGAN:
Q. The helicopter involvement, what is on the scene with respect to helicopter transportation?
MS. TURNER:
A. Yes, sure. The biggest thing that jumped out from an aviation perspective was over the last 10, or just over 10 years, Norway has committed to some fairly comprehensive helicopter safety studies. They've done three of those reports, not all of them fully translated in English, but the first two were actually commissioned by the Government and really did explore the hazards, risks, and safety issues associated with offshore flying.

It's interesting, the third study was actually commissioned by a group of eight oil companies. So again you can see a little bit of a shift from regulatory government flavour through to engagement, transparency, consultation through to the oil operators themselves commissioning that last and third study which has just come out recently. In terms of interaction, again very similar to

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the UK approach in terms of interaction with the industry itself, and they have a helicopter safety committee and a forum which includes a range of different players, including the workers, the unions, and most interestingly, air traffic control. So really looking at that setup again, slightly different approach that fits the context of their setup there.
MS. FAGAN:
Q. So beyond the unions and air traffic control, what about the oil operators and the aviation people?
MS. TURNER:
A. Yeah, absolutely. Pilots, aviation operators, oil operators, and the regulators, all represented there as well.
MS. FAGAN:
Q. So is the PSA, when you say the regulator, the oil regulator is also part of the committee?
MS. TURNER:
A. That's correct.
MS. FAGAN:
Q. And the last jurisdiction is Nova Scotia.
MS. TURNER:

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A. Sure. Nova Scotia, as many of you know, has the oversight body of the C-NSOPB, that has about 35 staff and was established in 1990. So, you know, fairly recent, but certainly growing and developing. There's two helicopters operators, CHC, and Cougar Helicopters, that provide support to the industry in Nova Scotia, and it's interesting when you start looking at the regulatory approach, there's a strong theme around hazard management and a hazard-based approach. It is quite consistent with other jurisdictions and there is also certainly a communication that there's a performance-based oversight regime there in place as well.

MS. FAGAN:

Q. How about the safety plan, safety case, production plan, do they have that similar -

MS. TURNER:

A. Yes, sure. From our research we found that there was draft guidelines put in place for safety plans that was released in December last year, 2009, and again you can see fairly consistent theme and approach, as you say, safety cases, safety plans, production plans,

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safety management systems. They all have a similar intent, some of them more indepth than others.

MS. FAGAN:

Q. The helicopter operations, can you explain the oversight there?

MS. TURNER:

A. Yeah, one of the interesting things that actually came out in this research was in terms of helicopter operations oversight, the definition of the use of support craft, and the helicopters actually fall under that definition and on page 51 of our report, we've just included two points that I'll just read out for us that actually provide an overview of that scope of the support craft and the definition of what it covers.

So helicopters used to transport workers to and from offshore oil installations are included within the term "support craft". Furthermore, the duty of the operator is to ensure that; number one, any operation necessary for the safety of persons on a support craft has priority at all times over any work or activity, and, number two; all

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persons in transit to and from an installation receive instruction in and are familiar with safety and evacuation procedures including emergency response procedures.

So that was something that came out that was of interest in the research and I thought was fairly sound.

MS. FAGAN:

Q. So you have mentioned that the PSA, the Petroleum Safety Agency in Norway, does - its regulations does cover - although they have the civil aviation, their regulations do cover the helicopter transportation. How would you categorize the Nova Scotia regulations, having just read that section? Is that the same as what you saw in Norway, or are these two different things?

MS. TURNER:

A. Yes, sure. In terms of our research, I mean, that's just a definition extracted from one of the regulations, but in our bibliography you can see the scope of what we looked at, and as I mentioned before, I'd love to go into this in more detail to really draw out some of those parallels that you're talking about. I

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think that Norway is probably a little bit ahead of the curve in terms of their history and maturity, but again some really good things that can be taken away and embedded in the philosophical approach as to how you actually drive regulations.

MS. FAGAN:

Q. Are there any changes expected that you're aware of with respect to the Nova Scotia regulations, because you've told us you expect some shifts -

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. Either they've happened in the other jurisdictions or they're likely to happen. Anything on the horizon on the Nova Scotia jurisdiction?

MS. TURNER:

A. Yeah, the biggest thing in the Nova Scotia jurisdiction is the expected review and amendment in the Occupational Health and Safety Regulations, and it will be interesting to see, you know, what relationships are drawn with the offshore oil regulations, the

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aviation regulations, and the occupational health and safety, and that approach is fairly consistent with other jurisdictions. So no surprises there.

MS. FAGAN:

Q. I will just ask you to provide, in conclusion, a synopsis. I know it's difficult to draw parallels.

MS. TURNER:

A. Yes.

MS. FAGAN:

Q. Without perhaps a much, much greater depth; however, with this oversight, were there any themes - was there anything that you could see as sort of patterns that we can draw upon?

MS. TURNER:

A. Yeah, sure, and I'm sure many of these themes and patterns have just come out or people are twigging with that just as I've been talking, and a couple of the trends that are across most, if not all, is firstly the division of power, or the separation of power from safety and then the commercial and production side of things, and that is not unusual for a regulator that has a safety oversight function

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to really examine where safety sits.

I'll just draw on an example from Australia, that the Australian aviation regulator used to be called the CAA, or Civil Aviation Authority, and a number of years ago the Director at the time decided to change the name to be the Civil Aviation Safety Authority, and so you can see this emphasis in the separation of safety in many areas around the world.

The second one, and this is probably of greater importance, is the shift to performance-based regulation and oversight. Now I've talked about performance-based, we've talked about goal-based, we've talked about outcome-based. Basically, in a nutshell, what it is is rather than writing a rule or a regulation that could cover every particular scenario or case in an industry, the aim of performance-based regulation is to say this is the outcome that we wish for you to achieve; how you achieve it is up to you, we won't be prescriptive in telling you exactly how, but it's up to you to have an appropriate framework system process/procedure to achieve

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that outcome. So the performance-based regulation is about being prescriptive on the outcome as opposed to the way and how you achieve it. So that's what I find is the most simplistic way of defining that.

Even here in Transport Canada, the rail component of transport is trying to move from a compliance-based prescriptive regulatory regime where there's a lot of regulations that are very, very detailed, and inspectors go out and check compliance, through to this performance-based outcome based approach. So that's a pretty big theme and something that has come out in this research.

The next is this move to a risk-based approach, and the risk management discipline, I mean, this is my bread and butter and more core area of expertise. It really is a growing field and you can see risk management, the management of risk, the identification, assessment, and reduction of hazards and risks and consequences is a flavour that's being written into not just regulation, but also legislation and standards and guidance material, and there is a discipline, an art,

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and a science around how you achieve a good level of risk management in those applications. So this risk-based approach compliments the performance or outcome-based regulatory regime. You actually need a risk management process or system to achieve a performance-based outcome.

One of the key things, being a bit more focused now on aviation, is the interaction with the aviation community and how the various jurisdictions actually tackle that. Some of the structured memorandums of understanding that define the relationships. Others commit to formal forums or committees and dialogue with the operators. Some have retained aviation expertise, some have aviation expertise on their organizational structure. So I guess there's a number of different things that can be learned from that aspect.

The next theme, and I've touched on this and emphasized it a couple of times, is around safety assurance, and adopting an innovative approach to providing confidence that things are safe. So basically what assurance is, is

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the provision of confidence. Confidence to whom; confidence to the regulator, to the workers, to the community, to the operators themselves. How do you provide confidence; well, we do a lot of audits and inspections in these type of industries, and that's one way to do the checking or to provide confidence. What we're seeing is a shift which is complimentary of the performance-based and risk-based into safety assurance, which broadens the tools and methods of how you achieve that communication of confidence into things beyond just audit.

Then the final one that is pretty common across the board is level of consultation that needs to take place or that does take place.

MS. FAGAN:

Q. Consultation between who?

MS. TURNER:

A. Really the oil industry, the aviation industry, the regulators, the operators, and all the interested stakeholders in those groups, including the workers, the unions, the associations, and subject matter experts in the various technical fields.

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MS. FAGAN:

Q. Did you see any practises or approaches that weren't right across the board, but something that might be a little innovative that we may want to think about or look at more closely?

MS. TURNER:

A. Yes, certainly. The one that comes out of Norway that really stood out was their stepped approach to their enforcement and really focusing on having some structured processes around having the dialogue before things escalated into the, I guess, traditional regulatory compliance based area and also secondly, their level of transparency. Everything's public. Everything's available. Certainly, you know, it doesn't seem like there's need for freedom of information requests and things like that. It's just available for people to read.

MS. FAGAN:

Q. There may be those requests?

MS. TURNER:

A. Yeah, absolutely, and I'm sure there's a depth of notes and, you know, more in-depth work that sits behind, but certainly there's a lot

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that's available and it is very open.

A couple of things from Australia is definitely the safety management system and taking that broader approach and not just necessarily a safety case or a safety plan. The audits that pick up that organizational type themed audits and with the restructure, probably the national approach to safety oversight, as opposed to, you know, the state-based administrative function that took place and that's really allowed safety to be bolstered up in that, which has been great.

And then, in terms of the UK, probably the most influential thing that really does have a place in aviation safety is the production of the written guidance material on aviation safety and helicopter activities is a stand out there.

MS. FAGAN:

Q. Okay, thank you. Well, that's all I have to ask you on this report, and we're not going to break until one, correct?

COMMISSIONER:

Q. Yes.

MS. FAGAN:

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Q. So we can move right on to the third and final report and all the counsel are taking lots of notes, so we're dealing with the three reports upfront and then they'll have the opportunity to delve into each one of the reports. So your last report is a safety culture report.

A lot of times this is referred to something that's fairly theoretical, so we will try and keep it to a -- we need to understand the theory, but some practical examples or applications will be helpful. So this paper on organizational safety culture, the purpose of this work was to highlight to the Inquiry key practices and concepts that are accepted and widely applied in the aviation industry. So can you tell us how we could best use this information? And you've prepared the report. How do you think it may help the Inquiry?

MS. TURNER:

A. Yes, sure. A couple of points to note in terms of safety culture, be that organizational culture or safety culture, this is a very defined discipline, particularly in the aviation industry. Culture and culture theory really emerged about 20 to 30 years ago

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and is quite embedded into the safety practices and hence why I'm so familiar with these areas and have assisted our client base over the years in implementing some real practical programs and systems. Like many other what we call high reliability organizations or industries which are high risk, low chance of things going wrong, but if they do, catastrophic. Such as the petroleum industry, the nuclear industry, the petrochemical industry, the aviation industry, there's a low chance of things going wrong, but if they do, the outcome, as we've seen down in the Gulf of Mexico, can be catastrophic, be that to safety, people, environment, reputation or even funding and finance.

Why this is important is these industries, higher liability organizations, since their very inception have been driven to reduce risk and to minimize risk and so when we're trying to establish cultures that encourage behaviours that actively reduce risk, there's a bit of an art to that.

There's many interfaces within aviation

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safety that have a cultural perspective and one of the models, called the shell model, and not as in Shell Oil, but as in shell, is it looks at the systems between liveware, the people, the interaction between people and people, liveware and liveware, people and the environment, people and the hardware, people and software, and so that whole interface really is quite -- it's quite an ecosystem to really get functioning to a high degree or reliability and hence, the culture and the people aspects are really key.

When you hear safety culture, in particular, being talked about at conferences or papers or experts, there's one very, very simplistic view that gets espoused all the time and in one way, I like it, and in others, I absolutely despise and hate it, and it says how do you define safety culture, and the simplistic way of looking at it is the way things are done around here. So how do you actually describe your culture, the way things are done around here. Now I think that really does have merit because it demonstrates the behaviours, the thoughts, the processes, the

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decisions of how people interact and behave.

Now that's a simplistic view. When you actually look behind why people do things the way they do, there's a whole set up of beliefs, values, systems, rules, structures, expectations, behaviours and decision making that all influence the way things are done around here. So the purpose of this paper was to provide, again, a high level synopsis and summary of a discipline that's been very, very high profile in the aviation industry for the last 20 or 30 years, in 36 pages, so that those key concepts and models could be understood and possibly matched with those good practices that we've seen in other regulatory jurisdictions and possibly the results of the survey itself.

Now I must say that there's one exclusion. We have not conducted a safety cultural analysis or assessment of the offshore oil industry here in the area, but the work that has been done could be used as a foundation to some of that further work.

MS. FAGAN:

Q. The report, can you take us through some of

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the main points in the report? It's 36 pages. We're not going to read 36 pages.

MS. TURNER:

A. No.

MS. FAGAN:

Q. Just like you to explain some of the key points.

MS. TURNER:

A. How it all works, yeah. In preparing for this presentation, I didn't want to get into the theory too much. The way the paper has been written is actually in common language, so it should flow and be a fairly easy read, but the 36-page report does provide that high level overview and it just highlights a couple of key accepted practices and models that are commonly used across the aviation industry.

In terms of the report itself, it does go into the definition of safety culture. It goes into key traits and characteristics of culture itself and how you might recognize and define one. It also goes into how to develop a positive safety culture. It's all very good and well, every company, including mine, including the Inquiry, including all those

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organizations represented here, have a culture. They have their organizational culture and then they also have a culture around how safety is handled and managed. The question is whether it's a good one or a bad one, and that's where some of these definitional areas assist and recognizing the traits and characteristics definitely assist.

In terms of how you'd set things up the best you can to help encourage, enhance or develop a positive safety culture. I just wanted to talk you through this concept which was presented earlier in my evidence presented late last year. There's merit in the relationship between all those structural things we've talked about, regulations, legislation, standards, committees, interaction, forum, safety management systems, safety cases, safety plans. All of those things help to create an environment and this model that you see on the screens, for those of you that can see it, and for those of you that can't see it, basically how do you develop a positive safety culture? You create an environment which influences people's

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behaviours, which in turn will shape or develop a culture. Okay.

So when you actually look at an organization's safety culture, if you're not happy with the traits and the characteristics and what they're saying to you, you can use this concept and this model to help redesign or reshape. So just to give you a very, very simple example. How do you create the environment? Well, if the regulator comes out and mandates that every organization is to have a safety management system, and these are the components, over time that will set up an infrastructure that creates an environment that defines certain accountabilities, responsibilities and practices. That will in turn affect people's behaviours.

I used the example before, we talked about operational risk management and how that's a tool in aviation. Now basically what it is, it's a standard risk assessment on a routine activity or task that you might undertake. Now very, very simplistically, for those of us that work in an office-based environment, to go to and from work, we might

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drive a car. You could develop an operational or standard risk assessment around how you drive the car and what's accepted in terms of your normal practices, and so that tool can define the environment. It can define your equipment, your procedures, the expectation, the speed, the limitations, whether you wear your seatbelt or not, whether you have passengers, whether you have your windows open. So you can actually define all that environment that will shape or influence people's behaviours, and which will in turn become a habit and become the way things are done around there.

So this culture slide is designed to, I guess, give direction or tips as to how to reshape a culture if you're not satisfied. Now if you're happy and satisfied with your current safety culture, and a lot of organizations are, it doesn't take much to tip the balance. It could be a change of leadership, could be a change of regulation. It could be a change of customer base. It could be a change of activity, and so all the time culture actually shifts and changes, but

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the theories presented in the paper help identify those traits and triggers of how you recognize those things.

MS. FAGAN:

Q. Okay. What is the key points that you'd like to discuss on Slide 12?

MS. TURNER:

A. Yeah.

MS. FAGAN:

Q. Safety culture. Now it's a little difficult to read and there are -- the viewers who are trying to watch this from their desks at work or at home won't be able to read this slide, so it -- because it's a fairly busy slide, and it's a safety culture stages. So can you describe the stages?

MS. TURNER:

A. Yes, sure. What this diagram represents, and for those of you that can't see it, I'll just talk through a few of the keys points. I mentioned before there's traits and characteristics of how you measure culture or how you recognize culture. Going back to the survey report, in part three, we asked a list of questions of the workers to help us define

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the culture. Now a couple of those questions were all around reporting. Do you feel comfortable that you can raise a safety concern and it will get actioned? You know, how would you describe your company's reporting culture? Is it opened or closed? Those type of things. Those questions were asked using some of these concepts and theories to actually gauge some of the traits and where things actually sat.

So on this slide, a couple of the key concepts that I just wanted to talk through, maybe two or three of them, is what is a just culture. Now just to give you an example, a just culture is a culture where people are encouraged to highlight reports and information and incidents without fear of retribution or punishment. Now one of the very delicate aspects in just culture is what do you do if somebody purposefully breaks a rule and causes harm or injury to someone else? The just culture approach doesn't cover that type of behaviour, but it does cover the bulk of just normal human behaviour where errors occur, mistakes happen, you know, maybe

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people forget or there's a lapse or aren't trained properly and so a just culture is exactly that. It's just, it's fair and it's designed to, I guess, get information out.

Now just an example that we might all recognize because, as Ms. Fagan said, it's very easy for this material to turn into theory and be hard to apply in practice, so if we took an example of just a workshop, be that an aviation workshop or a maintenance workshop, a just culture would encourage people to be open, report, communicate without fear of being penalized or punished. For an example, a worker would be more -- a worker would be more likely and comfortable to raise a concern if they know that they're not necessarily going to be penalized or punished. So in the case where, say, some oil is spilled on the floor of the workshop, if a just culture exists, people would be happy to, number one, report the information so that something can be done about it, and number two, not be afraid that they're going to get fired or they're going to get reprimanded for possibly making that mistake.

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Now as I said before, that's quite different if the person purposely goes out and pours oil on the floor in order to cause harm, and that's a separate issue that is dealt with in its entirety. Now if a closed or a punitive culture existed, people wouldn't necessarily put up their hand to say "hey, look, there's an issue over there" or there's an incident or there's oil on the floor. They'd just walk by it and say nothing through that fear factor, and you can just imagine that you apply a simplistic example like that to a complex environment like aviation where helicopters are involved, where people might see something that's wrong, yet if they're not necessarily comfortable, encouraged or open to put things up, the regulator, the operator, the helicopter provider, the pilot may or may not have that information readily available to them. So the just culture is all about what is done with the information and how it is investigated and whether there is penalty, cause or an openness, and one of the practical tools that is available is a just culture algorithm and it's used in accident and

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incident investigation and it's basically a decision flow chart that takes you through a question such as: the incident occurred, what type of event was it? Was it a procedural concern? Was it a training issue or was it a violation? And so you pick that and then you walk through and say: did the person do this on purpose? Yes or no. If the person did it on purpose, why did they do it? And then you can -- if they didn't do it on purpose, did they know that it was a situation that could cause harm? Yes or no. If they did know, you know, why was it breached? So it's actually like this decision flow chart.

