

OFFSHORE HELICOPTER SAFETY INQUIRY
November 23, 2009
Tara Place, Suite 213, 31 Peet Street
St. John's, NL

November 23, 2009

PRESENT:

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..... Petroleum Board (C-NLOPB)**

**Ian Wallace/ Hibernia Management and
Cecily Strickland..... Development Company (HMDC)**

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Alexander C. MacDonald, Q.C..... Husky Oil Operations Ltd.

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Jamie Martin..... Families of Deceased Passengers

**Kate O'Brien.....Davis Estate (Pilot) and
..... agent on behalf of Douglas A. Latto for Lanouette Estate (Co-pilot)**

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..... Local 2121**

David F. Hurley, Q.C./

Karen Hollett..... Offshore Safety and Survival Centre, Marine Institute

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1 November 23, 2009
 2 COMMISSIONER:
 3 Q. Good morning, ladies and gentlemen. We're
 4 ready now to start the evidence from the--on
 5 the survival training from Memorial University
 6 and so are we ready, Ms. Fagan?
 7 MS. FAGAN:
 8 Q. Yes.
 9 COMMISSIONER:
 10 Q. Good morning, Mr. Rutherford.
 11 MR. RUTHERFORD:
 12 A. Good morning, Commissioner Wells.
 13 COMMISSIONER:
 14 Q. Okay then.
 15 MS. FAGAN:
 16 Q. This morning we're going to hear from the
 17 Offshore Safety Survival Centre, and as you
 18 may recall from the introduction quite some
 19 time ago now, the Centre offers a
 20 comprehensive range of courses in safety and
 21 emergency response training to a number of
 22 industries, and in particular, to the offshore
 23 petroleum industry and the Centre has a
 24 particular expertise in dealing with training
 25 for operations in cold and harsh environments
 26 and for this reason, it provides training to

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1 the workers in the offshore facilities off the
 2 coast of Newfoundland and Labrador.
 3 The format over today will be--there will
 4 be a little bit of movement back and forth.
 5 We will initially hear from the director of
 6 the Offshore Safety and Survival Centre, and
 7 that is Mr. Robert Rutherford. Then the
 8 inquiry is going to hear as well from Greg
 9 Harvey, and Greg Harvey is one of the
 10 trainers. Greg will provide a demonstration
 11 on the use of the HUEBA, which is the
 12 helicopter underwater escape breathing
 13 apparatus. We heard an awful lot of
 14 information on that device last week, and Mr.
 15 Harvey is one of the trainers and he has
 16 brought in one of these devices and he will
 17 explain the use so that there may be a little
 18 more of a complete understanding as to some of
 19 the aspects and the complexity of bringing
 20 such a device into the training environment.
 21 When Mr. Rutherford and Mr. Harvey are
 22 finished, we will have a panel, Mr.
 23 Rutherford, Mr. Harvey and as well another
 24 trainer, Mr. Patrick Dohey, is here. So the
 25 two trainers and the director will sit
 26 together, at which time we will then open up

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1 the questioning, because some of the questions
 2 may be more ideal for the trainer and other
 3 questions may be more ideal for the director.
 4 Mr. Rutherford will then direct the questions
 5 to the appropriate individual and as well
 6 during these presentations, there are three
 7 videos and we'll move to those at the right
 8 time.
 9 So in order to help this run smoothly,
 10 we're going to have Mr. Rutherford sworn and
 11 Mr. Harvey sworn and Mr. Dohey sworn, so that
 12 when they're getting up and down, we don't
 13 have to go through that process. So I'll
 14 first ask Mr. Rutherford to provide his full
 15 name and to have the Registrar swear him in.
 16 MR. ROBERT RUTHERFORD, SWORN
 17 REGISTRAR:
 18 Q. State your name please.
 19 MR. RUTHERFORD:
 20 A. My full name is Robert John Rutherford.
 21 MS. FAGAN:
 22 Q. I would ask Mr. Greg Harvey to come forward
 23 and be sworn and then we'll have Mr. Dohey
 24 come forward.
 25 MR. GREGORY HARVEY, SWORN
 26 REGISTRAR:

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1 Q. State your name please.
 2 MR. HARVEY:
 3 A. Donald Gregory Harvey.
 4 REGISTRAR:
 5 Q. Thank you.
 6 MS. FAGAN:
 7 Q. And Mr. Dohey.
 8 MR. PATRICK DOHEY, SWORN
 9 REGISTRAR:
 10 Q. State your name please.
 11 MR. DOHEY:
 12 A. Patrick Dohey.
 13 REGISTRAR:
 14 Q. Thank you.
 15 MR. ROBERT RUTHERFORD, EXAMINATION BY MS. ANNE FAGAN
 16 MS. FAGAN:
 17 Q. Mr. Rutherford, can you please provide a brief
 18 summary of your background? And I understand
 19 you're also going to give us a brief summary
 20 of Mr. Harvey's background and Mr. Dohey's
 21 background so that everybody has a context and
 22 perspective as to where the three of you are
 23 coming from and what information and
 24 experience you have.
 25 MR. RUTHERFORD:
 26 A. Okay, and I'd like to say good morning,

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<p>1 Commissioner Wells, counsel and stakeholders 2 and also to any viewers at home. I am very 3 happy and pleased to be here to present the 4 Marine Institute's offshore survival 5 capability to this Helicopter Safety Inquiry. 6 I've been Director of the Marine Institute's 7 Offshore Safety and Survival Centre for ten 8 years. My background is I'm a registered 9 professional engineer, as well as a 10 certificated first class marine engineer. 11 After I completed my engineering training or 12 engineering education in South Hampton, 13 England, I went to sea for 12 years, sailed in 14 a wide variety of vessels, vessel types with a 15 number of different companies in all ranks, up 16 to and including chief engineer. 17 I came ashore and in 1984, I joined 18 German & Milne which at the time it was a 19 marine engineering naval architectural 20 consultants and specializing primary in 21 icebreakers and icebreaker construction and 22 modernization. I joined there as senior 23 mechanical engineer and subsequently, I was 24 technical manager there. With this company, I 25 worked on and led a range of ship design, ship 26 modernization projects. As well, I engaged in</p>	<p>1 very quickly into doing other types of 2 training at the Offshore Safety and Survival 3 Centre. I also taught at the main campus of 4 the Marine Institute in marine engineering and 5 marine management subjects. 6 For the last five years, I have served as 7 the secretary of the International Association 8 of Safety and Survival Training and that's an 9 organization that represents 140 training 10 providers worldwide in 46 countries. 11 As the director of the Centre, I'm no 12 longer involved in delivery of training, but I 13 do have a responsibility to our clients to 14 ensure that training is delivered efficiently, 15 effectively and safely. As mentioned there 16 before, I have two instructors with me today. 17 Greg Harvey and Pat Dohey will be available 18 for questions on specific details relating to 19 training delivery, if required. Greg Harvey 20 is a survival training specialist and Pat 21 Dohey specializes in firefighting and other 22 aspects of helicopter transportation. As 23 noted previously, Greg Harvey will also 24 provide demonstration of the details of 25 helicopter underwater escape breathing 26 apparatus.</p>
<p>Page 6</p> <p>1 a wide range of consulting projects which 2 included ship surveys, inspections, quality 3 management systems and safety management 4 systems. 5 In 1990, I accepted a position here in 6 Newfoundland with the Newfoundland Dockyard 7 Corporation. At the time, the dockyard was a 8 ship repair yard. It was looking to position 9 itself to bid on offshore fabrication 10 contracts. I applied for the position of 11 manager engineering, which was a new position 12 at the Dockyard, and the responsibilities of 13 that department were to set up an engineering 14 group as well as quality management and safety 15 management, develop a quality management and 16 safety management systems for to bid offshore 17 contracts. 18 When the shipyard changed ownership from 19 the public sector to the private sector, I 20 left there and moved to the Marine Institute, 21 where I took over a position initially as a 22 tanker instructor at the Offshore Safety and 23 Survival Centre. I have a long background, 24 from my childhood, I was a competitive open 25 water swimmer as well as an open water 26 lifeguard and a dinghy sailer. So I moved</p>	<p>Page 8</p> <p>1 Just brief background. Greg Harvey is an 2 instructor with the Offshore Safety and 3 Survival Centre. He has more than 25 years 4 experience in cold water marine survival 5 training, including helicopter underwater 6 escape training, qualified instructor trainer 7 for both rebreather and compressed air 8 helicopter ditching emergency breathing 9 systems. In addition, he has extensive 10 experience working as an occupational diver, 11 dive supervisor and is the lead instructor for 12 the Marine Institute's occupational dive 13 program. Mr. Harvey is a member of: the 14 Canadian Standards Association Occupational 15 Safety Code for Diving Operations, Technical 16 Subcommittee; the CSA Competency Standard for 17 Diving Operations, Technical Subcommittee; the 18 CSA Occupational Diver Training, Technical 19 Subcommittee; and is a member of the Canadian 20 Association of Underwater Science. He also 21 sits on the Provincial Workplace Health Safety 22 and Compensation Commission, Diving Technical 23 Advisory Committee. 24 Mr. Dohey has a Bachelor of Education 25 degree from Memorial University, a Masters of 26 Science in Risk Crisis and Disaster Management</p>