Now the end point actually gets you to a point that gives you guidance on whether or not there should be penalty, punishment, retraining, counselling or consoling and so that the behaviour that follows the investigation is commensurate with the type of era or the type of activity. That's a very long-winded way to basically say there is theory, there's structure. If you do adopt a just culture, it's more than just a concept. There are practices and procedures that

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actually go with the idea that need to be embedded into your safety set up and practices.

MS. FAGAN:

Q. So from that example, in a just culture, it wouldn't be just, you know, an expectation or a feeling or a sense that "if I report the oil on the floor, I'm not going to get in trouble or I'm not going to get a colleague in trouble"? You would see a system, some type of process where, in a just culture, a lot of questions would be asked, perhaps a lot of dialogue, as to why and you would investigate and get all the facts and depending on how that sorted itself out, a decision would then be made and that there would be a sense of fairness, but that the workers could see and rely on the fairness. They could see it. It's in a policy. It's in a manual. It's somewhere where they can see it. This is how this situation is going to be treated.

MS. TURNER:

A. Yes, yes, absolutely, and it's interesting that it's not just the decision on what takes place, but it's also what rectification and

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action follows through, and so, these systems and the procedures that go with these discipline around culture and the behaviours actually will shape whether it's a systemic, whether it's a procedural issue, whether it's a training issue that can be fixed to prevent that outcome, be that the oil on the floor or something more catastrophic.

MS. FAGAN:

Q. What about some of the other cultures? I mean, they may be similar but you've listed five, I believe. So what's the difference?

MS. TURNER:

A. Yeah, sure. I'll pick one like in terms of the learning culture and it's interesting, I think we all like to see ourselves as those that like to learn and, you know, you learn something new every day, but in terms of some of the traits and characteristics around a positive safety culture, it is one where there's lessons that are learned. Again, this isn't something that you just commit to from a philosophy. You need to actually put it in place. So how does that take place. So this is where your communication regime comes in,

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your training regime. The thought around how you do closed loop reporting so that oil on the floor, someone reports it, it's fixed, or does everybody else in the workshop who works in that situation know about the incident, know what happens and knows what was done to actually prevent it, and whether they have a role in that. So the learning culture is all around using that material to grow, develop and learn from others mistakes.

I would say the aviation industry, as a whole, as a very strong learning culture. The offshore oil industry, the helicopter industry, the aviation industry is watching with great interest as to what comes out of this Inquiry. Why? Because they have a learning culture. Reviewing the Piper Alpha, you know, review with Lord Cullen and the findings that came out of that, it's a learning culture.

MS. FAGAN:

Q. So the cultures that you've listed here, a just culture, a reporting culture is a culture I assume that encourages reporting.

MS. TURNER:

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A. Um-hm.

MS. FAGAN:

Q. A flexible culture, an informed culture, learning, are these good or bad cultures?

MS. TURNER:

A. Yes, sure. These would be seen as traits of a positive or a good safety culture and so I guess, the question is what's the flip side of what's negative and you could almost reverse these and say a positive trait is having an open reporting culture, a negative or a bad is having a closed reporting culture where people don't put up their hand, don't submit incident reports for whatever reason, be that they feel that nothing will happen if they do or that maybe they'll be penalized.

MS. FAGAN:

Q. How can the positive traits improve safety? And I mean, I know this may all be obvious, but from a practical perspective, how does having all this in place improve your safety situation?

MS. TURNER:

A. Yeah, sure. One of the biggest things in safety is it's very difficult to manage what

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you don't know about and one of the biggest ways that this work improves safety is by getting more information and a greater level of understanding of actually what's going on so that the right level of action can take place.

Now match that with risk management, there's various risks that are acceptable and not acceptable, but in order to reduce risk, different people at different levels can do different things that are effective. The regulator can put a rule in place to actually fix something. An operator can put resources in place, such as training, equipment, education, knowledge. A worker can have a certain approach that can be put in place in terms of, you know, reporting and putting up their hand and using the systems provided by the operator.

So in terms of how this can best improve safety, one of the biggest aspects is getting the information out. The second part is when that's out, having a process of how the action can take place, and what you'll find is how do you build these type of positive cultures. If

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you're not currently getting the information, number one, you've got to focus on that. Once you've got the information, if you don't do anything about it, people lose confidence very quickly. Well, I mentioned that and nobody did anything, you know. Well, I put up my hand and they don't do anything. You know, so you can lose confidence if that second aspect is an action.

So you actually need to be ready that if you're going to put an effort into opening up your reporting culture that you're ready with the skills, people and processes to do something with it, and then finally having a balanced and fair approach so that you're not penalizing those that are giving you the good information.

MS. FAGAN:

Q. Okay, thank you. On this particular report, I don't have any other questions. So I'd just ask if you have any concluding remarks or comments? You've now been here for ten months and I know you have not done an analysis of our culture in the industry here, and I'm not asking you for that, but do you have any

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concluding remarks in light of the three reports and what this Inquiry can take away?

MS. TURNER:

A. Sure. In terms of the concluding remarks around the safety and organizational culture piece, there is a lot of theory in that, but I believe that the theory provides a good framework and structure to organize a lot of the other thoughts and concepts that we've discussed in the two papers. So I guess to just encase all three reports, there is a fairly strong interrelationship between all three topics that we've undertaken.

The first was the worker survey and really getting a snapshot of where the current practices, views, perception, reality is at a given point in time and so that's been a really great resource and piece of information that can be used. The regulatory snapshot just gives us a good overview of what else is happening around the world and some of those key themes and patterns that are emerging can be used, and then finally, that safety culture report actually just provides us a structural framework to actually tie everything together

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and look at how the dots can be connected here for the industry.

So from my perspective, it's certainly been a pleasure undertaking this assignment. Love to spend more time and getting into a lot more depth, particularly in the regulatory benchmarking in aviation practices, but I hope the presentation has been useful in explaining a lot of reports and many, many pages and I trust it's valuable to the Inquiry and to yourself, Commissioner.

MS. FAGAN:

Q. Thank you, Ms. Turner. They're the questions that I have. It has been very -- well, it's one thing to read the report, but it's another thing to have the author of the report come in and at least explaining the context, explaining the processes and some of the assumptions or limitations. I think it was helpful for me and others as to how to place these reports from a safety perspective. So it is 20 to 1. There's 20 minutes left, and I leave it to you, Commissioner, to decide how you want to use the time. I'm done. Thank you.

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COMMISSIONER:
Q. Thank you. On the list now, well, the Inquiry counsel has led off and there is no counsel for the party being examined, of course. Counsel for Transport Canada, is counsel for Transport Canada present?
MS. FAGAN:
Q. Not present.
COMMISSIONER:
Q. No, not present, all right. CAPP?
MR. SCHULTZ:
Q. No questions, thank you.
COMMISSIONER:
Q. No questions, thank you. The three oil operators, HMDC?
MS. STRICKLAND:
Q. We're going to reserve our right for cross until all other crosses are completed.
COMMISSIONER:
Q. That may not be possible because C-NLOPB has asked me if they could go last, because the regulator is very much a -- so they will go last.
MS. STRICKLAND:
Q. We'd be content to go second last.

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COMMISSIONER:
Q. So at any rate, you do want to ask questions?
MS. STRICKLAND:
Q. We may, depending on any issues that come up out of the cross-examination by other parties.
COMMISSIONER:
Q. I see. So you're not sure. Does that apply to all three oil operators?
MR. PRITCHETT:
Q. It does.
MACDONALD, Q.C.:
Q. It does, Commissioner.
COMMISSIONER:
Q. Yes, all right then. Counsel for Cougar, Mr. Stamp? A new face, welcome.
STAMP, Q.C.:
Q. Thank you, Commissioner. We don't have any questions at the moment.
COMMISSIONER:
Q. Okay, thank you. Helly Hansen?
MR. SPENCER:
Q. Commissioner, we have no questions at this time, although again, if something were to arise in cross-examination, we may want to, for clarification.

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COMMISSIONER:
Q. All right then, thank you. Counsel for Memorial University of Newfoundland?
HURLEY, Q.C.:
Q. No questions.
COMMISSIONER:
Q. Thank you, Mr. Hurley. Counsel for the Government of Newfoundland and Labrador?
MR. PRITCHARD:
Q. We have a few questions.
COMMISSIONER:
Q. No questions.
MR. PRITCHARD:
Q. We have a few questions.
COMMISSIONER:
Q. Oh, you have a few questions. It's about 20 minutes to 1. Would you like to start now? If you haven't many questions, you may be able to finish. What's your preference?
MR. PRITCHARD:
Q. Well, I don't have a lot of questions, but I wouldn't mind reviewing some of the material this morning during lunch and then what I have, I'll be brief.
COMMISSIONER:

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Q. You wouldn't mind lunch hour to reflect on it? Is that what you're saying?
MR. PRITCHARD:
Q. Yes.
COMMISSIONER:
Q. All right then. Well, what I will suggest, in the interest of getting on with thing speedily, it's nearly quarter to one. Supposing we make the hour lunch quarter to two and so that we won't lose any time out of a fairly tight schedule. Is that all right? So if we could come back at quarter to two and you could begin then.
MR. PRITCHARD:
Q. Thank you.
(LUNCH BREAK)
COMMISSIONER:
Q. Okay. Whenever you're ready then.
MS. KIMBERLEY TURNER, EXAMINATION BY MR. ROLF PRITCHARD
MR. PRITCHARD:
Q. Good afternoon, Ms. Turner. My name is Rolf Pritchard and I represent the Province of Newfoundland and Labrador and the questions that I have for you this afternoon all stem from your review of selected offshore

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petroleum regulatory regimes.

MS. TURNER:

A. Um-hm.

MR. PRITCHARD:

Q. And just before I ask my questions, I guess I should just indicate that I'm aware of the limitations, if you will, that were expressed earlier today, which is that that's not your area of expertise.

MS. TURNER:

A. Yes.

MR. PRITCHARD:

Q. That you did a survey to assist the Commissioner. Obviously it relates to areas of expertise, but in terms of drilling down into it, it wasn't intended to be that type of report. I appreciate that. So if I ask questions that require too much detail or so forth, I'll understand if that's the response.

MS. TURNER:

A. Sure.

MR. PRITCHARD:

Q. One of the areas that you touched on at the start was you were asked about why you had selected certain regimes and I wanted to ask

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about that, only in the sense that Newfoundland is somewhat unique in the sense that it's a fairly small offshore, I think we've heard remarks to that extent, and other than the Nova Scotia regime that we had seen, most of the other regimes seem to be quite a bit larger, with perhaps the exception of the South African one, which I'll ask about in a moment.

MS. TURNER:

A. Yes.

MR. PRITCHARD:

Q. But I was wondering, in terms of other regimes around the world, I'd be curious to know, are you aware if there are others that are sort of more similar in size to the regime that we have in Newfoundland?

MS. TURNER:

A. Yeah, it was interesting when we looked at selecting the regimes to examine and research. We really did consider two things in particular. Firstly was the size and secondly was the unique operating environment here in terms of the weather, the cold, the nature of the operating environment here. There are

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other smaller jurisdictions. One of the other criteria that we put into the mix in selecting was the government structure, as well as the -- I guess whether or not it was a first or a third world country in that classification and also the sharing of onshore and offshore as well. There's a lot of variables in that and there's certainly different scope of structure with the various regulators in those smaller jurisdictions.

MR. PRITCHARD:

Q. I notice that the examples that were used, and they seem like fine examples, in most of those cases, I gather there are national regulators, as opposed to regional regulators as we see in Nova Scotia or Newfoundland.

MS. TURNER:

A. Yes.

MR. PRITCHARD:

Q. Would any of the other countries, perhaps that weren't considered, have more of the regional regulator model?

MS. TURNER:

A. Yeah, sure. I can't answer that in a lot of detail. However, when you look at the

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regulators, it really is driven by the size and the scope of the fields and so, you know, some countries have very small fields. Others have a lot that are untapped. Maybe their production hasn't commenced. The biggest thing in selecting the different jurisdictions wasn't so much to draw the exact similarities from size, structure, Commonwealth countries, et cetera, but it was more to really try and draw out some of the good practices that might be considered, nothing that everything can be scalable, which is really key in this area.

MR. PRITCHARD:

Q. Okay. I had a few questions about some of the specific countries. The first one I have concern the United Kingdom and you were good enough to provide the information that there's approximately 100 helicopters involved in that operation, and one piece I was curious is we have a certain environment here, as you pointed out, and obviously they have a certain environment there. The helicopters that are being flown, I'd be curious to know with some of these ones, how they compare in terms of the duration of the flight.

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MS. TURNER:
A. Yes.
MR. PRITCHARD:
Q. Would it be a longer flight or a shorter flight or comparable? I don't know if that's something you can assist us with in terms of the different -
MS. TURNER:
A. Yeah, sure. We didn't necessarily specify that in the report, but you will note for each country there's actually maps and layouts of the operating environment or the area of jurisdiction, so that may be something to look at. In terms of the helicopter operations, the duration, even the sequencing of flight and how that happens, whether or not you just go direct to the installation and back or whether or not there's a route and a structure, we didn't do a comparison on that type of thing, however that certainly could be mapped out in that more in-depth work that I referred to earlier.
MR. PRITCHARD:
Q. Just one other question about the UK example, and I'm looking on page 13, and only because

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paragraph 3.4, which is where you focused in on the helicopter operations oversight and you had explained earlier on about the HSC, which I gather was a -- had responsibility for safety legislation across a broad range of activities, not just helicopter or the offshore. Is that correct?
MS. TURNER:
A. Yes.
MR. PRITCHARD:
Q. Okay. And here you explain there's an interaction with the civil aviation authority, which I guess is a structure we see repeated quite often.
MS. TURNER:
A. Yes.
MR. PRITCHARD:
Q. And I appreciate your remarks about trying to get away from a prescriptive approach for a lot of these jurisdictions, so if my question sounds as though I'm going after -
MS. TURNER:
A. No, that's okay.
MR. PRITCHARD:
Q. - a prescriptive approach, I don't mean it to.

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But I wonder, just sort of using an example that we could relate to here, certain specific things like survival suit standards or what is necessary, what kind of training standards are necessary or like the HUEBA that we heard about. In the UK example, for instance, which of those bodies would be responsible for setting those standards? Would it be one of those two or would it be another organization?
MS. TURNER:
A. Yeah, sure. I might leave that question to some of our experts following because I think I'm probably the odd man out when it comes to the experts, in terms of suits, training, survival, the equipment. I think there's other people that are more qualified to get into that level of detail, but certainly from a prescription versus regular -- the performance based review, and I know that's an area of interest to a lot of people and it really is an emerging area, an example from a principle based approach is a performance or an outcome based regulation would say you are to conduct -- or have an appropriate regime so that the skills of the workers are fit for

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purpose and would enable, you know, appropriate escape and evacuation, et cetera, as opposed to the regulation saying you must do HUET training. So you can see how the performance based outcome actually describes the competency or objective that you're trying to meet, which are to have skilled workers that can perform the function effectively to get out of an aircraft in the case of an emergency, as opposed to the prescription around exactly what way, shape and form that that could be achieved.
MR. PRITCHARD:
Q. Now with the other regimes that you looked at, Australia or Norway or Nova Scotia, or indeed Norway, if I were to ask a similar question, you know, sort of drilling down into those specific kinds of details, would your advice again be to deal with some of the other presenters?
MS. TURNER:
A. Yeah, absolutely, and you see that the scope of our work didn't extend into the specifics around equipment, training, even aircraft. It was more at that higher regulatory oversight,

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in terms of standards, approach, scope of regulation, as opposed to the data.

MR. PRITCHARD:

Q. The American example is a fascinating one, just the sheer virtue of the size.

MS. TURNER:

A. Yes.

MR. PRITCHARD:

Q. I had no idea of the numbers until I read your report. It was quite staggering. You make reference to 4,000 helidecks and 200 companies and the fleet sizes can range from 1 to 200 aircraft. I'm wondering if you can assist us with a general number. Like for example, in the Gulf of Mexico, how many aircraft are we talking about?

MS. TURNER:

A. Yeah. We weren't actually able to ascertain an exact figure, but as it mentions here in terms of the helicopter operators, they really are very, very diverse and I don't know of too many other jurisdictions around the world where that is the case, where you have the smaller operators, and when I say smaller operators, it's not just in terms of aircraft

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numbers, but also aircraft size and capability. We're all familiar here with the S-92. It's actually quite a large helicopter. Some of these smaller operators actually have quite small aircraft and don't necessarily have the scope of capability, in terms of technology, aircraft, duration, equipment, et cetera.

MR. PRITCHARD:

Q. Just one other question about the American example, and at the risk of this perhaps being a question I should ask one of the other presenters, on page 26, in the second paragraph under 4.4, you indicate -- you talk about the Helicopter Safety Advisory Conference guidelines and you indicate that the guidelines are not binding, and then in the next paragraph, under the FAA, you also indicate at the end of that, there's no specific program or regulatory work under way with respect to offshore helicopter travel. You're not suggesting that, with respect to those items that I asked about earlier, that it's unregulated. It just, I guess, doesn't indicate what the specific source of that type

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of regulation is? Is that what it's saying?

MS. TURNER:

A. It's quite interesting. When you're talking about the HSAC, the topics that are discussed or in my exposure to those meetings, much more helicopter centric. They're focused on safety practices, technology, equipment of the aircraft, as opposed to the people and the workers and the personal protective equipment and suits, et cetera. So that forum that's being referred to in the States is looking at aircraft standards, interaction with the FAA, capability, technology, pilot training, and so it's much more aviation centric.

MR. PRITCHARD:

Q. Okay. I have a question about Australia now.

MS. TURNER:

A. Here we go.

MR. PRITCHARD:

Q. You indicate there's 166 offshore facilities.

MS. TURNER:

A. Um-hm.

MR. PRITCHARD:

Q. And I'm just curious, just trying to get a sense of the volume of flying. We're talking

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about a thousand aircraft or a hundred, any sense?

MS. TURNER:

A. No, I'd have to really look at the details, but my estimates based on my knowledge of the industry, maybe around 30 aircraft. So in terms of Australia, you've got three or four main operating areas. You've got down in the southeast corner and so, Esso is the primary operator. They have a fleet of six to eight aircraft. And then in the western and northern area, there's a number of other operators, CHC being one, Jayro Helicopters, and Bristows, and so there's Karatha and then up in Darwin, two of the local ports. So I wouldn't expect that it would be any more than 30 aircraft. The actual size of the company's aircraft are quite small. Unlike the US and maybe the UK where one company may have 50 aircraft or 100 aircraft, we're really talking about quite small operations that are comparable to what you have here in St. John's.

MR. PRITCHARD:

Q. I take it the areas that are serviced are

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those areas that are referred to as basins on the diagram? Is that right?

MS. TURNER:

A. That's correct, on page 29.

MR. PRITCHARD:

Q. Just with respect to the question I've asked about, you know, who would be responsible for those specific types of things like suits.

MS. TURNER:

A. Yes.

MR. PRITCHARD:

Q. In the Australian context, I don't know if perhaps it's one you're more familiar with.

MS. TURNER:

A. Yeah. I'm actually not that familiar with suits, so I might just push that to the side. You've got three or four experts that actually work in this field, sit on standards committees, et cetera, and so that's really outside my area of expertise.

MR. PRITCHARD:

Q. The last country that you referenced in the report is South Africa.

MS. TURNER:

A. Yes.

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MR. PRITCHARD:

Q. And I appreciate that that's just a snippet.

MS. TURNER:

A. Yes.

MR. PRITCHARD:

Q. Are you able to assist us at all just to any idea of the number of sites, the number of aircraft involved?

MS. TURNER:

A. No. We were very, very keen to put South Africa in this research, the reason being our assumption was that it was a similar size, when you start looking at their oilfields, et cetera, so our assumption was it would be quite comparable in nature and similar legal structure and things there as well. Unfortunately we made multiple attempts to get that information and certainly within the time frame, it wasn't possible.

MR. PRITCHARD:

Q. All right. Those are my questions. Thank you very much.

COMMISSIONER:

Q. Okay, thank you, Mr. Pritchard. Mr. Harris?

MS. KIMBERLEY TURNER, EXAMINATION BY JACK HARRIS, Q.C.

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HARRIS, Q.C.:

Q. Thank you, Commissioner. Good afternoon. My name is Jack Harris. I'm a Member of Parliament, Parliament of Canada, for this riding and I just have a couple of questions. First of all, it may sound silly, but help me understand your design of your questionnaire because I'm looking at, let's say, Question No. 8, which talks about "how safe do you feel travelling in helicopters?" and it goes from not safe to very safe with people just being asked to answer on a scale of one to five, do you feel safe. I wonder what three means. Does it mean you don't feel safe, you do feel safe or you're not -- you don't have an opinion, and does that get counted in one side or the other or is it ignored? So could you enlighten us about that?

MS. TURNER:

A. Yes, sure. So just in terms of the question, if I can confirm, it is question number on the -

HARRIS, Q.C.:

Q. Question 8 on page 19.

MS. TURNER:

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A. Okay, page 19, Question 8. That's correct. It was really interesting. We had a decision to make with asking this question of whether or not we purely wanted to ask a yes or no and we actually debated this quite long and hard internally within our team as to whether that would give us anything of use to say I'm safe or not safe. The scale of one to five was selected because you've got the extremes, you do have a middle and then you've got either side. So just looking at the results there up on the screen, you'll see that 344 survey respondents actually sat in the middle and your comment as to whether or not they didn't necessarily feel safe or unsafe may be the case.

HARRIS, Q.C.:

Q. Well, one -- if I may interrupt for one second?

MS. TURNER:

A. Um-hm.

HARRIS, Q.C.:

Q. It's not very unsafe and very safe, for example. It's not safe, which is an absolute, and very safe on the other end, which is an

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extreme. So I just wonder what that does to the middle position. Sometimes you see surveys and they tell you what one means, what two means -

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. - what three means, four and five, and it just seems to me that if I were answering the question, it may be arbitrary what I would think number three means and you debated it and what did you conclude? Did you conclude that that meant yes, I feel safe or I don't have a strong opinion about it one way or the other?

MS. TURNER:

A. Yeah. I would sit with your latter comment in terms of I don't necessarily have a strong opinion. If we were to put the word "safe" in the middle and then very safe at the other extreme, I think it would have skewed the results. You'll see that in all of the questions one to five, we actually opted to be consistent in the survey to just put the descriptors on the extremities at the one and

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the five so that is consistent throughout the survey.

HARRIS, Q.C.:

Q. If I may compare that to Question 23 on page 28 when you ask to rate your organization's safety culture, you have poor on the one hand and excellent on the other, which I guess again the middle probably means okay.

MS. TURNER:

A. Yeah, that -

HARRIS, Q.C.:

Q. Not good, not bad.

MS. TURNER:

A. Yeah, that would be right.

HARRIS, Q.C.:

Q. Simply fit right in the middle.

MS. TURNER:

A. A scale of five does give you a choice of sitting on the fence in the middle and whether or not that's because people aren't necessarily compelled either way or whether they are neutral on the issue, both of those could be legitimate.

HARRIS, Q.C.:

Q. By way of comment, it seems to work there,

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between poor and excellent, but I'm not so sure when you have an absolute, whether it does the same thing, but that's -- I'm just trying to understand that for my own use. Well, thank you. On the -- I'd like to turn to the issue which I think probably dominates your presentation, which I found very interesting, and I'm interested in the notion of a performance or goal based or outcome based regimes versus the regulatory ones, and I was -- I put it to you that I don't think you're suggesting that it's an either/or proposition. It seems to me that when you described Norway, for example, you talked about as Norway matures, but Norway seems to me at least, to have probably a desirable mix of both.

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. But if you look at Norway, and if I may refer you to a couple of paragraphs here, you know, sometimes when you hear this performance based, it almost sounds like self regulation.

MS. TURNER:

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A. Yeah.

HARRIS, Q.C.:

Q. Which I don't think you're proposing, but let's look at what Norway says in its -- or what you say about Norway, for example, on page 41, and describing Norway's -- that's Exhibit 210, page 41, at the bottom there, the framework regulations stipulate the Norwegian equivalent of the phrase "as low as reasonably practicable" and it says "far more danger to harm shall be prevented or limited in accordance with the legislation related to health, the environment and safety, including internal requirements and acceptance criteria. Over and above this level, the risk shall be further reduced to the extent possible." So this notion of reducing harm is an add on to the existing regulation, which I think are somewhat prescriptive in Norway. If I may, on page 43, when you're talking about the operations of the PSA, which is the Petroleum Safety Authority, and talk about giving consent to their plans.

MS. TURNER:

A. Yes.

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HARRIS, Q.C.:
Q. So the second paragraph there, about halfway through, "an official consent is also required as important milestones of operation or to continue. The consent application includes the current safety management system," which is the kind of thing you're talking about.
MS. TURNER:
A. Um-hm.
HARRIS, Q.C.:
Q. "As well as a number of binding commitments specific to that facility. There are minimum standards which the operator must meet and any commitments made beyond this minimum constitute a legal requirement for the operation." So even the safety management systems have become legally binding upon the operator once they're agreed to. And again, if I may, you talked about the importance of the industry in Norway, 35-34 percent of its gross national income. On page 44, you talk about the step approach. You mentioned that specifically.
MS. TURNER:
A. Um-hm.

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HARRIS, Q.C.:
Q. In that same paragraph, it says "given the nature of the petroleum industry and its stature in Norway, the potential for public embarrass is a sufficient deterrent for companies to engage with the regulator. Dialogue is a key part of the supervisory role and is influential in causing changes" and I would have to agree with that. Obviously the kind of dialogue, ask them to improve their safety culture, develop your own plans and you mentioned the fact that -
MS. TURNER:
A. Yes.
HARRIS, Q.C.:
Q. - in Norway now, the companies themselves are putting forth their own schemes as well. But I will say, as the last para -- the last sentence of that paragraph says "fines and charges, as well as the removal of consent, are considered the last steps, are only necessary in serious cases." So it seems to me, from reading that, that not only does Norway encourage the safety plans or safety cases, various names that have been used to

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describe them, but it also has a significant enforcement regime that it can use if it has to?
MS. TURNER:
A. Yes.
HARRIS, Q.C.:
Q. And do you think that's a good thing or can you go it alone with the safety management cases?
MS. TURNER:
A. Yes, sure. With -- in my knowledge, all regulators around the world have a continuum of enforcement and certainly that stepped approach outlines that continuum. At the very severe end of penalty are fines, loss of license, penalties, legal charges, et cetera. What you're actually seeing is a bit of a shift to really define that continuum and move towards more that process based self fixing. I'd like to pick up on a couple of things you've talked about.
I'll come back to your comment about self regulation, because I think it's really important to understand where that fits in the scheme of things, in particular in relation to

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a safety management system, but first of all, this performance based regulation is firstly a philosophical shift in the regulatory approach. I think we'd all be in agreement that a compliance based -- basically, the flip side of a performance based or goal oriented or outcome based, those three words are all used interchangeably, is a compliance or prescriptive based approach. Any regulator in any industry, part of their role is to provide or ensure compliance. Now whether you ensure or assure, I guess, comes down to the degree of certainty in which you're going to do that.
So first of all, this shift to a performance based regulatory regime is a philosophical shift. Secondly, and in translating that into practice, the biggest change actually comes in terms of how the inspections are undertaken by the regulators' inspectors and whether or not it's compliance based checklist auditing where the inspector goes in with their list and only checks that or whether it's process based auditing, and this is quite important where the inspector goes in to evaluate a process behind how a

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company does something, as opposed to just the rule or the actual outcome of that compliance based aspect itself.

So when we're talking about shifting, you're right in Norway it has been this shift over time. They do still have, in most cases, that full continuum. I guess the thing comes down to where is the emphasis? Is it more on the process based side? Is it more on compliance or is it fairly balanced and use both?

In terms of safety management systems, there is a recognition, particularly -- and I'll speak from aviation regulators and one could translate that across to the petroleum industry, just from a principle based approach, that not every scenario, case, hazard or risk in the aviation industry can be, number one, identified by the regulator and number two, have a rule in place to mitigate, and I use that word quite deliberately, to mitigate or remove that risk. And so the move in the aviation field has been to adopt this performance or outcome base that relies on the operator, the helicopter company

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in this case or the aviation provider, airport, airline, et cetera, to have a process by which they manage that issue, so that they will pick up their hazards, their risks, the severity and put appropriate reduction measures in place.

There is a recognition in the aviation regulatory world that after years and years and years of having a workforce of inspectors who are prescriptive or compliance based, that are recruited on their experience and industry knowledge, to shift that to a work force that has process based thinking or systems based thinking is actually a huge shift and I've had conversations in the last three months with the FAA in the US, Transport Canada in the aviation, marine, rail and security areas, the Civil Aviation Authority in New Zealand and the aviation regulator in Australia. All the same conversation about how do you shift your work force capability from compliance and prescriptive based approach into this process based evaluation. It's actually a different way of auditing and evaluating.

HARRIS, Q.C.:

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Q. I think we could all agree that having industry be very conscious of the fact that, you know, a process based assessment is valuable, but there's still an implementation side of all of this.

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. And someone still has to make a decision, you know, and get the case, for example, as the Commissioner did recently in this recommendation that a 15-minute or 20-minute response time is required, as opposed to a 45-minute response time or that, you know, gas tanks are -- will be or will not be in the same space as passenger, all of these things have to be decided.

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. And I notice you use the word "only", that an inspector would not only be looking at a checklist.

MS. TURNER:

A. Yeah.

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HARRIS, Q.C.:

Q. You're not saying, I don't think, but it sounds like it -

MS. TURNER:

A. One system doesn't replace -

HARRIS, Q.C.:

Q. - you're shifting. You're not actually removing -

MS. TURNER:

A. Replacing, correct.

HARRIS, Q.C.:

Q. - the regulation. You're suggesting that there ought to be that safety culture, the safety management system are very valuable, but I mean, even Australia where, again, there's quite a lot of interest in the case, the safety case, I see on page 32 of the same Exhibit 210, I believe, the -- I forget what that means now, but "the petroleum safety authority addresses its core regulatory responsibilities through monitoring and enforcement strategies that include the planned inspections, themed audits," which you talked about -

MS. TURNER:

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A. Um-hm.
HARRIS, Q.C.:
Q. - "assessments and acceptance of safety cases, safety management plans for diving and pipelines, investigation of incident or complaints and enforcement activities that include measures for prosecutions and ultimately withdrawal of safety case approvals."
MS. TURNER:
A. That's right.
HARRIS, Q.C.:
Q. So some of these things are kind of big hammers, like they'll take away your license, you can't produce oil or you can't fly your helicopters.
MS. TURNER:
A. Yes.
HARRIS, Q.C.:
Q. But that's, you know, not very often going to be used unless someone is totally negligent and reckless with respect to how they're handling their business, but enforcement for violations of regulations or violations of safety procedures seems to me to be still an

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important part of keeping behaviours operating in conformity with safety requirements. Would you agree with that?
MS. TURNER:
A. Yes, I'd agree with your comments around a few things. Firstly is the balanced approach, that it's not either/or. So you don't replace compliance with regulations with this process based thinking. It is a continuum and a shift of emphasis and I think that's predominantly because the scope of risk that any regulator in any industry has is quite broad. So the question comes down to is it the role of the regulator to identify the risks and hazard and then put regulations in place to control the risk or is it the role of the regulator to set the standard and audit against the standard and how does that take place.
Your reference to enforcement, you're right. There is a, I guess, a severe end of that continuum which is where the penalty, the enforcement, the legal penalties come into play. A regulator really has a number of roles. One is to -- and I'm speaking from a position of expertise in the aviation

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industry, is to set rules and regulations and to provide some level of confidence that there is compliance with those regulations.
Now in the aviation industry, most regulators that I've heard in a public forum have said our standards and our regulations are minimum. They're not the highest standard and they're not necessarily best practice. So from a society's tolerance perspective, they have been prescriptive in what the criteria is for some of the specifics, but certainly there is a push to encourage the aviation industry to go beyond compliance and not strive to meet the regulatory minimums or the regulations.
HARRIS, Q.C.:
Q. You mentioned Transport Canada. Recently, Transport Canada moved to what was called by its critic, self management of its safety and maintenance programs and in the face of criticism backed off of that and said no, no, we will continue to monitor that ourselves.
MS. TURNER:
A. Yeah.
HARRIS, Q.C.:
Q. We're not satisfied to leave that to the

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airline industry. So this debate is still going on. This only happened in the last six months.
MS. TURNER:
A. Yes.
HARRIS, Q.C.:
Q. I notice in your paper as well, on page 25, talking about the American experience, that the basis of MMS regulatory enforcement is through the self inspection program.
MS. TURNER:
A. Um-hm.
HARRIS, Q.C.:
Q. And they have a list of 27 criteria that you self inspect for. Someone said to me recently that, you know, self inspection is a great thing or self regulation is great. If you ask me how I'm doing, I'll probably tell you I'm doing pretty good.
MS. TURNER:
A. Fine, thanks, absolutely.
HARRIS, Q.C.:
Q. If I ask somebody else, they might have a different opinion about that. So you know, while I'm supporting your notion of the fact

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that there needs to be a culture of safety, and by the way, I mean, my experience in acting for unions in the offshore oil industry is every oil company will tell you -- they're all here and they'll tell you when they get up, that safety is number one priority, and we understand that, but you still have to have what are the nuts and bolts, what's the content of that, and you know, you can't replace a regulation by someone saying we have a culture of safety and we look after that ourselves. So I'm glad you're not saying we throw out the enforcement and the regulation, but that we add that this is an add on, that the safety culture, the safety management system, the safety cases is in fact forcing the industry to be proactive and come up with the ideas that they themselves say we don't want to be regulated because we have better ideas than being stuck with the regulations.

Would you also agree that, as you say, some regulators will say that the standards are unlimited, they should move up and keep up with the latest technology and the latest advances as well? That it shouldn't be just a

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floor that stays as a floor. That that floor actually moves with the times and are updated in accordance with the latest technology?

MS. TURNER:

A. Yeah, it's very fair to say that any regulator, unless the industry that they're regulating is stagnant and doesn't change, would be aiming to update regulations. Now the cycle for how that is done and the time lag, certainly in the aviation industry is quite large. For instance, changes in technology and the introduction of helicopter terrain avoidance warning systems, the technology is readily available. It is a fantastic risk reduction measure to help prevent controlled flight into terrain, but it's not necessarily mandated in the regulations.

Now one would see over time as the technology is more readily available, the accepted practise, there will be a drive from the regulator to make, I would assume, that what's seen as now beyond compliance, probably the baseline over time, and so there really is that shift.

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In my presentation, I emphasize this issue of safety assurance, and I can't stress this enough, and I'm not sure, you know, whether everybody's latched onto how safety assurance differs from just normal audit or inspection. Assurance is about providing confidence and there is a range or again a continuum of tools and processes and techniques as to how you can provide confidence that things are safe. For example, a self-inspection program sits on that continuum, but what is that designed to do. Is it designed to give assurance internally to the company that those list of 27 things are covered, or is it designed to give confidence to the regulator that they're compliant with regulations?

So with an assurance regime or an assurance program, you actually map the functional areas of the organization. You work out what level of assurance is required, and a simple rule is there's assurance level 1, 2, and 3. A level 1 is where you just give a statement of assurance, your word; ask me and I'll tell you that I'm good. The second

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one is having that statement of assurance with some evidence that can be checked by whoever is checking, and assurance level 3 is saying, thanks very much, but I'm going to check this myself, and so -- whether or not that's a third party 100 percent compliance-based audit.

So with this move to have a structured approach around safety assurance, there is a recognition that it's not just one tool or one thing that is going to provide protection or provide 100 percent confidence. There's going to be this continuum, and certainly where this self-administration, self-regulation, or safety management systems fit, they all have a role in there somewhere, but it's important to get the balance.

HARRIS, Q.C.:

Q. How does a regulator assess a safety management system or a safety case? They obviously have to do it against some set of criteria.

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

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Q. And some of the issues that the Commissioner is dealing with, and whether we have forward operating radar -

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. And a search and rescue helicopter, these are all -- all these come at a cost, and it's a cost that obviously is going to be borne not by the regulator, or the taxpayer, but by the industry itself.