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<p>1 from the University of Leicester in the United 2 Kingdom, as well as certificates in major 3 emergency management, helicopter landing 4 officer, helicopter refuelling, helicopter 5 firefighting and rescue, and helideck 6 attendant, and studying offshore helideck 7 safety emergency response at a number of 8 training institutions in Canada, the United 9 States and the United Kingdom. He possesses 10 senior fire officer certifications, the 11 International Fire Service Accreditation 12 Congress, IFSAC, and is a visiting staff 13 instructor at the Canadian Emergency 14 Management College in Ottawa. He has been an 15 instructor with the Offshore Safety and 16 Survival Centre since 1995, was the primary 17 delivery of helideck safety and emergency 18 response training for the startup of Hibernia, 19 Terra Nova and White Rose offshore projects. 20 He continues to provide this training on an 21 ongoing basis and also provides advice and 22 guidance on safe offshore helideck operations 23 to various operators on the Canadian east 24 coast, as well as the Gulf of Mexico. 25 MS. FAGAN: 26 Q. Thank you, Mr. Rutherford. Mr. Rutherford is</p>	<p>1 to the Inquiry of the Safety Survival 2 Emergency Response training which is provided 3 to offshore petroleum workers and I'll also 4 touch briefly on a role we play and can play 5 related to many aspects of offshore safety. 6 The presentation I'm going to give today 7 is going to address a number of issues. I'm 8 going to start off with background information 9 on the Offshore Safety and Survival Centre and 10 the Marine Institute as well, including 11 information on the nature and volume of our 12 training deliveries, some of our academic 13 processes, facilities, equipment, faculty and 14 staff and our quality assurance and safety 15 management systems. I will provide an 16 overview of the East Coast Canada offshore 17 training requirements, basically this is the 18 envelope that guides our training to the 19 offshore, a brief summary of some training 20 requirements and envelopes basically in other 21 regulatory jurisdictions. We'll get into some 22 more specific details related to helicopter 23 escape training and certainly related to 24 helicopter underwater escape breathing 25 apparatus where Greg Harvey will provide a 26 presentation. Also provide information on how</p>
<p>1 going to use a PowerPoint presentation and 2 before we start to go through that 3 presentation, there are a number of exhibits 4 and I'd like to have those exhibits entered if 5 there is no objection. The exhibits are 6 numbered 11 through to 23 inclusive, number 66 7 and as well, numbers 93 to 99. So I'd like to 8 have them marked and entered as an exhibit. 9 COMMISSIONER: 10 Q. Okay then, they're entered. 11 MS. FAGAN: 12 Q. Now Mr. Rutherford, I understand you have a 13 PowerPoint presentation and the format is 14 going to be that for the most part, you can 15 run through your presentation and occasionally 16 I may interject with the odd question and then 17 towards the end, we may have some further 18 questions. So if you'd like to begin with an 19 overview and then take us through your 20 presentation. 21 MR. RUTHERFORD: 22 A. Thank you, counsel. Just like to say that the 23 training of employees is fundamental to safe 24 operations and will form part of any 25 operator's safety plan. I will do my best to 26 provide a comprehensive and accurate account</p>	<p>1 we look to approach knowledge gaps and seek to 2 improve offshore safety training, some current 3 plans which are already in place and have been 4 in place to enhance the Marine Institute, the 5 OSSC capability to provide survival and 6 emergency response training to the growing 7 offshore petroleum industry and some 8 concluding remarks, and after the 9 presentation, I'll be more than happy to take 10 questions. The presentation can be found at 11 Exhibit 11. 12 Just we are part of the Fisheries and 13 Marine Institute of Memorial University and 14 Fisheries and Marine Institute, Memorial 15 University is probably known to most in this 16 room. It may not be known to all of the 17 viewers at home, but it is North America's 18 most comprehensive institute dedicated to 19 education, training, applied research and 20 industrial support in the oceans industries, 21 and also, it is part of Memorial University. 22 It is a technical institute within the 23 University and provides a portal to the ocean 24 for industry, educators, government and 25 researchers. So we have a--we are the focus 26 point for the ocean activities.</p>

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1 Just going to get into a little bit on
 2 how the Marine Institute is currently
 3 structure. This slide which I've brought up
 4 here, I will discuss. You'll see there's
 5 three circles in that, in the slide there,
 6 which represent the three schools. They're
 7 the three basic academic units of the
 8 Institute. The School of Ocean Technology is
 9 the newest school. This was recently
 10 implemented or put in place only last year and
 11 it looks at programs, applied research and
 12 development associated with ocean technology
 13 and it's very much a growing sector in
 14 Newfoundland and Labrador. The School of
 15 Fisheries relates primarily, as it says, to
 16 the fishing industry, but it also has programs
 17 and it has aquaculture, seafood development
 18 and sustainable aquatic resources as two
 19 centres within the--you seen under the School
 20 of Fisheries, those are CASD and CSAR are two
 21 industrial response centres.
 22 The School of Maritime Studies, which is
 23 what we are part of, as you can see, as
 24 programs which are primarily carried out at
 25 the main campus of the Marine Institute. The
 26 CMS, which is Centre of Marine Simulation,

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1 which is at the main campus of the Marine
 2 Institute, that's an industrial response
 3 centre which provides mainly simulating
 4 training which makes use of simulators, such
 5 as bridge simulator, engine simulator and
 6 ballast control simulators. Under there, you
 7 see the Offshore Safety and Survival Centre.
 8 That is our Centre. We provide, again,
 9 industrial response centre, and I'll get into
 10 that in a little bit more detail later, what
 11 that means, but we basically provide safety
 12 survival emergency response training to a wide
 13 range of industries and industry sectors, and
 14 under there, there's a SERT Centre. This is
 15 basically the SERT Centre, and again I'll get
 16 into that later, it's a satellite of the
 17 Offshore Safety and Survival Centre, which we
 18 spun out in 2003.
 19 Around that, around the framework here,
 20 you'll see at the top across is a blue strip
 21 there, academic and student affairs. These,
 22 or the academic side of the Institute comes
 23 under an executive within the Institute. He
 24 oversees all of the activities relating to
 25 academia and the student affairs, as it
 26 states, and underneath, anything that's not

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1 related to the academic side is under the
 2 corporate services and external affairs, which
 3 looks after the operations, the basic
 4 operations of the Institute.
 5 On the right-hand side, there's a number
 6 of offices. These offices report to the
 7 Executive Director. There's an office of
 8 research and development, which basically
 9 guides all our R & D activities. MI
 10 International, which looks after any
 11 activities that take place internationally.
 12 They also play a role with any of our graduate
 13 students that go overseas to study or to
 14 engage in activities, as well as they do a lot
 15 of developmental work overseas through CEDA
 16 and such other funding agencies.
 17 The Canadian Centre for Fisheries
 18 Innovation is what it says, basically looks at
 19 innovations in the fisheries industry. One
 20 Ocean is basically a unit that was put
 21 together to try and bring together the
 22 concerns and issues relating to the offshore
 23 petroleum industry and the fishing industry as
 24 a communication and looking at ways that these
 25 two industries can coexist. We have the
 26 National Research Council, IRAP, which is a

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1 unit within the Institute which undertakes
 2 research, and CFNES St. John's, that's the
 3 Canadian Forces. We have a large contingent
 4 of Canadian Forces undergoing training at the
 5 Marine Institute, main campus. So that's got
 6 their own separate centre there. So that's
 7 basically an overview of the Institute.
 8 This here just shows some pictures of the
 9 Offshore Safety and Survival Centre. This is
 10 our facility which is located in Foxtrap, just
 11 outside of St. John's. You'll see up in the
 12 top left-hand corner is our building there.
 13 On the bottom left is our firefighting
 14 training field. On the right-hand side,
 15 you'll see what is our survival tank, complete
 16 with some of the facilities there, including
 17 the helicopter underwater escape trainer.
 18 MS. FAGAN:
 19 Q. Just before you move on, the picture on the
 20 far right, the helicopter underwater escape
 21 trainer, we've heard the term "HUET" and I
 22 believe this may be one of the first times
 23 we've seen a photograph of the HUET. So
 24 that's the device that the trainees get in to
 25 be dunked and rolled in the training
 26 exercises?