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. And so what criteria does the regulator use as to whether to approve or not approve a safety management system? Isn't it better to have a set of, okay, these are - this technology is available, we want you to use it, and not that we don't care about the cost, but we know that it's important enough to have, so we want to have it.

MS. TURNER:

A. Uh-hm.

HARRIS, Q.C.:

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Q. So does it not put the regulator at a bit of a disadvantage having to compare apples and oranges, or make evaluations based on whatever argument is being given at another particular time? At the end of the day, do they still not have to have a series of criteria by which to evaluate the safety case?

MS. TURNER:

A. Um.

HARRIS, Q.C.:

Q. I mean, maybe obviously there could be add-ons that the industry comes up with on their own that the regulator might not have thought of, as you say. They can't think of every situation.

MS. TURNER:

A. Yes.

HARRIS, Q.C.:

Q. But it seems to me there has to be still a very robust set of regulations that ensures that the - not just the basic safety regime, but whatever is reasonably available is put into place.

MS. TURNER:

A. There's a couple of - couple of components to

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answer that question. You asked the question, how do you evaluate a safety management system. You also asked what's the criteria for that evaluation in relation to the detail, and one of the things I wanted to thread in, I mentioned this in my synopsis around paper #2 with that comparison of the regulatory regimes, that there is a move to risk-based approach. The types of things that you're raising really are the reason why risk management is being introduced into the mix. Why; because somebody needs to identify, measure, and make a determination of what level of risk is acceptable, and whether that's the regulator in a case where that prescriptive approach will be taken and you would mandate a rule or regulation for a piece of equipment, or whether it's the operator, and when I say "operator", I'm not referring to an oil operator as such, I'm referring to an aviation operator, it's the same terminology used in two different industries, whether the operator identifies the risk, quantifies, and then determines what level of risk they're willing to accept.

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So the risk management piece needs to be thrown into the mix with this conversation and with the debate. In terms of how you evaluate a safety management system, there is criteria. I'll give you a great example. In terms of measuring a safety management system, a prescriptive approach, when you look at the elements of a safety management system, one is around safety communication. Another element is around safety accountabilities, etc.

The old way of having a safety program, and when I say "old", prior to the introduction of safety management system, there was a notion of prescription that every aviation organization had to have a safety manager and a safety committee, and so there was rules in place or guidance in place to basically say you don't have a great safety program unless you have a safety committee. A safety management system would define that you need to work out who has what levels of accountability and responsibility. If the way that you choose to do that is through a safety committee, then that's what evidence you provide to show that you're actually meeting

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the elements of the safety management system. The trick is when you have a workforce that has a culture of compliance based, they're looking to the list to say that you must have a safety committee, you must have a safety manual, you must have a policy statement on the wall signed by the CEO. Now they're all good pieces of evidence to demonstrate that you might have a safety management system, but you can get a bit confused if somebody has the mindset from that compliance checklist based approach. When they're asked to go out and evaluate as opposed to check or just audit whether or not the accountabilities that this company has defined are appropriate, whether or not they're going to get the right level of attention with the safety matters, and so there really is that shift.

A good example of this is with Transport Canada's introduction of the safety management system some time ago, and this would be going back to your debate, the jury is still out and there's still a lot of dialogue, in an attempt to - and this is my personal opinion in looking at SMS and how to implement. It's

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quite a difficult process because the aviation industry, the demographics and the culture of the people that you want to be pilots, engineers, and the technical people, actually are quite compliance-based on their approach. They start, taxi, take off, they fly, they land, they come back. When you give options of it's up to you as to how to do it, it goes against the grain as to the environment and the behaviours that are traditionally set up. So when SMS was introduced by civil aviation in Canada, their work was really recognized as some of the leading work around the world, and you talk with any regulator and certainly Transport Canada's material really does stack up and is excellent work.

When you translate that into practise, Transport Canada provided very comprehensive guidance material to the industry. Each element of the SMS, it listed criteria, listed examples of evidence. There was a general move in the aviation industry for them to take that guidance material and have the mentality that this is the regulator's prescription, I have to have 1.1.1, 1.1.2, 1.1.3 because of

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the cultural aspects. So this is why culture is so important when you implement these different systems. It needs to be taken into account or things can, I guess, lose the balance or sometimes the intent of how it was designed to deliver on the outcome that we talked about before.

HARRIS, Q.C.:

Q. I submit that it didn't work in that particular case, and I guess what I worry about is that these things take time.

MS. TURNER:

A. Yeah.

HARRIS, Q.C.:

Q. You know, this talk about culture and safety culture, what happens in the meantime while people are developing this new culture or this new idea; someone has got to be minding the shop and making sure that safety regulations or safety interests are being followed.

MS. TURNER:

A. Uh-hm.

HARRIS, Q.C.:

Q. I take it you wouldn't be happy with a regime that just suggested we have the safety

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management system and we have no regulations and no enforcement and this stuff, operating under guidelines, you wouldn't be happy with that, would you?

MS. TURNER:

A. Absolutely not, and I don't think there's been any assertion that a safety management system would play that role because a safety management system, one of the key differences between a safety program and a safety management system is the risk management component, and I think a lot of people forget that. A very simple way to describe a safety management system is you have the reactive component, which is about incident and accident investigation and data and what you do with that, you have the proactive component which is all about identifying, assessing, and managing risks, things that could happen, and then you encase it within a framework of accountability, so the reactive and proactive information moves to the right level of the organization, gets the attention, gets the appropriate assessment, gets the appropriate action and resourcing for that, so a lot of

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people forget the proactive risk management piece and the role that that plays.

Now an interesting thing to note, if you look at the ISO standards committee for risk management, the International Standards Organization, they've published last year an international standard on risk management. It is not a compliance based standard. You can't get certification against ISO 31000, unlike ISO 19000 quality systems and environmental management systems and things where you can get certification and there's a little bit more prescription. The risk management standards is a process and the Chairman of that standards committee, Kevin Knight, will tell you it's not a compliance based standard. So again, I guess, it gives you a feel for the philosophy. It really is a passive maturity. It certainly isn't switch off one regime, turn on the other.

So the way that Norway has kind of shifted their approach over, you know, quite a lengthy period going back into the 80s, is quite appropriate and even the move into the 2011 regulations are yet another shift along

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that continuum. So it really is a journey, and not one or the other.

HARRIS, Q.C.:

Q. Thank you. That's been quite helpful.

MS. TURNER:

A. Thanks.

COMMISSIONER:

Q. Thank you, Mr. Harris. Mr. Earle?

EARLE, Q.C.:

Q. No questions today, Mr. Commissioner.

COMMISSIONER:

Q. Thank you. Counsel for the families, Mr. Martin.

MR. MARTIN:

Q. I have no questions, Commissioner.

COMMISSIONER:

Q. Thank you. Counsel for the pilot's estates, Ms. O'Brien.

MS. KIMBERLEY TURNER - EXAMINATION BY MS. KATE O'BRIEN:

MS. O'BRIEN:

Q. Good afternoon, Ms. Turner. If you'll just give me a moment here to get organized. The first questions I have have to do with the survey that was done.

MS. TURNER:

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A. Uh-hm.

MS. O'BRIEN:

Q. And I wanted to find out were the flight crew included as participants in the survey? We're talking about Cougar employees now, pilots and co-pilots.

MS. TURNER:

A. Sure. The intent of the survey was predominantly for the passengers as it was a passenger survey, and so the distribution was really designed for the people checking in. However, you can see on page 15, Question 3, we did have two pilots or aircrew that actually filled in a survey, and I take it that they were either in transit or out at the heliport and opted to do the survey. I'm very much of the opinion if you were to run the same survey of the Cougar staff, you would get different results because of their safety regime, their safety system, and the practises there within the organization.

MS. O'BRIEN:

Q. So that part answers my question, but leads to some more, because when you say that the survey was in part designed to -- your basis

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was to look at the list of issues that the Commissioner developed.

MS. TURNER:

A. Uh-hm.

MS. O'BRIEN:

Q. And sort of designed the survey around those issues.

MS. TURNER:

A. Yes.

MS. O'BRIEN:

Q. So there's a number of those issues that really address flight crew issues.

MS. TURNER:

A. Yes.

MS. O'BRIEN:

Q. So why was the decision made not to more specifically target Cougar employees in the survey?

MS. TURNER:

A. Our brief was to really target the offshore oil workers and that workforce that hadn't necessarily - well, it's a very big group and hadn't necessarily provided evidence outside the handful of representatives. I agree with your, I guess, implied intent that there would

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be great value in surveying the pilots and the operational staff and the administrative staff at Cougar, and I wouldn't be surprised if Cougar actually undertakes regular safety culture surveys because that is a normal part of a safety management regime that we've been discussing.

MS. O'BRIEN:

Q. Okay. In terms of the response that we did get from aircrew, we have two aircrew that responded here, do you have any idea what percentage of Cougar's aircrew workforce that is? In other words, do you know how many pilots, co-pilots, are employed by Cougar to work in the Newfoundland and Labrador offshore?

MS. TURNER:

A. I can't answer that question, but two people certainly isn't a good cross-section. So I wouldn't rely on that as a sound and balanced representation.

MS. O'BRIEN:

Q. All right. The next question I wanted to ask a bit about has to do with when you did your review here this morning of the regulatory

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regimes, at the end Ms. Fagan asked you to kind of go through some conclusions, trends that you saw.

MS. TURNER:

A. Yes.

MS. O'BRIEN:

Q. And the one I was in particular interested in was the interaction between the aviation companies, the air operators, the Cougars of the world - sorry, and the interaction between them, so the aviation regulators like Transport Canada, with the oil operators.

MS. TURNER:

A. Yes.

MS. O'BRIEN:

Q. So can you give us a little bit more information about what's going on in the other regimes between those two regulatory bodies?

MS. TURNER:

A. Yeah, sure. I think we'd all be in agreement that one of the good principles of having a great safety regime is communication, and you certainly can't establish a safety regime in isolation of your key stakeholders, and I think like other industries I've referred to

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where you've got two very big industries, the oil industry and the aviation industry, they both have their own regimes and there really is a need and it's a healthy approach to try and get an integration or at least some type of connectivity of communications, issue identification, resolution, accountabilities, etc, in that. It's a shame - I was going to actually include a slide in my presentation, but it's not necessarily written up in the material, where when you have these two separate industries that come under their own regulatory regimes, they have their own safety standards, cultures, practises, etc, you need something to actually connect them. Whether or not that's a forum, whether that's an integrated safety management system, whether or not it's a liaison body, there really needs to be some thought put into how you connect these two different regimes at all different levels.

Now in the report, I think two out of the six countries actually had a formal memorandum of understanding between the aviation regulator and the oil regulator, which is very

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much at that high level regulatory regime all the way down into, you know, pilots talking with workers, pilots unions talking with worker unions, you know, and that representation at every level. So again there's great merit in mapping that to try and get a complete and balanced approach to the whole thing because aviation safety, you can't have the safety of half a helicopter, you can't have a safety program for those in the back and a safety program for those in the front. They actually need to talk and they need to connect. Unless you get either self-empowered agreement with the bodies coming together and just doing it because it's a good thing, or regulatory agreement through some MOU to say we're going to mandate that this combination of aviation and petroleum needs to have an integrated approach to safety.

There needs to be some definition, be that voluntary or regulatory, to try and, you know, encourage that type of connectivity. My advice and what I've seen well is where it actually just happens by the stakeholders because it's a good thing. Going back to the

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discussion that we were just having with Mr. Harris about prescriptive versus performance based, the outcome that we want is the safety of the whole helicopter and integrated cultures and practises, and, you know, all of that side of things, that's your outcome that you want. How you achieve that; sure, you can mandate it in regulation, but chances are if you did that, there'd be a compliance based mentality of we have to do this. So you don't necessarily get the value out of - the full value out of things first up.

MS. O'BRIEN:

Q. Okay. So you're saying in other jurisdictions you're seeing a formal MOU between the oil operator regulator - the oil regulation, and the aviation regulations. What did you see in Nova Scotia?

MS. TURNER:

A. We didn't necessarily uncover anything in our research that demonstrated that. That's not to say that it's not in place, and it would be worth finding out.

MS. O'BRIEN:

Q. Okay. So do you have any idea what's going on

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in Newfoundland and Labrador between C-NLOPB and Transport Canada in terms of how those two bodies are communicating?

MS. TURNER:

A. Yeah, not any formal knowledge of activities, but, you know, I do meet regularly with the aviation community and a couple of weeks ago I met with the DG, the Director General of Civil Aviation, and it wasn't a topic of discussion in terms of a defined activity, yet there is a very strong philosophy from the current leadership within Transport Canada to get levels of connectivity, both in this sector and in others, and there's a great level of interest as to how that can take place.

MS. O'BRIEN:

Q. Okay. It's certainly something, from my perspective, having watched - you know, during this Inquiry, heard all the evidence unfold, something that strikes me as maybe missing for us. You talked a bit about how some of the oil regulators are even engaging their own aviation experts, whether they have it in-house or whether they're contracting out with consultants.

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MS. TURNER:

A. Yes.

MS. O'BRIEN:

Q. Do you know what's going on in Nova Scotia in particular with that?

MS. TURNER:

A. No, I don't have a great visibility of the level of aviation expertise within those 35 staff or contracted, but I do know that in the industry sectors that I've worked in that aren't primarily aviation, so other industry, and it's very interesting in our company's history, we've been going for nearly 14 years, about 40 percent of our work is outside the aviation industry. That's generally come from these industries that engage with aviation, but aren't necessarily aviators, that want advice or some level of connectivity, and there generally needs to be some trigger to motivate that inquiry to a specialty degree in that. Sometimes it's just through self-inquiry, sometimes it's through the risk - the enterprise risk management approach. The case of Integral Energy that I wrote up as a case study or we compiled in our report, it was

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interesting when they recognized when they didn't have the aviation expertise, it was actually through their enterprise risk assessment or their corporate risk profile the aviation risk associated with their contracting with #4 on their corporate risk list. We've seen accidents, you know, with mining executives travelling out, contracting aviation assets, and aircraft crashing and taking out the whole Board of Directors, and a case just happened in Africa a couple of weeks ago, and so those type of aviation risks are not unusual to be on the corporate risk profile of these other industry sectors. So there's many, many trigger points as to where this can take place, but I think at the end of the day it doesn't matter how you get it, but if you have a responsibility for oversight of the specialty area, you do need some level of specialty advice, knowledge, or expertise.

MS. O'BRIEN:

Q. Okay. So one of the things that I think this Commission has been dealing with in terms of when they have been defining the issues list and what, in particular, the Commissioner

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feels he is empowered to do here, one of the issues that's coming up is this is obviously an Inquiry that's been called by the C-NLOPB and where what - once you get into areas that are under the auspices of Transport Canada, which this is an Inquiry about helicopter safety -

MS. TURNER:

A. Yes.

MS. O'BRIEN:

Q. And, of course, helicopters are under the jurisdiction of Transport Canada. You know, how far this regulator can go when you're going to butt up against Transport Canada, and one of the issues that has been discussed is whether the C-NLOPB would have the ability to put in requirements, whether it be, you know, sort of checklist based requirements or a more prescriptive approach that really go above and beyond requirements that are already there by Transport Canada. So to bring that to a more specific example, say, for flight crew survival suits or safety equipment -

MS. TURNER:

A. Uh-hm.

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MS. O'BRIEN:

Q. So can you tell us when you've looked at these other regulatory regimes, other parts of the world where they're clearly doing a little bit more communication, I would say, than we are here in Canada, certainly in this jurisdiction in Canada between the aviation regulator and the oil regulator, are you seeing that kind of approach where they're actually - you know, the oil regulators are actually going in there and putting in additional requirements over what the aviation regulator is?

MS. TURNER:

A. Yeah, sure. There's two parts to my answer. The answer is "yes", we are seeing that, and not just in the jurisdiction studied here, it's a move in many industries. If you look at the mining industry here in Canada and the standards for aviation that are set, they do exceed Transport Canada's requirements. They're the customer. They contract aviation service, they can set standards and decide to contract or not contract, you know, based on those.

In terms of how you achieve that, whether

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you just write it into your rules and expect for it to happen, I think there's a degree of stakeholder understanding that needs to take place. There's a degree of relationships that need to be created if they don't already exist, and there's definitely a need for communication and interaction, and you can see that in the types of working groups or committees or forums that some of these other jurisdictions have actually set up, so that they have an environment in which to bring these issues to the table and get that resolution. So to answer your question, it really is based on that relationship, stakeholder understanding and interaction. Whether you prescribe that and write it into your rules and have that actually physically implemented is an area for consideration, and there's nothing stopping any customer of an aviation service setting standards that are beyond compliance. I think where you would actually butt heads is if the customer had a lower expectation and weren't willing to pay for the air operating certificate holder to meet their obligations and whether it was cost

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effective. Now that's a different discussion.

MS. O'BRIEN:

Q. And that's really not what I'm talking about here. Okay. All right, thank you very much for those comments. I'll just finish by saying, you know, one of the - there seemed to me at times a disconnect here between who we consider the - who are the offshore workers in this province, and the focus really seems to be on the people who are working for the oil companies and the people who are providing direct services to the oil companies, very distinct from the people who are working with Cougar.

MS. TURNER:

A. Um.

MS. O'BRIEN:

Q. And that distinction, again I think we see that in how this survey was developed, that it really didn't get to finding out the views of the aircrew who are working day in and day out in the offshore here. I don't know if you have any further comment on that point. I'll certainly hear it if you do.

MS. TURNER:

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A. Yeah, and that is a fair comment, and as I mentioned before, I think that body of work would be very, very quick and simple to do. I mean, this survey itself took 10 to 15 minutes, and as you implied, it's not a large workforce out there at the heliport, and certainly that survey is there and available and I'd welcome the opportunity to include the group of Cougar employees into that rota or aspect. It might actually show some interesting results to draw the comparisons.

MS. O'BRIEN:

Q. Thank you very much. Those are all my questions, Commissioner.

COMMISSIONER:

Q. Before you go, Ms. O'Brien, the point you are raising about the pilots and the people who work for Cougar is a very interesting one. The focus really of the Inquiry so far has really been on other areas, there is no question about that, particularly, of course, on the people whom you mentioned who work for the oil companies offshore, and the survey and the terms of reference of the survey were really designed to get the opinions of those

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who travel offshore; in other words, passengers. You make the point, and it's a good point, about the employees of Cougar, whether they be pilots or whomsoever, and having heard that point and some of the points made by Mr. Harris, I will certainly undertake to have a good look at the terms of reference and the issues because we're not talking about a huge group, and it would be quite easy for us if I feel after taking advice that it's proper to do so, it would be fairly simple, I think, to get the views of Cougar employees. So I'll just leave that with you, and I will go into that.