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1 MR. RUTHERFORD:
 2 A. That is indeed, yes.
 3 MS. FAGAN:
 4 Q. That's the HUET?
 5 MR. RUTHERFORD:
 6 A. Yeah.
 7 MS. FAGAN:
 8 Q. Okay, all right.
 9 MR. RUTHERFORD:
 10 A. I should, before I move on to the next slide,
 11 I'll just mention really, the Offshore Safety
 12 and Survival Centre was originally established
 13 to provide training to the marine
 14 transportation industry. That's why it fits
 15 within the School of Maritime Studies. As
 16 well as the fishing industry, they provided
 17 support to the School of Fisheries. Because
 18 of its location here in St. John's, we are
 19 located in convenient proximity to the
 20 extensive oil and gas deposits, Newfoundland
 21 and Labrador's Grand Banks and elsewhere. It
 22 has grown and become Canada's largest provider
 23 of safety survival and emergency response
 24 training to the offshore petroleum industry.
 25 Just a little bit of our history there.
 26 Again, the facility, the OSSC has been in

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1 place for many years, providing support to the
 2 marine--to the School of Maritime Studies, but
 3 it's only been at its facility out in Foxtrap
 4 since 1986 and it was put there to deliver
 5 safety and emergency response training to the
 6 marine transportation industry, as noted
 7 before. In 1992, underwent a significant
 8 expansion, particularly relating to the fire
 9 field and fire field simulators, and this
 10 basically enhanced the facilities in
 11 preparation for delivering training to the
 12 offshore petroleum industry.
 13 In 2003, in response to continued
 14 expansion of training volumes at the OSSC, as
 15 well as an anticipated increase in these
 16 volumes, a new expanded marine base was
 17 established in St. John's harbour, and we also
 18 span out the satellite training centre in
 19 Stephenville in Western Newfoundland. The
 20 Satellite Training Centre, SERT Centre,
 21 basically, currently focuses primarily on non-
 22 marine safety and emergency response training,
 23 but is also able to provide a range of marine
 24 emergency response training courses. The
 25 establishment of that centre allowed us to
 26 move some training courses out of the OSSC.

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1 In particular, what we moved out were long
 2 certificate courses in firefighting and the
 3 challenge we were facing is that these--
 4 because they were long courses, it reduced our
 5 flexibility to offer short courses because
 6 they were taking up facility space and we
 7 weren't able to respond as rapidly as we
 8 needed to to the offshore petroleum industry
 9 needs. So that gave us a lot more flexibility
 10 to schedule our short courses.
 11 In terms of courses that we have, we have
 12 80, around 80 standard short courses in the
 13 area of safety survival and emergency
 14 response. Around 25 percent of the courses we
 15 have are focused at the offshore petroleum
 16 industry and we're also able to, and we do,
 17 deliver--develop and deliver client courses or
 18 client required courses, custom courses to
 19 meet specific needs. All the courses at our
 20 Foxtrap campus are between half a day and ten
 21 days' duration, so they're all--it's all short
 22 course training. The majority of our courses
 23 involve practical exercises in some way or
 24 another, but everything that we deliver at the
 25 OSSC, as an industrial response centre, we
 26 operate on what's called a cost recovery

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1 basis, and this is basically our facilities
 2 are provided for us, and major equipment are
 3 provided for us either through Government or
 4 other funding arrangements, but the actual
 5 delivery of all courses, including all ongoing
 6 maintenance, service, support and all minor
 7 equipment activities all has to be funded out
 8 of our training revenue. So we have to
 9 essentially break even.
 10 This next slide just gives a little bit
 11 of a snapshot of how the Centre has grown over
 12 the last few years. I think it's divided
 13 into--we got '95-96, '00, 2000 to 2001, 2005-
 14 2006 which are five-year blocks, and I think
 15 the last one is a three-year block. As you
 16 can see there, the Foxtrap, Southside, and the
 17 Southside is our marine base, which I
 18 mentioned before. You can see that the
 19 industrial response type training has gone
 20 from 60 to 1700 courses delivered to over
 21 5,000. You'll see the technical certificate
 22 course there, '95/96-'00/01, we don't deliver
 23 that any more. That's now delivered in
 24 Stephenville. We also deliver training to the
 25 rural Newfoundland through--we take travelling
 26 courses out and deliver all round the

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1 communities of Newfoundland. What's missed
 2 there, I guess, is the two years '06/07 and
 3 '07/08 when we undertook a significant amount
 4 of training. There was a new regulation came
 5 in for the fishing industry and it required
 6 all people involved in fishing activities to
 7 have basic safety training. So the actual
 8 activity in those two years exceeded 7,000
 9 people. We had--that was a very, very busy
 10 couple of years, and again this year is going
 11 to be similar because with the HUEBA, which
 12 was brought on, again we're exceeding the
 13 7,000.

14 I think I should note there's an Exhibit
 15 22 which--see if we can figure out how to shut
 16 this down. I think that's just--that just
 17 covers off the basic safety training, the
 18 basic safety training recurrent since '99. As
 19 you can see, the basic safety training, which
 20 I'll get into later, is our five-day course.
 21 It's relatively steady. These are--this is
 22 the course that's delivered to new entrants
 23 into the offshore petroleum industry, so that
 24 remains, except when we have new developments
 25 coming on stream, that remains relatively
 26 steady. The recurrences, which are the people

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1 actually in the industry, are just continuing
 2 to steadily grow with more and more people are
 3 engaged in this offshore petroleum industry
 4 off Newfoundland. That's shown in the slide
 5 there, the growth that's going on.

6 Just going to get a little bit into the
 7 academic structure of the Marine Institute.
 8 We are an educational institute and a public
 9 body, but all courses that we deliver at the
 10 Offshore Safety and Survival Centre are
 11 subject to the oversight of Academic Council
 12 of Fisheries and Marine Institute, and the
 13 role of the Academic Council is to approve,
 14 for recommendation to the University Senate,
 15 all degree regulations, courses and programs
 16 of study and to approve all non-degree
 17 regulations, courses, programs of study and
 18 candidates for diplomas and certificates.
 19 Approval of new courses and revisions to
 20 courses at the Offshore Safety and Survival
 21 Centre is undertaken by a standing committee
 22 of the Marine Institute's Academic Council,
 23 which is called the Non-Degree Program
 24 Committee. This committee is chaired by the
 25 Vice-Chair of Academic Council and includes
 26 the Marine Institute Registrar, three faculty

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1 members for each of the schools, one non-
 2 voting curriculum specialist and one student.

3 One of the key, I guess a key feature of
 4 our academic process is there is a separation
 5 of academic from operations, which means that
 6 our training quality is not sacrificed to
 7 expediency. If we need a change of course or
 8 something needs to be updated or changed, it
 9 has to go through a formal process, which can
 10 be, you know, when you're responding to
 11 industry, can sometimes be frustrating, but it
 12 tends to be--it's not--it's quite efficient
 13 and I think it serves a valuable function.

14 Our courses are subject to a regular
 15 review and updating and a schedule for review
 16 is prepared by Assistant Director of Programs,
 17 who reports to me, in consultation with a
 18 Program Chair. Our program chair there is a
 19 faculty member who is voted into that position
 20 for a duration of two years by other faculty
 21 members, and he has a role to play in
 22 developing of new programs and courses.
 23 Reviews may be undertaken because of the time
 24 since the last review, as a result of updating
 25 the regulations or other reason, as a result
 26 of comments received from students, clients or

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1 instructors, and the review of update is
 2 conducted by the faculty members who are
 3 teaching the course and under the oversight of
 4 program chair for some courses, not
 5 necessarily--if it's a course that's only
 6 delivered by one instructor, this may not be
 7 in that--it may not be--it may just be dealt
 8 with directly. Updated courses are signed off
 9 by management. We sign off to confirm that
 10 the courses are--we have the resources to
 11 deliver the courses and we have the--and that
 12 the courses do meet the requirements of our
 13 clients, and after that, they're submitted to
 14 the Non-Degrees Program Committee, which vets
 15 them for compliance with all academic
 16 processes.

17 The majority of our courses are
 18 regulatory required courses, so they're
 19 subject to external accreditation. They're
 20 required in some way by legislation. So the
 21 OSSC is recognized as a training provider by
 22 the Canadian Association of Petroleum
 23 Producers and its recognized by Transport
 24 Canada, the International Fire Service
 25 Accreditation Congress and others. For any
 26 courses that we deliver in accordance with

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1 external regulatory requirements, basically
 2 our review process involves us going to the
 3 regulator. If we update a course, we go first
 4 to the regulatory to confirm that the course
 5 meets their requirements. It then comes
 6 internal and goes through our own Non-Degree
 7 Programs Committee, just to confirm that it
 8 meets all requirements of the Institute.