MS. O'BRIEN:

Q. Thank you very much, Commissioner.

COMMISSIONER:

Q. Now, Ms. Strickland, having heard the evidence, have you any questions at this stage?

MS. STRICKLAND:

Q. No, nothing arising.

COMMISSIONER:

Q. Thank you, and the same would apply to other members of the - all right, thank you, Ms. Crosbie, C-NLOPB.

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MS. KIMBERLEY TURNER - EXAMINATION BY MS. AMY CROSBIE:

MS. CROSBIE:

Q. Good afternoon, Ms. Turner. I'm Amy Crosbie, and I represent the Newfoundland and Labrador - Canada Newfoundland and Labrador Offshore petroleum Board, and I only have a few questions, a lot of the stuff has been canvassed. You had mentioned there were several themes in your comparison of the regulatory regimes, and I think you identified three of them as the separation of safety from other aspects of the regulator, the shift to performance-based regulation, and risk-based approach.

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. Were they the three that -

MS. TURNER:

A. There were a couple of others, but they were certainly the three that I covered. Would you like me to recap on some of the others?

MS. CROSBIE:

Q. If there were others, yes.

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MS. TURNER:

A. Sure. You're correct with those first three. The fourth one which was brought up by Ms. O'Brien was the interaction with the aviation community and with the range of stakeholders. The fifth one was safety assurance and some of the innovative practises for that continuum from audit inspection all the way through to the enforcement regime to achieve improved safety culture, and the last one was adopting a consultative approach, which really does go hand in hand with the interaction with the aviation community, but adopting a consultative approach is actually a philosophical way in which you would undertake your work. So they were the key themes that came out, and then there was just a couple of highlights of specific practise.

MS. CROSBIE:

Q. And I just have a couple of questions that covers off on those themes.

MS. TURNER:

A. Sure.

MS. CROSBIE:

Q. With the consultative approach, which kind of

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goes with the interaction with the aviation community, you had talked about in the United States the helicopter group that you have some involvement in.

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. I was just wondering if the oil operators in the United States were part of that group, or was that really just aviation?

MS. TURNER:

A. Yeah, the oil operators are represented in that group, but I must say it's heavily - not stacked, because it's actually a voluntary committee, and there's other people that sit on and have formal roles to administer the committee. It really does have a very large aviation operator presence, but it does have that interaction with the other players.

MS. CROSBIE:

Q. And I think when you were talking about Australia, and I may have gotten this wrong, but I think you said they are just emerging and they have yet to put together that sort of forum?

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MS. TURNER:

A. Yeah. I think it's based on a number of things. Number one is the size. It's a small industry at the moment. Number two is the size of the country. The oil fields are spread on, you know, east, west, north and south, and the helicopter community in Australia is actually - although it's about 3 or 4 percent of the global helicopters, it's actually quite a small part of the aviation industry that don't get together that regularly. When they do get together, it's not necessarily in sub industry sectors like the air medical or the law enforcement or the offshore, as you'll see in the States, purely based on the size. It's the whole helicopter community get together and talk about topics, and then there's sub kind of discussion that take place, but there's certainly not that same level of forum or structure in Australia that I'm aware of.

MS. CROSBIE:

Q. And if you were going to compare it to the Newfoundland jurisdiction, we would be significantly smaller here?

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MS. TURNER:

A. Yeah, and I think there is - one key difference is you don't necessarily have a number of helicopter operators, you have one, and so where there is a number of operators all servicing the same industry, obviously there's a need for those stakeholders groups to talk. Where you've got one helicopter operator, it's almost the reverse. You've got one helicopter operator and multiple oil companies, as opposed to maybe one or two oil companies with multiple helicopter providers. So it really just is the inverse, and is worthy of looking at what's practical, what's realistic, and one of the greatest benefits of that interaction is just to get the sharing of practise, knowledge, and standards, and it's amazing that peer review where people really do benchmark themself and say, oh, they're doing that over there; oh, we haven't quite got onto that yet, we'll have a look at that, and everyone has got their own emerging practise as to what they focus on and what they're good at. And so to have some type of forum here in this industry, whether or not

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it's with yourselves or whether it's with, you know, other like-minded organizations around the world, the aim is really just to get out there and share practice so that you know what's going on.

MS. CROSBIE:

Q. And so it would be very similar to, you know, my client and their interaction with other regulators.

MS. TURNER:

A. Absolutely.

MS. CROSBIE:

Q. A very close relationship with some of these regulators that you have canvassed.

MS. TURNER:

A. Definitely.

MS. CROSBIE:

Q. So they can draw on their knowledge, as opposed to have their own format?

MS. TURNER:

A. Definitely and the question is whether or not those relationships and how you draw on that expertise is informal or formal. You know, any professional in their job that's interested in doing more than just going to

Page 217

work and getting paid will connect those networks and will draw on the information. So that's, I guess, the informal buddy network. Whether or not there's been a formal forum and whether that's needed to facilitate that dialogue and discussion, needs to be sorted through.

MS. CROSBIE:

Q. And with respect to the interaction specifically with the aviation community in Canada, we'd be talking about Transport Canada -

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. You did just indicate that you didn't ask the Nova Scotia Board whether they had a formula or not, you just didn't find one in your research.

MS. TURNER:

A. Yeah, as I mentioned our research was really table top analysis, what was available and so there was nothing that was obvious, but that's not to say that we, you know, haven't missed it if it is underway.

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MS. CROSBIE:

Q. Or and again you also said that it doesn't have to be formal, an informal communication would serve the same purpose?

MS. TURNER:

A. It would serve the purpose of sharing information, benchmarking, if, like for instance if you're referring to a MOU, the beauty of a MOU is really to make clear the lines of regulatory accountability to the industry of where does the jurisdiction start and end. And this is actually the case in many countries around the world with occupational health and safety. Does OHS come under the jurisdiction of the aviation regulator or the workplace OHS agency? And where does the workplace start and end and, like for instance manual handling as such and who actually has jurisdiction over manual handling of patients being loaded on trollies into the back of a helicopter. Is it the OHS regulator or is it the aviation regulator that actually certifies the patient trolley where the person, you know, gets put in, so it's really important, I think, where there are

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either a lack of clarity to the general mass as to who does what or whether or not there's things where there is this handover point to actually have some type of accountability matrix so people know who does what.

MS. CROSBIE:

Q. I take it that's what you, on page 55 of your paper, I'm assuming that when you state collaboration between the C-NLOPB and Transport Canada in order to provide guidelines or legislation would enable the offshore helicopter operators to improve and validate their existing regimes. And I assume that's what you mean?

MS. TURNER:

A. Yeah.

MS. CROSBIE:

Q. The other issue that you had covered as one of the themes was the shift to performance based regulations.

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. And I just want to confirm that when you were doing this paper, you weren't actually

Page 220

comparing the regimes to pick one over the other or, you know, you were just simply laying out what each is doing?

MS. TURNER:

A. That's right, that's right.

MS. CROSBIE:

Q. And on page 51 of your paper, Section 7.4, Exhibit 210.

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. Page 51. And Ms. Fagan actually drew you to this in your direct this morning. You were referring to the drilling and petroleum regulations.

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. They are the new regulations that Nova Scotia Board, the Newfoundland Board and the National Energy Board -

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. And you would agree that they have shifted to

Page 221

a performance based regulatory regime in these new draft regulations?

MS. TURNER:

A. Yeah, that's a message that came out in the research that there was an intent to shift. Obviously here running regulations is a long process and how you then implement that is another thing, but certainly that intent was consistent with where other jurisdictions have gone or are going.

MS. CROSBIE:

Q. And I think as you pointed out, Norway, they've done it over several years.

MS. TURNER:

A. Yeah.

MS. CROSBIE:

Q. It's a process as opposed to mark one off and turn the other way?

MS. TURNER:

A. Yeah, absolutely and I think one of the things that's evident in all of the research, with all of the jurisdiction, is there's an intent to go that way. I think there's a vast difference in the level of understanding of what performance based regulation is and

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there's a lot of work that has to be done to then translate the philosophy and the concept firstly into regulations and secondly into practice where your organizational structure follows suit, the workforce capability planning and the skillsets, you're employing people that actually have that evaluation process based approach as opposed to industry only base knowledge, so there's a lot that goes with it and as you say, it's not a simple, switch one, pick another. It's not an alternate or it's a grade of a continuum.

MS. CROSBIE:

Q. And in this first bit here you were talking about support craft and you drawing attention, I think to it because that's where helicopters would be referenced, it's considered support craft. And I just wanted to confirm with you that this is an example of a more goal oriented approach in that the regulations state that the operator shall ensure that it's a safe operation of a support craft, a sort of a very board statement and so it's up to the operator to add that little check list as to how they're going to ensure it's safe.

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MS. CROSBIE:

Q. Yeah, and absolutely, that's the type of themed approach, the supporting material that goes with that or how that is checked under your assurance regime is probably where the detail comes into play and whether those procedures match the intent of the regulation is where alignment needs to take place.

MS. CROSBIE:

Q. And that would be in, what we've been referring to as safety case, which in our jurisdiction has got a safety plan -

MS. TURNER:

A. Yes, that's right.

MS. CROSBIE:

Q. Or the same thing, you would likely see that then flow through the safety plan.

MS. TURNER:

A. Yeah.

MS. CROSBIE:

Q. Okay.

MS. TURNER:

A. There's a lot of--just on that point, there's a lot of education that needs to take place for those that write regulation, those that

Page 224

have the responsibility for conduction the inspections, those that have the responsibility for developing the procedures that are given to the inspectors and I think that is a key area that is often overlooked, who writes the methodology that's given to the inspectors. Often there's a disconnect with the writers of the regulation and the philosophical view from the top and the practical tools of how that works, and in those regimes that haven't quite connected, the philosophy and the practice, generally when you look at the cause and factors as to why, you can pinpoint that, that the tools are compliance based, but the regs are this process based approach.

MS. CROSBIE:

Q. When you did your review of the Nova Scotia Board, I just wanted to clarify one thing at page 46. 7.1 is the overview.

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. You've indicated in 7.1 that the Nova Scotia Board is responsible for ensuring the offshore

Page 225

operations are conducted safely and in a manner which promotes the environment and the Board also has the responsibility for managing offshore resources, issuing licenses for offshore exploration and development and collecting and distributing resource data. And that's just your overview of what the Nova Scotia Board does.

MS. TURNER:

A. Yeah, based on the research and publicly available information.

MS. CROSBIE:

Q. Right, and we all know that the Nova Scotia Board and the Newfoundland Board are -

MS. TURNER:

A. Fairly close.

MS. CROSBIE:

Q. Fairly close. I just wanted to ask you about, there's just one sentence in Section 7.5 that I just wanted to clarify.

MS. TURNER:

A. Sure.

MS. CROSBIE:

Q. In the first paragraph, the last line, you're talking about -

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MS. TURNER:

A. This is on page 52?

MS. CROSBIE:

Q. Page 52, yes.

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. The sentence reads, "It would also provide some separation of the potentially conflicting priorities of ensuring the safety and health of the offshore workers, while simultaneously promoting continued offshore development." And I'm just a bit concerned about your use of the word "promoting". That implies that the Nova Scotia Board, because that's who we're talking about here -

MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. Is promoting offshore development, as opposed to in your overview, you, I think, accurately say they manage the offshore resource and there is a difference between managing and promoting -

MS. TURNER:

Page 227

A. Yes.

MS. CROSBIE:

Q. And I'm just wondering if by saying the word "promoting" you actually meant it in the sense of promoting?

MS. TURNER:

A. That would be fair.

MS. CROSBIE:

Q. Okay, so it is that you did actually mean managing the offshore.

MS. TURNER:

A. Yes, that would be fair and as you mentioned, you know, you're closer to this regulator than we are and certainly that would be a fair assumption.

MS. CROSBIE:

Q. And the last little bit I want to touch on is the idea of the separate safety organization because that obviously, in some regimes they have shifted towards that.

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. And you have made some comments with respect to the Nova Scotia Board on that.

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MS. TURNER:

A. Uh-hm.

MS. CROSBIE:

Q. On Page 55 and this is your overview section, your conclusion section.

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. The second paragraph you indicate, "The Norwegian Petiolate Safety Authority has benefited significantly from the separation of safety and licensing bodies." My only question there would be did you do any sort of review of that--of their regime prior to the separation? Because you do make the comment that they benefited from the separation, but the paper doesn't give us any indication of what that benefit might have been, if there was one.

MS. TURNER:

A. Yeah. One of the key benefits or changes and it's really a key change that we picked up in our research which I believe is a benefit, is this increased focus on safety, the increased transparency, the public nature of the work as

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opposed to it being restricted and that really has matched the shift in the bolstering up of the safety agency and it might be a discussion worthy of talking through with those that have visited Norway.

MS. CROSBIE:

Q. And in some of that, I think you had also indicated in Australia by simply adding the word safety to that organization, it gave it more transparency, so in some respect is that sort of a perception as an added assurance, I guess, to -

MS. TURNER:

A. Yeah, one of the other areas that you can look at and I won't go into it in my response, but we did include the organizational charts on purpose for each of these organizations and so you can draw your, I guess, conclusions from the safety setup and infrastructure and size and even the titles and the scope and who reports to who, there's a lot that goes into that safety infrastructure. It's not just the numbers of people, it's the regulatory regime which we have talked about at length, it's the approach to that regime, but it's also the

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structure of where people sit, where they report, how that takes place and also all the way through to the scope of their surveillance or their assurance or audit regime that takes place. And if you look at the organizational chart of Australia, I think you will find it's quite heavily weighted in those roles, where some of the others may not necessarily have such an emphasis.

MS. CROSBIE:

Q. In the next paragraph you actually say specifically with respect to the Nova Scotia Board what is evident is the need to introduce a clearer separation of the safety and licensing roles of the Board. From my point it is not so evident, my point of view it's not so evident and so I'm just wondering why you--what made you make the statement that it is evident that you need a clearer distinction.

MS. TURNER:

A. Yeah, sure, and I think it probably goes hand in hand with the sentence just prior to the one that you've read out, is the regulatory regime in Nova Scotia is under reform, so at

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this point, it is difficult to draw any particular valuable conclusions and so the level of depth that we were able to get to with a table-top review certainly wasn't commensurate with the level of depth we were able to achieve in the UK, the US or Australia.

MS. CROSBIE:

Q. And the reform that you're talking about is the new prescriptive regulations.

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. But as well the occupational health and safety -

MS. TURNER:

A. Correct.

MS. CROSBIE:

Q. Okay.

MS. TURNER:

A. And the whole regime.

MS. CROSBIE:

Q. Am I fair in saying that it's not necessarily the structure needs to be reformed, it's just that right now some of the working papers are

Page 232

being reformed and so you're not sure how it's all going to land.

MS. TURNER:

A. Well that's right and when you've got draft regulations that haven't quite been, you know, approved or they're still in the consultative phase, I think it's too far to jump to exactly how they're going to be implemented and as you imply whether or not that would warrant a change in the organizational structure or size, et cetera.

MS. CROSBIE:

Q. Because I think the top of the next page, 56, you indicate what has been demonstrated in several examples is the benefit of having a separate body or division that is responsible for promoting and enforcing safety.

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. Certainly from my client's standpoint we believe we have a separate safety division and so can I take it from that particular sentence that it does not actually have to be a separate agency, a separate entity, you would

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just want to see a good organizational chart that shows you that it is a separate division.

MS. TURNER:

A. Yeah, it comes through to some of those traits that I was talking about before is whether or not the structure is appropriate to give that emphasis on safety, whether the composition of the staffing model actually puts the emphasis, you know, in the area that matches the regulatory approach. The other thing is the reporting of where does the safety function report, does it have access right at the top level or is there a competing, because of the level within the organization or the access to reporting, that maybe sometimes the safety information can get lost and as I mentioned right up front when Ms. Fagan outlined the limitations is we didn't do an equivalent table-top review on the C-NLOPB and certainly this type of work might be valuable and this is the one paper that I would have loved to have gone into more depth because you can just imagine how valuable the comparative charts would be, you know, of number of aircraft, number of regimes, who does what, the safety

Page 234

structures, even just getting into this separation of safety and whether they have independence. Now how that independence can be created, whether it's in the same organizational chart or a separate agency, I think that's, you know, up for grabs and really needs to be looked at for the context of the province or the nation or the structure and the industry itself, but certainly some of its key traits and characteristics, reporting independence, the composition of structure, the role and all the way through to some of those things I was talking about in terms of the practical tools that are given to the people that are out there doing the checking function.

MS. CROSBIE:

Q. And when you did your review of the Nova Scotia Board, you did include the chart, but did you look at the reporting structure for the safety officer in that regime?

MS. TURNER:

A. Not in a lot of detail.

MS. CROSBIE:

Q. Certainly my client has already given evidence

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with respect to that, so -

MS. TURNER:

A. Yes.

MS. CROSBIE:

Q. Those are all of the questions I have, thank you.

COMMISSIONER:

Q. One thing that occurs to me, Ms. Turner, that we've not mentioned New Zealand and if I remember correctly, New Zealand has five installations which would be something comparable to the size of our offshore. Are you able to tell us what the New Zealand structure is or if you can't, and I can understand that, you can find out for us and I would share with -

MS. TURNER:

A. Yes, sure. Commissioner, we didn't include that in the scope of research purely just because of time and there's probably a couple of others, as Mr. Pritchard mentioned that may be worthy of looking at and I'd be happy to explore that further.

COMMISSIONER:

Q. All right, yes, I certainly would like to

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hear, New Zealand is so comparable in size it might be interesting to know. So if you wouldn't mind doing that and letting -

MS. TURNER:

A. Sure.

COMMISSIONER:

Q. And ladies and gentleman, as soon as I hear, you will hear from me. All right then, anything arising Ms. Fagan that you would like to wrap up with or ask?

MS. FAGAN:

Q. Not from the inquiry counsel's perspective, but to thank Ms. Turner, it's quite a bit of work and I believe very valuable even with the limitations that she'd like to research further, but at some point we have to move on with getting the report done. So that's it for this examination. We're supposed to take our break at 3:30, however it's 3:15, so if it's convenient, we can break now -

COMMISSIONER:

Q. I think so, I think Mr. Roil indicated to me that you'd like a little break of ten or--well fifteen minutes say to get Ms.--so that Dr. ..... could become ready. Well Ms. Turner,

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thank you very much.
MS. TURNER:
A. Thank you, Commissioner.
COMMISSIONER:
Q. Not only for this report but all of the work you've done and the guidance on aviation matters or the last year, it's appreciated.
MS. TURNER:
A. Thank you.
COMMISSIONER:
Q. Thank you, we'll take fifteen minutes.
(RECESS)
COMMISSIONER:
Q. Okay, Mr. Roil.
ROIL, Q.C.:
Q. Thank you, Commissioner. I don't need to introduce to you Dr. Coleshaw, but to those of you in the room and to those that are watching by one of the media, I would have great pleasure to introduce Dr. Susan R.K. Coleshaw who is from Aboyne, Aberdeenshire, Scotland. I have to say to you that it was interesting that when we travelled with you in the North Sea, every where we went people said you should talk to Dr. Coleshaw and so we did. So

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Dr. Coleshaw we're delighted to have you with us today. For the purposes of the record, we have three exhibits which we would ask to have put into evidence, Exhibit P00212 which is Dr. Coleshaw's curriculum vitae and P00213 which is the report that was commissioned by or for us by Dr. Coleshaw and finally Exhibit P00214 which is a PowerPoint presentation that Dr. Coleshaw prepared in order to bring the report to us today and so in my questions for her, I will not be referring to the report itself, others may wish to do so, as was done with Kimberley Turner's, but I will take her briefly through her C.V. and also through the PowerPoint presentation. First of all I would ask that you would affirm Dr. Coleshaw please.
DR. SUSAN ROSEMARY KATHERINE COLESHAW (AFFIRMED)
COMMISSIONER:
Q. And the exhibits will be entered.
EXHIBITS P00212, P00213 AND P00214 ENTERED INTO EVIDENCE
REGISTRAR:
Q. The exhibits are entered.
ROIL, Q.C.:
Q. Now, Dr. Coleshaw, I'm a long way away from you and I have ears that don't work as well as

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they used to, so I'm going to ask you to speak up and speak to me and then hopefully everybody in the room will hear. The subject matter, Commissioner, that I am going to ask for Dr. Coleshaw to give us opinion of it is on, is defined by she and I, I guess, as being personal protective equipment and human factors relating to helicopter escape and evacuation. And so, Dr. Coleshaw, I would ask you now perhaps to take us through some of the aspects of your education, your work experience, your writings, your training and so on that would have relevance to that general subject and why we should consider you as a person qualified to give us opinion evidence.
DR. COLESHAW:
A. Thank you. Well my background, I started off as a thermal physiologist, so my first degree was in physiology and I then went on to do a Ph.D in University of London, looking at some of the causes and consequences of hypothermia in water and that was related to problems with North Sea divers at that time. I spent ten years in academic research, both University of

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London and laterally, University of Aberdeen and that was primarily human temperature regulation and aspects of that, including hypothermia. I moved from there to a position at the RGIT Survival Centre in Aberdeen which was primarily offshore training emergency spokestraining centre, but I was working within a separate research and equipment testing division at RGIT. By all that, I was undertaking research projects and that included aspects such as helicopter underwater escape, emergency response procedures, liferaft reliability, topics of that nature, and we also had an equipment test laboratory primarily carrying out approvals on life jackets and immersion suits, and some other association equipment and the laboratory was accreditated during the time that I was there.
ROIL, Q.C.:
Q. What sort of time period are we speaking of now, what year or years?
DR. COLESHAW:
A. '91 to 2000 I spent at RGIT. In 2000, I left RGIT and became an independent consultant at that time, so for the last ten years, I've

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been working as an independent and I think probably the best way to describe my work is to look at some of contracts I've undertaken during that time and who the work has been for, which is quite wide ranging, say working for offshore operators and doing quite a lot of work, looking at equipment compatibility or health and safety -

ROIL, Q.C.:

Q. What kinds of equipment and what compatibility issues, for example?

DR. COLESHAW:

A. Well that is again primarily life jackets and immersion suits, but our health and safety executive brought out guidance in 2002 looking to ensure that the equipment used offshore, particularly for abandonment, but also covering helicopter transport side, that life jackets or with immersion suits were compatible with each other, but also compatible with the other emergency equipment that might be used in association with, say during an evacuation, if you have to use a dissent system, an escape shoot, liferafts, the life boats, that that life jacket suit

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combination didn't actually interfere with the performances of these other systems. And those assessments have involved the workforce, it was quite a move to involve the workforce in decision making in these two areas, so when we done trials on the equipment, that's primarily been with workforce members as the test subjects. Again on the equipment side, I done a set amount of work for some of the equipment manufacturer's companies manufacturing helicopter suits, either in terms of measuring human performance in their development phase or helping them with, through the approval process and sort of consultancy relating to the process of approval in different jurisdictions. Also quite a bit of work with the Civil Aviation Authority, at the time I became an independent we were part way through the project looking at capsizing, inversion of helicopters, I completed that work as an independent and then followed on with a couple of projects, looking at helicopter emergency breathing systems and one of those is ongoing right now. And so that's very cogent to the questions that I'm

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being looked at today. I think probably one of the other significant projects was some work I did a few years back for--well instigated by Oil and Gas UK, was actually funded by BISO, the training organization.

ROIL, Q.C.:

Q. Oil and Gas UK is the association of oil operators in that region?

DR. COLESHAW:

A. Operators, but actually including a wider group now, the old ICAO was just operators and Oil and Gas UK has a slightly wider group and so it includes some of the contractors, I think, as well within that group, I think I'm correct in saying that.

ROIL, Q.C.:

Q. By contractors, that would be like the rig operators and perhaps some of the -

DR. COLESHAW:

A. Yeah. That work, well OPITO would only put out a proposal at that time to include exits into the helicopter underwater escape training.

ROIL, Q.C.:

Q. Now OPITO is an expression that hasn't been

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used an awful lot here, it was quite awhile ago, but that's a standards organization.

DR. COLESHAW:

A. That's a standards organization, yes.

ROIL, Q.C.:

Q. Just to put it in context for people who are hearing us for the first time, so they understand.

DR. COLESHAW:

A. So that they have responsibility for the training standards in the UK, so I think all the courses in the UK are OPITO certified and that's now a worldwide organization, so they've got the course being run in countries around the world. So they're looking at introducing exits and they've put out proposals and there's been concerns raised by the offshore industry in some of the medical departments about whether any health implications relating to, would there be additional stress caused by adding this extra layer into the helicopter underwater escape training. And I should have said one of the first jobs I did when I went to RGIT was look at levels of stress in trainees undergoing the

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emergency response training and so that was one reason why I was asked to basically relook at that issue and comment back as to whether there were any health implications in terms of them adding that into the training.

ROIL, Q.C.:

Q. Now if I was to ask you or tell you that that personal protective equipment, I and perhaps some in the room would include that to include the helicopter evacuation suit and perhaps the life jacket, if it's a separate and the EBS, the breathing system -

DR. COLESHAW:

A. That's right.

ROIL, Q.C.:

Q. And the light and the locator beacon, those kind of things, is that the kind of equipment that you are familiar with?

DR. COLESHAW:

A. Yes, anything that's particularly worn all the time, there's a little bit of separation between what is defined as personal protective equipment and lifesaving equipment, so life jackets and suits could also be described as lifesaving equipment, but so too could the

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life jacket you have under the seat on an aircraft would be lifesaving equipment, it's not personal protective equipment because it's not worn all the time, so it's nuances of the definition.

ROIL, Q.C.:

Q. So what would human factors then be in the context of that kind of discipline or that kind of study?

DR. COLESHAW:

A. In particular how people perform in certain situations, survival in cold water is a particular special interest of mine, so that comes within human factors and it also ties in with the work of the personal protective equipment, some of the ergonomic assessments, so that is how does the equipment work when you actually put that together with human performance, so you put together human performance and the equipment that they're using and how do those two interact and that would be an ergonomic assessment and that all comes within human factors.

ROIL, Q.C.:

Q. Okay, so ensuring that the equipment is

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designed or applied in a way so that the human being can use it with some degree of integrity.

DR. COLESHAW:

A. That it's easy to use, that it's intuitive and the equipment is fit for purpose, that it's doing the job that it's supposed to do.

ROIL, Q.C.:

Q. Now if I go to you publication list which is extensive, I see that you have written over the years about things like escape from capsized helicopters, immersion suit and life jacket developments, HUET, a training device, HUET simulator exit study, implementation and use of the EBS, the breathing system in the UK, helicopter ditching research and so on. I take you you spend a fair amount of time writing.

DR. COLESHAW:

A. Quite a bit of time.

ROIL, Q.C.:

Q. Both by yourself and with others.

DR. COLESHAW:

A. Recently a lot by myself, in the past, in bigger teams.

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ROIL, Q.C.:

Q. Is there a relatively small world of people that are engaged in this kind of study that you are involved in?

DR. COLESHAW:

A. I would say very much so, yes, it's a specialist area.

ROIL, Q.C.:

Q. So it's ten or twenty people, not fifty or a hundred.

DR. COLESHAW:

A. No.

ROIL, Q.C.:

Q. And the subject of your Ph.D was causes, consequences and prevention of hypothermia in water.

DR. COLESHAW:

A. Uh-hm.

ROIL, Q.C.:

Q. A subject very dear to the heart of most Newfoundlanders.

DR. COLESHAW:

A. I would qualify that that it was looking at certain aspects, it wasn't looking at the whole remit of underwater survival, absent

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particular periods -

ROIL, Q.C.:

Q. Okay, with those comments and with recognizing that individuals have the opportunity to look at Dr. Coleshaw's curriculum vitae, I would stop at this point and see whether anybody else has any questions, after which I would ask for her designation as a person to give opinion evidence.

COMMISSIONER:

Q. Yes, thank you. Has anybody any questions for Dr. Coleshaw on her areas of expertise? No, I think not, so I do declare that Dr. Coleshaw can be an expert in her field.

ROIL, Q.C.:

Q. Either that or the entire North Sea is wrong. Thank you, Dr. Coleshaw. I just simply ask you to identify Exhibit 213 is the 47 page report that we asked you to do for us.

DR. COLESHAW:

A. Right.

ROIL, Q.C.:

Q. And then Exhibit 214, this is the synopsis of that report that you were going to use to lead us through the description -

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DR. COLESHAW:

A. Yes.

ROIL, Q.C.:

Q. Perhaps then if we could take you to the report itself--sorry, to the presentation itself, be precise in your words, John. I take it that you were given four issues for consideration, where did they come from? Where did you get the instruction?

DR. COLESHAW:

A. They were supplied by Commissioner Wells. There were a list of many issues and having had discussion with Commissioner Wells, it's very apparent there was sort of four areas where I had some sort of specialist interest and these are the four areas that were identified.

ROIL, Q.C.:

Q. So you saw our general issues for consideration?

DR. COLESHAW:

A. That's right, yeah.

ROIL, Q.C.:

Q. Okay, and I think just for the guidance of those in the room and others, your item No. 1 is actually item No. 13 on our list.

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DR. COLESHAW:

A. Right.

ROIL, Q.C.:

Q. Your item No. 2 is our item No. 2. Your item No. 3 is our 12 and your item No. 4 is our No. 15. And so these are the issues, I take it, that you did some research for us and prepared the report. Could you tell us a little bit about how you prepared the report, was there research that needed to be done at that point in time or was it relying on the body of experience and exposure that you already had in terms of doing the report for us.

DR. COLESHAW:

A. The latter of those two, so this was very much a case of looking at the questions to be posed and discussing those issues.

ROIL, Q.C.:

Q. These were issues that you were familiar with already?

DR. COLESHAW:

A. Yes.

ROIL, Q.C.:

Q. Okay, issue No. 1 is worded a little longer

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but essentially you captured it on slide No. 3 as being personal protective equipment needed by helicopter passengers and pilots.

DR. COLESHAW:

A. That's part of the first issue.

ROIL, Q.C.:

Q. Right.

DR. COLESHAW:

A. I should say that my issues, one to four, are all labelled at the top left-hand corner of the presentation.

ROIL, Q.C.:

Q. Yes, so on page 3 we see that we're dealing with issue No. 1, if we go further and we get into issue No. 2, it will pop up there. Good, that's very helpful, thank you. Okay, what is it you want to tell us about personal protective equipment that is needed by both passengers and pilots who travel offshore in Newfoundland, first of all what familiarity did you have with the Newfoundland offshore?

DR. COLESHAW:

A. Not extensive before the accident last year, though I had been across to Halifax in 2006 when CAPP held a workshop on emergency

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breathing systems, so I had some contact at that time with members of the industry from this area, but that was specifically talking about emergency breathing systems. There had been a previous slight link up with Peter Noel from your petroleum board, again to do with emergency breathing systems from ten years back.

ROIL, Q.C.:

Q. But what did you note about the environment in terms of our water and that sort of thing?

DR. COLESHAW:

A. Well in terms of that, you're obviously a very cold water environment, colder water temperatures than are experienced in the North Sea where our minimum temperatures are probably only down to a six, seven degree centigrade, yours are working in a colder environment, in terms of times of flights, UK anything up to two hours plus of flights, so probably comparative to some extent in certain areas, but I think yeah, particularly in terms of equipment there are differences in equipment used because of that colder water temperature.

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ROIL, Q.C.:

Q. Okay, you, I take it, understand the nature of the equipment that's in the North Sea and the differences between one jurisdiction and the other up there.

DR. COLESHAW:

A. Right.

ROIL, Q.C.:

Q. And there are some differences.

DR. COLESHAW:

A. There are some differences, yeah.

ROIL, Q.C.:

Q. Okay, well perhaps we can talk about your general principles and then we'll get into specific questions as we develop along.

DR. COLESHAW:

A. Okay. On this first slide really all we're just trying to do is just summarize--asked the question what I felt was the protective equipment required and just look at it from working through the scenario if a helicopter had water impact, so initially on actual water impact the first thing we would be looking at is protection from cold shock and I think many people in the room already know that cold

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shock is this reflex response. On entering cold water, you tend to take a very big deep breath and then have several minutes when it's very difficult to control one's ventilation, but also if you weren't protected, you'd have a very strong reflex if you entered water at naught two degrees centigrade, so the first thing is providing an immersion suit that will give you protection from that initial cold shock. That becomes much more critical if you then look at the possibility of capsize and submersion because the biggest problem with cold shock is that it makes it very difficult to breath hold and if your head is under the water, so the average breath hold time in cold water is thought to be somewhere in the region of 20 seconds, in some individuals it could be as little as 10 seconds, so that's a very short time period in which you can actually hold your breath and there has been general recognition that the time needed to escape from a helicopter is significantly longer than that, so this is where there's been a growing recognition of the importance of providing equipment, in this case, emergency breathing

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systems, such as EBS, and to provide protection from drowning in the event that an individual has to make an underwater escape from the helicopter. And on escaping from a helicopter, there is still quite a high risk of drowning, particularly in big seas, breaking waves, there's a severe risk of drowning, great danger of water being taken into the respiratory system, so buoyancy becomes very important to support the head above the water surface and to provide protection from breaking waves, tied in with that is the use of spray hoods and that might be either on a life jacket or in case of your suits, it's actually on the suit itself, but again to stop water washing over the face and risking drowning.

The next obvious one is protection from hypothermia, you come back to the immersion suit here and during this phase, the immersion suit is protecting you against both short term and long term effects of cold. So right from five minutes into a cold water immersion, you start to lose manual dexterity, gradually the muscles of the limbs will cool and that could

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cause problems with people's ability to swim and maintain their position and then ties in with having buoyancy to support you if you find that you can't swim any longer and then ultimately protection from hypothermia and that's something that's going to develop over a period of hours, rather than minutes and so that's moving down the timeline in terms of the emergency situation.

ROIL, Q.C.:

Q. So the suit really has three functions, I gather from your evidence, one is to protect you from the cold shock initially upon immersion -

DR. COLESHAW:

A. Yes.

ROIL, Q.C.:

Q. Then to give you buoyancy once you get out.

DR. COLESHAW:

A. Certainly in terms of, yeah, your suits in particular are quite buoyant suits, so yes, they've got a role for buoyancy there.

ROIL, Q.C.:

Q. And then ultimately protection for the longer term until you get saved, in terms of -

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DR. COLESHAW:

A. So thereafter it's protection from cooling of the body.

ROIL, Q.C.:

Q. Right. Let's just chat a little bit about our suit, because I understand that you have seen and you're familiar with our suit and that you have seen and are familiar with the suits in the North Sea.

DR. COLESHAW:

A. Uh-hm.

ROIL, Q.C.:

Q. What are the physical similarities and differences between, let's say Canada--never mind Canada, Newfoundland and Labrador and the English side of the North Sea, and then Newfoundland and Labrador and the Norwegian side of the North Sea?

MS. COLESHAW:

A. In terms of Newfoundland and the UK, North Sea, probably the biggest difference is in the amount of insulation provided in the suit. So your suit has a higher level of insulation.

ROIL, Q.C.:

Q. Yes.

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MS. COLESHAW:

A. And that is reflecting this colder water temperatures in your field of operation.

ROIL, Q.C.:

Q. Right.

MS. COLESHAW:

A. That then has implications and one of my later slides will look at some of those implications because of the fact that the needs of providing insulation, then we're talking about air trapped in the thermal lining of the suit, in the clothing that you wear underneath the suit and that trapped air has a negative consequence in that it makes you much more buoyant, which in terms of getting out of the helicopter is a negative. It's a positive once you've got out and on the water surface, because there naturally, it does help and this buoyancy problem to protect you from drowning but -

ROIL, Q.C.:

Q. So air trapped in the suit is a negative when you're in the helicopter?

MS. COLESHAW:

A. Yeah.

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ROIL, Q.C.:

Q. But it becomes a positive once you get to the surface?

MS. COLESHAW:

A. Yeah.

ROIL, Q.C.:

Q. Because the air provides some insulation?

MS. COLESHAW:

A. Yeah. Yes, and basically when we talk about insulation, a lot of it comes down to air being a very good insulator. So wool is a good insulator because it traps air. Neoprene has bubbles of air within its fabric, so at the end of the day, air is the big insulator.