9 Just on our employees, we're moving onto
 10 now. The current number of personnel full
 11 time and on call at the OSSC, including the
 12 SERT, the Safety and Emergency Response
 13 Training Centre in Stephenville, is 86. This
 14 is comprised of four managers. That's myself,
 15 I have an assistant director of operations and
 16 administration and I have an assistant
 17 director of programs, and I have a manager at
 18 the Safety and Emergency Response Training
 19 Centre in Stephenville. We have 70 faculty
 20 which are instructors and technical support
 21 personnel. This is comprised of both full-
 22 time and on-call people. We have around about
 23 70 to 80 percent of those are full-time
 24 faculty at our Centre, but we have what are
 25 called a number of on-call personnel and these
 26 are people that work within industry generally

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1 and when they're off on duty--a lot of them
 2 work shift work, like in the marine industry
 3 or offshore industry. When they come in off
 4 duty, they will provide training at our
 5 Centre, and this provides two things for us.
 6 One, it allows us to be reasonably flexible in
 7 terms of capacity. We have a number of people
 8 we can call on. Two, it keeps what's going
 9 on--it maintains a currency with industry
 10 requirements, so that we don't become
 11 separated from our clients.

12 We have three of our faculty are
 13 currently undertaking work related to research
 14 and development in the marine and offshore
 15 industry. I've got eight administrative
 16 personnel who are involved in processing
 17 student files and receiving payments. That's
 18 between the two centres. There's two out in
 19 the SERT Centre and six in Offshore Safety and
 20 Survival Centre, and because we have a
 21 cafeteria at the Foxtrap campus, we have one
 22 catering employee.

23 Our instructors are selected through an
 24 open competitive hiring process. We're part
 25 of Memorial University. Everything has to be
 26 published, advertised and there is a formal

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1 process for any hiring of instructors or any
 2 other employee, but the instructor process
 3 takes account of qualifications,
 4 certifications, industrial emergency response
 5 experience, as well as teaching experience.
 6 New instructors when they come on to the
 7 Centre are provided with an orientation and
 8 training program before they're assigned to
 9 course deliveries, and I think I've got some
 10 exhibits there on our-- we might as well go,
 11 19, 20 and 21. Let's have a look through
 12 that.

13 19, this is just--this would just be a
 14 typical advert for an instructor involved in
 15 safety and survival, which identifies what the
 16 duties are going to be. They will be
 17 delivering classroom instruction, but also
 18 assist in development of course materials in
 19 new and existing courses. Typically, our
 20 qualifications we're looking for, at least
 21 five years experience on offshore installation
 22 or commercial vessel, successfully completed
 23 three-year technology diploma or Transport
 24 Canada certification and we give preference to
 25 candidates with superior education previous to
 26 experience, industrial experience, members of

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1 emergency response organizations. We also
 2 look at some qualifications, if they're highly
 3 desirable, it's useful for us to have people
 4 who have SCUBA diving certification, fast
 5 rescue boat, life boat coxswains, emergency
 6 operations team safety of safety management,
 7 and we need to have people in good physical
 8 condition. So that's a typical advertisement.

9 We have in place, within our quality
 10 system, which I'm going to get into a little
 11 bit later, our instructor competency
 12 procedure, where we ensure people remain
 13 competent within for the delivery of courses
 14 and the Assistant Director of Programs and the
 15 Manager oversee this aspect of our operations,
 16 but to ensure that people, when they do come
 17 on board, have gone through the appropriate
 18 orientation, mentoring processes, ensuring
 19 that if there's external approval required by
 20 a regulatory authority for these people to
 21 teach courses that this has been obtained and
 22 you know, as noted here, we look at the hiring
 23 process and when we assign a new instructor at
 24 the Centre, we'll begin an orientation
 25 mentoring process, which is managed by the
 26 Assistant Director of Programs and we also