ROIL, Q.C.:

Q. Okay. So in the North Sea then, sorry, in the British side of the North Sea, how does the thermal capacity -- you say it's just a liner. Where does the thermal protection come from?

MS. COLESHAW:

A. In the early days in the North Sea, we just had a coverall type of immersion suit which relied on covering your body surface with seals and keeping you dry and the actual insulative value of that suit was dependent on

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the clothing worn under the suit. It became apparent that was perhaps not providing sufficient insulation in the event of a helicopter ditching, and we then did then start -- our manufacturers added thermal liners that would be worn underneath the suit to control the level of insulation because one of the biggest problems of relying on what people wear under the suit is you don't have -- or it's difficult to have any control over what is worn. So by adding a liner, that ensured a certain level of insulation. So we came a bit closer to the Canadian suit and at that time, I think probably the biggest difference now is that the lining garments tend to be slightly shorter sleeved and again, the legs only come down to about the knee level. They don't cover the lower leg. So it doesn't give quite as much insulation, but the positive from our point of view is that -- and it also means they're not quite as buoyant when you're doing the helicopter underwater escape.

ROIL, Q.C.:

Q. Okay. Now on the Norwegian side, I take it

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that their suit is rather more like ours than like yours? Is that correct?

MS. COLESHAW:

A. Very much more like yours, yes.

ROIL, Q.C.:

Q. And what are the similarities or differences? Is there anything substantial? The UK suit, I gather, seals at the neck?

MS. COLESHAW:

A. Yes. Again, that's something that's changed. 20 years ago, we had suits that zipped either up under the chin or to the side of the face, and there was a helicopter accident near the Cormorant Alpha platform in 1992 where there were only six out of 16, I think it was, on board that survived the incident and there were cases where the suits hadn't been properly zipped up and when the emergency happened at least one of the non-survivors was found with a significant amount of water in the suit and it became apparent, having interviewed others, that quite a few, even if they were done up, they weren't done up properly and quite a few of the survivors had water in their suits. So at that time, we

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switched over to a design of suit where there's a neck seal and a zip across the front of the suit that's to be zipped down. That's done up before the start of flight and then our lifejacket, which you wear as a separate item, is then donned on top of the helicopter suit.

ROIL, Q.C.:

Q. Okay. Now the Norwegian suit is more like the Newfoundland suit in that it zips up to the face?

MS. COLESHAW:

A. It zips up to the face, that's right.

ROIL, Q.C.:

Q. So I take it that there's no unanimity in the North Sea world as to what the best suit is or are the British entitled to claim the best suit?

MS. COLESHAW:

A. I think we've come from a different starting point because we don't have quite such cold water temperatures. We're able to pull back a little bit on the amount of insulation provided and part of the reasoning of that, and not providing yet more insulation to give

Page 264

them better protection in the cold water, one of the issues there is the problem of thermal comfort and thermal stress in a helicopter cabin and there are particular problems, spring, April-May time, when the sea temperatures are still at their coldest, but we start getting quite warm weather, so air temperatures are increasing, you could get some very hot days. Those times there's a tendency that people will wear less clothing under the suit and also higher cabin temperatures, and then it's balancing. We're now in a regime where you got a sealed suit, warm sealed, that while I think the individuals have to accept a certain amount of discomfort because the equip is provided to give them protection in the event of cold water immersion, but there's a level above which you don't want to push people. We do have days when there are people complaining that they're sweating and are wet when they get to the platform because they're hot. Now if you apply that across to the suits used in Norway and Canada, you got the higher insulation and I think you wear your suits

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unzipped except for the period coming up to landing, and that's partly to relieve this thermal stress problem in the helicopter cabin.

ROIL, Q.C.:

Q. And does the Norwegian side of the North Sea, do they get into colder waters and go farther north than the British side?

MS. COLESHAW:

A. Yes.

ROIL, Q.C.:

Q. Okay. So if we were looking for a factual comparator, Norway factually looks more like us in terms of the environment than the UK?

MS. COLESHAW:

A. I would say so, yes.

ROIL, Q.C.:

Q. Okay. That little aside with those suits was not really part of your presentation, but I think it's important to understand.

MS. COLESHAW:

A. Covered off at least one of the slides in doing that.

ROIL, Q.C.:

Q. That's right. Okay. Now you can -- I can

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take you back then to your slide three or four, as you choose, to go forward.

MS. COLESHAW:

A. I think the only thing we didn't mention on slide three was just the last item, equipment, which I'm not going to talk very much about, but the location, being aided by personal locator beacons, PLBs, but I'll come back to that in a minute.

So I think slide four probably covers most of these issues in that discussion. So the first one was being cold shock and protection for that being provided by the fact that the suit covers the majority of the body surface and obviously the one area that isn't completely covered is the face, the head if you haven't got your hood on. We've covered the issue of insulation being provided by trapped air. We've talked about the conflict with buoyancy making escape more difficult.

ROIL, Q.C.:

Q. Yeah, I think the trapped air is perhaps -- it may not be news to us, but I think we have not looked at trapped air as being a factor to provide protection.

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MS. COLESHAW:

A. Right.

ROIL, Q.C.:

Q. We're thinking more in terms of the manufacture of the suit, the fact it keeps the water out, the fact that there's a foamy substance there that that's providing, but in fact, air in itself is an additional factor that provides insulation.

MS. COLESHAW:

A. Yeah, yeah. There are going to be gaps between the layers. I mean there's enough talk about wearing layered clothing to provide better insulation, so it's just another example of that, that you've got layered and insulation under the suit in terms of clothing, a gap between the clothing and the suit and then the actual insulation of the lining of the suit itself.

ROIL, Q.C.:

Q. And the conflict caused by the trapped air creating buoyancy versus the trapped air that you want is a conflict that we can't resolve easily?

MS. COLESHAW:

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A. Not easily. I mean, there may be changes in the future and then I think that then ties into the next point on my slide, which is looking at the fit of the suit, and again, that was an issue that the Commissioner was particularly interested in because if you have a loose fitting suit, then again there's going to be a lot more air in the suit as it's worn normally than a very close fitting suit, and that's possibly another slight difference between the suits used here and Norway and the suits used in the UK where the UK suits tend to be slightly closer fitting. That partly depends on the number of sizes offered. So if you're offering four or five sizes, there's going to be a difference between a manufacturer that offers 15 or 20 sizes. So when you go along to the heliport and look for the appropriate size suit, if that's based primarily on height, you're a very tall person, but slim, you may end up with a large or an extra large suit because of your height, but the build is not particularly appropriate for your body build, and that is again a sort of situation where you could get a lot of

Page 269

trapped air and therefore problems with the buoyancy during the helicopter underwater escape.

ROIL, Q.C.:

Q. It appeared to us in the evidence that we took in in the earlier phase, that the whole issue of fit was not one that anybody focused on very heavily until very close to the end of this piece. Has the issue of fit been a big issue in terms of the research that you've done? Has there been a focus on the fact that fit is important or is that something that everybody has only discovered relatively recently?

MS. COLESHAW:

A. I think there was awareness of the problem in terms of buoyancy and the fit. I suppose in the UK, we tend to have more suit sizes available, so it's possibly less of an issue, but certainly manufacturers in the design of the suits do try and provide means of preventing that trapped air from being a problem and so there are certain helicopter suits that have got elasticated legs, so it's another difference with UK suits that they

Page 270

have socks, rather than the boots that are present on the Canadian suits.

ROIL, Q.C.:

Q. Okay. So I was going to lead you to two things certainly, which was boots and gloves. So you've seen the Canadian suit with the rather large green boot at the bottom. Is that similar to what's affixed in the UK?

MS. COLESHAW:

A. In the UK, it's more like a sock on the bottom of the suit, rather than a boot.

ROIL, Q.C.:

Q. And do you -

MS. COLESHAW:

A. So the user will wear a shoe underneath.

ROIL, Q.C.:

Q. - and what do you wear underneath then when you're putting on the UK suit? Do you wear your own footwear afterwards or do you wear -

MS. COLESHAW:

A. You take your footwear off and that will be put on on top of the sock of the suit.

ROIL, Q.C.:

Q. Okay, and what about in the Norwegian suit?

MS. COLESHAW:

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A. Norwegian suit is similar to the Canadian one. I think the boots are slightly smaller in size.

ROIL, Q.C.:

Q. And what about the situation with gloves? We haven't mentioned gloves.

MS. COLESHAW:

A. Gloves, again, I think on all the suits are primarily separate so they're donned later. They're not worn all the time.

ROIL, Q.C.:

Q. Right.

MS. COLESHAW:

A. There is an issue in terms of are they easy to don when somebody is in cold water. Talked about manual dexterity being lost very quickly, so there are potentially differences in terms of the type of glove provided, as to how easy it is to get on if your hands are cold.

ROIL, Q.C.:

Q. Have you been able to view and listen to Robert Decker's testimony here and the evidence he gave about the day in question and his difficulty with his hands?

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MS. COLESHAW:

A. Yes, I did.

ROIL, Q.C.:

Q. Okay. Is that something that was new to the world or was that the -- the loss of dexterity, was that a known concern?

MS. COLESHAW:

A. That is a known -- the old UK CAA Spec 19 standard for immersion suits did actually have a test where the test subjects were required to be immersed in cold water for, I can't remember, something like ten minutes and then have to don the gloves of the suit and they had to be able to do that with cold hands, and so that is a problem that there has been some awareness of.

ROIL, Q.C.:

Q. Okay. Part of the question that was put to you is what equipment and clothing is necessary. We've addressed passengers. We haven't -- or we've talked around passengers. We haven't really addressed pilots. Are there different concerns for pilots?

MS. COLESHAW:

A. I think in terms of, yeah, the risks are

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exactly the same, so you'd hope that the equipment that they used would have exactly the same performance, and that's not necessarily the case. I think quite often their suits are different to the passenger suits. Certainly in the UK, they wear a slightly different style of lifejacket and emergency breathing systems, not all of our pilots are currently flying with or only a few are flying with any emergency breathing system, and so there are differences. The colour of the suits, and that was an issue that was brought up in an accident in the UK a couple of years ago where the passenger suits are yellow, can be quite easily picked up by the search and rescue, and the pilots were wearing navy immersion suits and I don't think that issue has been addressed yet, in terms of should that be changed.

ROIL, Q.C.:

Q. Now we also asked you to speak something about what standards are available. What standards are you aware of? Is there a world universal standard or are standards different all over the place?

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MS. COLESHAW:

A. There are quite a few different standards and attempts to harmonize it, it would be useful to move on to my slide that has some of the standards listed.

ROIL, Q.C.:

Q. Yes, exactly, perhaps we'll move to number five.

MS. COLESHAW:

A. Which is the next slide, so to the left of this slide, I say there are many different standards. These are three that are possibly most appropriate, so the top one is the Canadian. I certainly don't have to remind you about the CGSB.

ROIL, Q.C.:

Q. Canadian General Standards Board.

MS. COLESHAW:

A. General Standards Board, thank you.

ROIL, Q.C.:

Q. Yes.

MS. COLESHAW:

A. So that's their 1999 standard. One I don't have here is the UK Civil Aviation Authority Spec 19, which has been superseded by the two

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European standards as I list on this slide. EASA is the European Aviation Safety Agency and they've recently taken over responsibility for airworthiness in Europe. So they have two standards, one for an integrated helicopter crew and passenger immersion suit. So that is quite similar to the Canadian suit whereby you have an immersion suit with additional buoyancy that is an integral part of the immersion suit. In the UK, we have a separate helicopter immersion suit and lifejacket and so the second of these two European standards, the ETSO-2C503 is the one that the UK helicopter suits, I think in the future, will be approved to. So that's got the closest similarity with the old spec 19.

ROIL, Q.C.:

Q. So I take it that even though there are two very different looking suits on either side of the North Sea, both of them are built to a standard that is more or less the same definition?

MS. COLESHAW:

A. Yes. I mean, certainly in the -- most of the passenger suits, and probably pilot suits,

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being used in the UK at the present time are still suits that have been approved to the old spec 19. There is now one UK manufactured helicopter suit to this new ETSO standard and I think there is one suit in Norway, a Helly Hansen suit, that is manufactured to the ETSO-2C502 standard. So there are now two ETSO approved suits. The Norwegian one, I think, is already in use. The UK manufactured European approved suit is currently subject to trials, so that's not widely used as yet. It's just in its early implementation phase.

ROIL, Q.C.:

Q. So if an existing suit is in use, then it can continue in use even though a new standard comes in?

MS. COLESHAW:

A. That's right. There are what's called grandfathering rights and I think the manufacturers have a duty of care to compare what differences there are between the standard to which their existing suit has been approved and the new standard and obviously look at if there is any big difference. There aren't huge differences. Probably one of the

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biggest difference for the UK sector is the thermal requirement is actually increased and they're now required to provide protection for four hours in water naught two degrees centigrade for the European approved suits. Now we've not previously -- when I say we, the UK manufacturers have not designed suits for that cold of water temperature. So they're having to now look at possibly upping the insulation slightly to make sure that they meet this slightly higher standard for insulation.

ROIL, Q.C.:

Q. So the standards, I take it, define performance requirements and you heard all of the evidence earlier about performance. They are more set to design or to dictate performance standards rather than what the suit looks like, in terms of physical characteristics?

MS. COLESHAW:

A. Most of it. Part of the standards relate to design, but the majority is focused on performance and levels of protection offered.

ROIL, Q.C.:

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Q. Okay. So you've indicated here the current performance requirements, levels of thermal protection and then it's expressed in terms of Clo or something called Clo. That's not a term that we've heard before, so you might want to tell us what sort of -- using more common understanding, what sort of definition that is giving to us.

MS. COLESHAW:

A. Right. Clo is a unit of insulation. It's not a standard international unit, as might be preferred by the scientific community, but it's one that's a little bit more easy to understand than the international unit. One Clo is equivalent to naught .155 degrees Centigrade meters squared per watt, which you can imagine is a very difficult unit to -

ROIL, Q.C.:

Q. That's fairly simple to understand, I'm sure, but it's way over my head.

MS. COLESHAW:

A. So one Clo is -- and you can see there, I put two values. The .75 Clo is the amount of insulation required by the Canadian standard. .5 is the equivalent amount of insulation

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required in the European standards.

ROIL, Q.C.:

Q. Okay, and .75 is a higher amount of -

MS. COLESHAW:

A. Higher amount of insulation, yes. One clo was originally defined as the amount of insulation required to keep an individual, sitting in a room at basically a normal room temperature standard humidity, low air flow, to keep that person in comfort, and that was the original definition of a -

ROIL, Q.C.:

Q. So it does come out of a simple to understand definition?

MS. COLESHAW:

A. Very much so, and there is now a conversion to the correct units, but I think a Clo, a Clo value is slightly easy to understand, yeah. There's another slight difference in that when we're talking about immersion suits, we're also talking about insulation measured in water, so you'll sometimes see it referred to as a immersed Clo.

ROIL, Q.C.:

Q. So we've heard Canadian workers say that

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they'd rather wear a UK suit or they'd rather wear a Norwegian suit and I take it that what this is telling us is that there is more thermal protection in the Canadian suit?

MS. COLESHAW:

A. In the Canadian, yes, that's correct.

ROIL, Q.C.:

Q. Yes.

MS. COLESHAW:

A. And the Norwegian suit is much closer to that figure, so they exceed the thermal protection required in the European standard. So I think the Norwegian suit would be much closer to the .75 Clo level of insulation.

ROIL, Q.C.:

Q. Leakage, we heard a lot about water getting into suits. What can you tell us about your understanding of the ability and the desirability of -- the ability of water to get in and the desirability to keep water out?

MS. COLESHAW:

A. As I say, that is number one is you want performance requirement would be to try and keep the individual dry. As soon as you introduce water into the suit, you're starting

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to destroy the insulation offered and this is because of this fact that insulation is provided by air. Water displaces the air and water is a much greater -- has much greater conductivity than air, and so you're going to cool much more quickly if water is introduced into the suit.

ROIL, Q.C.:

Q. But is it acknowledged that a suit can be made completely watertight or is it acknowledged that there will always be a certain amount of water that will get into a suit that is fit to a human body?

MS. COLESHAW:

A. Not always, but it's very difficult to get a suit that will fit everybody and seal correctly on everybody to remain absolutely watertight. Hence there is a certain amount of allowable leakage in most of the immersion suit standards. The 200 gram figure I've put here with a question mark is the figure that's allowable in the European standard, and this level of leakage is thought to not have a significant effect on body cooling.

ROIL, Q.C.:

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Q. How much is 200 grams to those of us that work in cups and those kinds of things?

MS. COLESHAW:

A. Probably a smallish cup. I was given a small bottle of water on the plane coming over and that was 250 mils.

ROIL, Q.C.:

Q. Okay.

MS. COLESHAW:

A. So it's not a huge amount, but that would create sort of quite a big damp patch if you introduced 200 mils, dripped it down somebody's clothing, you'd end up with quite a big wet patch on their clothing and probably not running down to the feet and filling up the boots.

ROIL, Q.C.:

Q. And what then can you tell us about the buoyancy and again, there's an N here which I understand to be something called neutons, but perhaps you can explain to us what are the concerns with respect to not enough buoyancy or too much buoyancy?

MS. COLESHAW:

A. Right. Several figures I've included here.

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The 156 neutons is the amount of buoyancy or is a minimum level of buoyancy that's allowed in the Canadian standard for the additional buoyancy device that you have that provides support to the head, so it's equivalent to a lifejacket. This is the positive buoyancy that's there to protect you from drowning. So that figure -- I should say, again, a lot of aviation, that lifejackets have got approximately 150 neutons of buoyancy within them. That compares to the figures I've put below which are maximum values of buoyancy, and these are limits set because of concerns about people being able to actually escape from the helicopter when underwater. 139 -- sorry, 175 neutons is the amount of buoyancy allowed in the Canadian standard. You see that's somewhat higher than the maximum limit in the European standards and the old spec 19, which was 150 neutons. There's been quite a bit of work in this area about where that level should be. 150 neutons is probably the preferred maximum figure and I think even work that's been done in -- a lot of the work has been done in Canada by Chris Brooks and his

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teams. I think a slightly higher figure was included in the Canadian standard because of the recognition that if you wanted to get the level of thermal protection that you needed in your suits to protect you from water temperatures as low as zero, it was then very difficult to balance these two figures of level of insulation required and the consequent buoyancy of the suit.

ROIL, Q.C.:

Q. So I take it that the tugging that goes on between buoyancy and thermal is a very troubling issue for the industry that you work with?

MS. COLESHAW:

A. I think it's a very difficult one and it's a very difficult one for the standards board. You're having to put priority. Now if you can get fabrics that provide better insulation with less air in the suit, you know, better fit will improve the situation, then there could be improvements. There isn't an easy answer. I think the only other thing, I think it's almost a risk assessment required. Again, can you look at the level of thermal

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protection required? The suits you have are designed to provide protection for six hours. Is there any way that you can improve recovery times that means perhaps you don't have to provide quite as much insulation? The answer to that may well be no, but that -- yeah, I think it's a risk assessment in terms of where do the priorities lie and therefore where do we shift the balance between insulation and buoyancy.

ROIL, Q.C.:

Q. So if we can assure recovery in a faster period of time, we can bring down the thermal factor and that will automatically then bring down the buoyancy problem?

MS. COLESHAW:

A. Possibly.

ROIL, Q.C.:

Q. Possibly.

MS. COLESHAW:

A. Yes.

ROIL, Q.C.:

Q. I understand. Okay, perhaps we'll move on to Slide #6 where you're talking more specifically about buoyancy equipment.

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MS. COLESHAW:

A. Again this is really just an overview in terms of answering the question of what equipment is needed. So in terms of buoyancy, basically you got two options in the Canadian and Norwegian suits. It's reliance based on the buoyancy of the suit itself, and this integral inflatable buoyancy element, which in this case is normally orally inflated. In the UK markets then we tend to have a separate immersion suit and life jacket. In that case, the life jacket is - it's an inflatable life jacket which is manually inflated once the user has actually escaped from the helicopter. At the end of the day they're providing the same performance requirement, which is to support the head, and also at the bottom we talk about the spray hood being necessary and to protect the mouth and nose from wave slashing and waves actually breaking over the face of the user. So in terms of protection from drowning, obviously that's a very important performance requirement.

The last factor I've got there is in terms of the turning capability of the user.

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There's again a slight difference in terms of requirements and standards. In the UK, the life jacket is required to turn with the user and actively - there is quite a strong argument been made in other jurisdictions that is that necessary because if you're able to escape from the helicopter, you'll be conscious, and, therefore, able to turn yourself, and so the Canadian standard and indeed the Norwegian have less standards that the new ETSOs just require that the user can turn themselves onto their back, but that the buoyancy has to keep the person once they're on their back in a very stable position. So that's to ensure that a wave will not flip a person over, and particularly somebody that's getting very tired or somebody that has lost consciousness, that they're not then going to be turned face down into the water.

ROIL, Q.C.:

Q. Is there any work ongoing that you're aware of that relates to the orientation of the person in the water? In other words, is it better to have your head to the waves or feet to the waves? Is that something that has been

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thought about or talked about, to your knowledge?

MS. COLESHAW:

A. Certainly Professor Tipton reports on this, and Frank Golden have talked about this in their book on sea survival, and it's much better to be able to face the waves. You can then see the oncoming water, if it's going to be a big wave that's about to break over you, you can take action to prevent that happening. What tends to happen when people lose consciousness is that they then turn with their back to the waves, and then there's a much higher risk of waves breaking actually over the face of the individual.

ROIL, Q.C.:

Q. And I gather the spray hood is designed to stop that from being a problem for the wearer?

MS. COLESHAW:

A. That's right. Modern spray hoods are pretty effective at doing that. In the past, there was a lot of resistance to use of spray hoods because they tended to fall on the face and steam up. There was a lot of resistance of people to use them. They've been pushing,

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pushing, and pushing over many years to try and get greater use of spray hoods, and at least the new designs tend to hold the spray hood away from the face. So again it's more comfortable and more user friendly, more fit for purpose, and for that reason - and probably less likely to ventilate and have to have holes, which means there is some circulation of air underneath the spray hood. Again that'll tend to stop the steaming up.

ROIL, Q.C.:

Q. Okay, so we've covered the suit and the buoyancy equipment. What other equipment do you feel is necessary for an offshore worker to wear while transiting?

MS. COLESHAW:

A. Well, next on the list is the emergency breathing system, so EBS, which is something that's been introduced in terms of the offshore industry over the last ten to fifteen years. We touched on this earlier that there's been a recognition that the time needed to escape from a helicopter in a real emergency has been estimated to be somewhere between 45 and 60 seconds. We've talked about

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breath hold times in cold water that may be on average 20 seconds, and as little as 10 seconds, and so there's obviously a disparity there that means that under breath hold, many individuals will actually not have sufficient time to escape from a helicopter, and so the EBS is a piece of equipment that hopefully will allow people sufficient time to escape from a helicopter. That does require them to be, I say here, successfully deployed to actually provide that protection. There's been a lot of concern that there's an overall safety benefit, that it does take time to deploy the EBS, and initially there were a lot of concerns that people would spend time deploying the EBS and not getting out quickly, and there's somebody with EBS sitting in a seat next to an exit was having problems, there might be somebody sitting on their inside who wanted to just get out very quickly who would be held up by that, and so in looking at EBS, it's very much again a thing of balancing the safety benefits against any potential disadvantages.

If we look at the benefits side, which I

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think is what we should do because of this disparity that we've got at the top of the slide here, then as long as we have got well designed EBS that can be very simple and can be deployed quickly, then it does mean that you're allowing that individual during this underwater escape; number one, to overcome disorientation particularly if you're turned upside down in a helicopter possibly in the dark, and people are very confused and the first few seconds as to which way up they are, they lose location of their exits if they're not careful, so this is something that can again delay escape. The EBS, if they're able to breathe, they've got a little bit more time to just orientate themselves again and relocate their exits. Actions such as releasing the seat harness, again if people have problems, they've just got that little bit of extra time to sort out why it hasn't released and effect a release of the harness. The ability to locate and jettison the exit or window, it may be right next to you, it may be some distance away, you have got enough time in the water to actually locate that exit and

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be able to operate the mechanism to get out.

We talked about the buoyancy problems that could be experienced. That's particularly difficult during the first probably ten seconds under water because over that period some of that trapped air will actually escape from the suit, and if you look at underwater video of people, you can actually see water escaping from the suits, but if somebody releases a harness before that water is escaped, they could be very buoyant, and if they are in a buoyant suit, they tend to with submersion float up towards the surface and then have to pull themselves down to the exit. In a capsize, they might be pushed down into their seat due to the buoyancy. So again effective use of breathing systems just gives people perhaps more time to overcome any problems they have and escape from the helicopter.

So I think in terms of benefits, there are some very definite benefits of having this piece of equipment.

ROIL, Q.C.:

Q. You say that this is a relatively recent

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development in terms of your experience in the North Sea. How long ago did people begin to use emergency breathing systems and how long has it taken it to become universal, or is it even yet universal?

MS. COLESHAW:

A. The differences between military and civilian, the military have been using them for probably 20 years plus, and tend to use compressed air systems. In terms of the offshore industry, I think I'm right in saying that the UK were probably the first to actually start using an EBS device, and that was work instigated by Shell UK who had had several accidents and had a whole program looking at survival at sea following a helicopter accident. They developed a rebreather called the Airpocket. So that was introduced in the late 90s. That was then developed further and what is now being used in the UK sector is what's referred to as a Hybrid Device. So it's a rebreather where a person will take a deep breath of air and basically have a counter lung. So they'll have a mouthpiece and they'll blow out into the counter lung. The pure rebreather,

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they'll just keep reusing that single breath of air. So blowing out into the bag, back into the lungs.

The hybrid has an extra small cylinder of gas which fires automatically when the unit goes under water. That's primarily to protect the individual if they don't have time to take that single breath of air before their head goes under water. So it gives -- between three and three and a half litres of air is discharged into the counter lung. That's the device that's now being used in the UK sector.

ROIL, Q.C.:

Q. And is that now universally or widely being used or is it still limited to certain companies?

MS. COLESHAW:

A. Certainly in the UK, I think that's used pretty well across the board now. In the UK, that everybody got the hybrid and rebreather device, and there are other companies around the world that are using that same device. Norway have a pure rebreather, so they're just relying on the individual taking a breath of air and rebreathing it from a counter lung.

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ROIL, Q.C.:

Q. And I think you said you're aware that we were using the - you had some engagement in the process that brought the compressed air system to Canada.

MS. COLESHAW:

A. That's right.

ROIL, Q.C.:

Q. Tell us a little bit about that just in terms of what engagement did you have in that process?

MS. COLESHAW:

A. That goes back to early 2006. At that time, CAPP held a workshop and they invited, I think, three of us from the UK to come over to Canada and basically talk about the UK experience in terms of the introduction of EBS in the UK.

So a lot of what we were presenting was relating to the rebreather and the hybrid devices, and then there was a lot of discussion about the merits of rebreathers versus compressed air systems.

ROIL, Q.C.:

Q. I think we had direct evidence from CAPP about

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the process that they went through over a long period of years. It's just rather interesting to note that you were one of the people that was resourced back then to bring some guidance or some information from the UK sector.

MS. COLESHAW:

A. That's right, and I later met a group who came over to the UK 18 months ago, was it, I can't remember the actual date of that, but I think it was to the UK and Norway at that time.

ROIL, Q.C.:

Q. Right, but I take it you were not involved in the decision making as to what to -

MS. COLESHAW:

A. No, not at all.

ROIL, Q.C.:

Q. Okay. Moving to Slide #8, again I think we can go through this one fairly quickly.

MS. COLESHAW:

A. Yeah, and this is just a listing of what are considered to be performance criteria that you'd be looking for in an EBS. So the obvious one is something that's very simple in design and this is primarily because you want something that's very quick to deploy.

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There's recognition that EBS is there to protect from drowning, and if you look at the different types of helicopter impact, then in a controlled ditching, then actually there are very few lives lost, but where lives tend to be lost most from drowning are flying incidents and what have been described as vertical descents with limited control as opposed to the fly-ins have got the highest fatality rate, but in both cases the majority of deaths where cause is known are thought to be due to drowning, and it's only when you get to uncontrolled impacts in order to find this as non-survival crashes where impact injuries exceed fatalities due to drowning.

So you're then looking at situations where perhaps there's very little time for people to prepare for the water impact, and it's, therefore, pretty vital that EBS are very quick to deploy. I think that's a very important performance criteria for EBS. The other items I've got here are easy to use in realistic conditions. A particular one is cold water. A lot of the work that's done of ease of use is done -- so the training course

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you've got in the offshore training centre which is relatively warm water compared to Canadian sea temperatures, UK sea temperatures, so it's important that manufacturers look at performance actually in cold water and there you're introducing the effects of cold shock and how it affects people's breathing from the units.

It's important how effective if somebody is inverted or if they're having to swim face down during an escape, and there aren't any snagging hazards when they're actually coming out through an exit or escape window.

The next one I've got there is compatibility with other equipment and that would apply both to the immersion suit, and the EBS might either be an integral part of that immersion suit or an extra piece of equipment that's added in. So particularly in the latter case, you don't want the performance of the EBS in any way hamper the performance of the immersion suit. The other area of particular interest is the seat harness. There's a lot of potential for four point harness to be affected by an EBS device,

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and they're variously situated on the chest down at the waist. So you've got to be sure that the harness can be released and it's not being trapped by the EBS, and vice versa that with a harness, you can actually find the EBS. So those two have got to interact correctly.

ROIL, Q.C.:

Q. So I take it from all of this evidence that there is a necessity at some point in time to make everything fit together to make sure that the life jacket, if separate, works with the suit; that the suit works with the EBS, and so on. Is there anybody that is overall responsible for that kind of integration, or do these tends to be disparate pieces that fit together sometimes and sometimes are a problem?

MS. COLESHAW:

A. It depends a bit on how much of the system is developed by manufacturers, and the problem comes here if you have a group of manufacturers that produce immersion suits - in the UK there would be a separate group that are producing life jackets. Some do both; a lot don't. A lot are separate companies.

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You've potentially got a different manufacturer again who produces the emergency breathing system. So then you can't have - it's very difficult to have the manufacturer of the immersion suit responsible for compatibility with every life jacket and every emergency breathing system.

ROIL, Q.C.:

Q. And I take it the seat belt manufacturer would like be another disparitor.

MS. COLESHAW:

A. Yeah.

ROIL, Q.C.:

Q. Separate individual, or separate entity.

MS. COLESHAW:

A. The process is simpler if you have a manufacturer who produces an integrated system. Helly Hansen is probably one of the few that have got a suit with integral buoyancy and they also make a breathing system, in which case they're responsible for looking at compatibility. Otherwise, it tends to be more - it tends to be the end user who puts together these different combinations who will then have to ensure that the system

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they've put together is compatible. Similar requirements certainly on the aviation side, in the UK the Civil Aviation Authority required compatibility assessments of suits and life jackets, and that was put on the helicopter suit manufacturers, I think, because there were a limited range of life jackets. So they actually had to test their suits in combination with the life jackets which would be worn. There isn't a straight answer to that one. At the end of the day, somebody needs to take responsibility for it.

ROIL, Q.C.:

Q. And I think that's something we need to know. We tend to think in our little part of the world that everybody else has got answers, and I think what you're telling us is that these are problems in other parts of the world as well?

MS. COLESHAW:

A. That's what I would say.

ROIL, Q.C.:

Q. And it's important for us to know that. Okay, finally, I think you're going to talk about the technical standards for the EBS.

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MS. COLESHAW:

A. Yeah, and this was one of the original questions in issue #1 was what are the standards relating to this equipment. The answer with EBS is at the moment there isn't a published technical standard for EBS. I was actually involved in a project with our Civil Aviation Authority to develop what they ended up calling an example draft technical standard that was published within a CAA report back in 2003, which at present that's the only published draft standard of any sort out there.

I'm currently working on a project for them to actually complete that standard, and part of the reason for it not being completed back in 2003 were that there were certain areas in terms of the performance of the EBS where we felt there wasn't sufficient information available in published data to be able to set clear performance criteria, possible criteria for tests. It's part of the current work that we'll come back to later in my presentation.

ROIL, Q.C.:

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Q. Yes, later in the presentation I think we deal with your current research on that.

MS. COLESHAW:

A. Yeah, what is at present and what is being developed are basic requirements that will cover the three generic types of devices we've talked about, so compressed air systems, rebreathers, and hybrid devices, just looking at work of breathing and breathing resistance. It's looking at minimum deployment times we talked about, something needed to be very quick to deploy; does that need to be one handed deployment, so that you can keep a hand on the nearest exit; if one hand is injured, can you still use it with the other hand, and it's looking at this issue of the different orientations, and it will cover compatibility, will cover snagging during escape, cold water performance, and the last one here, again buoyancy raised its head. In this case, it's additional buoyancy and this would relate just to these hybrid systems. If you've got a compressed air system, there's no problem with additional buoyancy, it's usually EBS. If you look at a rebreather, there's no additional

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buoyancy, just simply shifting air from the lungs into the counter lung, but with a hybrid system we are actually introducing some extra buoyancy, we're adding that extra three and a half litres of air into the system. So there's going to be a figure in there and a requirement that will be a maximum buoyancy allowable relating to that.

ROIL, Q.C.:

Q. So while there is a standard in the European Union for the suit itself, there is still not a standard with respect to the EBS?

MS. COLESHAW:

A. That's right, and at present the case is that the EBS must not in any way impair the performance of the suit. So again when our suit was assessed with the life jacket that's now most commonly used, it's called the lap life jacket, and that has got the hybrid rebreather as an integral part of the life jacket, and during the approval of that item, the Civil Aviation Authority wanted to be demonstrated that the rebreather didn't in any way interfere with the performance of the life jacket or the suit. They didn't approve the

EBS as such, but they wanted assurances it wasn't interfering with the safety of the life jacket or the immersion suit.

ROIL, Q.C.:

Q. Okay, and the final piece of personal equipment that you're drawing our attention to, and again this is something that we've heard evidence on, is the personal locator beacon?

MS. COLESHAW:

A. That's right, and again this is a piece of equipment that is gradually becoming an accepted piece of equipment to be carried in terms of passengers. I think crew have probably carried them for some years, and not so many years for the passengers. These are to aid in the location of the individual, and this is in the rescue phase following a helicopter incident. So it's an additional aid on top of a light that's found either on the life jacket or the suit, and you have reflective tape that allows people to be picked up, and this is an extra aid to locate an individual. These things transmit on different frequencies. So the ones carried by

pilots commonly have a distress frequency which will alert search and rescue organizations by satellite when an incident has occurred. The PLBs carried by passengers quite often only have a frequency that is used for homing. So this means that when the Search and Rescue facilities come to look for the incident and look for the individuals involved, that allows them to home in on the location of the accident and pick people up.

ROIL, Q.C.:

Q. Do you have any thoughts on whether or not these implements should be self-activating as opposed to activated by the wearer?

MS. COLESHAW:

A. Again if it's self-activating, it's one less thing for somebody in a distressing situation to have to remember to undertake, and again if it's manually activated, it quite often requires pressing a button or moving a lever and by the time they got to do that they're going to be in the water, their hands are already going to be starting to be cold, so they could well be trying to do that with a glove. So there are issues in terms of with a

gloved hand, are you going to be able to activate the unit. So there are certainly benefits to have something that is automatically activated by the water.

ROIL, Q.C.:

Q. Okay. I think the next portion of your report deals with a separate issue, and this might perhaps, Commissioner, be a place that we would stop for the day because I think we won't get very far into this. We're about half way through the report now, so it would take a similar amount of time, about an hour or so tomorrow to get through the next part of the report.

COMMISSIONER:

Q. All right then, fine, we'll adjourn then until 9:30.

ROIL, Q.C.:

Q. Thank you.

(UPON CONCLUDING 5 P.M.)

CERTIFICATE

We, the undersigned, do hereby certify that the foregoing is a true and correct transcript of a hearing heard on the 28th day of June, 2010 at Tara Place, 31 Peet Street, Suite 213, St. John's Newfoundland and Labrador and was transcribed by us to the best of our ability by means of a sound apparatus.

Dated at St. John's, NL this
28th day of June, 2010
Cindy Sooley
Discoveries Unlimited Inc.
Judy Moss
Discoveries Unlimited Inc.

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