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<p>1 undertake a course. During this process, 2 there's a course we call START, which is 3 Successful Teaching and Resource Training. 4 This is a specific effective teaching course 5 that we utilize at the Offshore Safety and 6 Survival Centre and SERT. Basically it covers 7 off aspects of teaching in the classroom, as 8 well as practical teaching requirements, and 9 there's a requirement there to maintain 10 competency. We have to have people engaged 11 continuously in courses or we have to 12 recertify them in the courses that they're 13 teaching.</p> <p>14 And I think if we look at 21 there, this 15 is just--this would just be a table which 16 indicates the required competencies. For any 17 of our marine courses, which are delivered 18 under Transport Canada, before we can assign 19 any instructor to delivering a course, they 20 have to be approved by Transport Canada and we 21 have to submit to Transport Canada--every 22 year, we have to submit updated lists of 23 instructors and their training competencies 24 and what they've been doing in teaching. So 25 this is an updated list. We don't have that 26 for the offshore petroleum industry, not at</p>	<p>1 MR. RUTHERFORD: 2 A. We have our own. 3 MS. FAGAN: 4 Q. But as far as an outside regulator. 5 MR. RUTHERFORD: 6 A. Yeah, in the current process under CAPP, the 7 way they have approached it, because it is a 8 fairly new industry and what they did when 9 they started up basically is instead of--they 10 haven't got into the detail of the 11 requirements of instructors, but what they did 12 was approve or accredit various institutions 13 or training providers. So they looked at the 14 certain capabilities of the providers and have 15 accepted that their own internal processes. 16 So at the present time, there is no set 17 standard that's external to ourselves. 18 MS. FAGAN: 19 Q. Are there any industries, any petroleum 20 industries that do have an external standard? 21 MR. RUTHERFORD: 22 A. Yeah, the UK has specific requirements under 23 OPITO and I'll get into that a little bit 24 later. 25 MS. FAGAN: 26 Q. And you're going to deal with OPITO and the</p>
<p>1 this time, any specific external requirement 2 put in place for our competencies, but we do 3 have in place our own internal requirements. 4 MS. FAGAN: 5 Q. So can I just stop you there? In the marine 6 industry, if you are putting off a course 7 that's required or certificate that somebody's 8 seeking in the marine industry, the trainer's 9 qualifications is regulated by Transport 10 Canada? So there's a regulation process for 11 the - 12 MR. RUTHERFORD: 13 A. There's a regulation process. 14 MS. FAGAN: 15 Q. - for the trainers if it's a marine 16 environment? 17 MR. RUTHERFORD: 18 A. Yeah. 19 MS. FAGAN: 20 Q. But in the offshore petroleum industry, are 21 you saying that there is no regulation of the 22 trainers? It's a - 23 MR. RUTHERFORD: 24 A. Well, the current - 25 MS. FAGAN: 26 Q. You have your own processes.</p>	<p>1 UK? 2 MR. RUTHERFORD: 3 A. I'll deal with that a little bit later, yeah. 4 MS. FAGAN: 5 Q. You're going to do a comparison of the other 6 petroleum industries and the Canadian 7 industry? 8 MR. RUTHERFORD: 9 A. Yeah. 10 MS. FAGAN: 11 Q. In a few slides? 12 MR. RUTHERFORD: 13 A. Yeah. 14 MS. FAGAN: 15 Q. Well, I'll let you deal with that at that 16 time. 17 MR. RUTHERFORD: 18 A. The next slide is just a little bit on the 19 facilities and equipment. We have quite an 20 extensive array of facilities and equipment to 21 support training activities at the Offshore 22 Safety and Survival Centre. It includes the 23 large survival tank, which is complete with 24 our helicopter underwater escape trainer, 25 which we saw, various marine and offshore 26 evacuation devices. There is an</p>

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1 environmentally contained fire training ground
 2 outfitted with marine offshore petroleum
 3 helicopter fire simulators. Our marine base
 4 is outfitted with a variety of life boat, fast
 5 rescue craft launching devices, as well as we
 6 have a variety of different life boats and
 7 fast rescue craft. We have access to a
 8 seagoing marine vessel which is operated by
 9 the Marine Institute and which we make use of,
 10 and we have a large inventory of specialized
 11 training equipment that includes such things
 12 as our immersion suits, our helicopter
 13 passenger transportation suits, bunker gear,
 14 et cetera, et cetera, et cetera. It's
 15 considerable.

16 The next--oh, just before we get onto
 17 that, before I start that, I'm going to just
 18 show the next part of the--the first part of a
 19 three-part video, which is a video that we
 20 show to all the people that come through to
 21 the Centre. It's basically an--provides an
 22 overview of the Centre and provides an
 23 overview of some of our safety management
 24 practices. I'm just going to show the first
 25 part at the moment and the reason I think this
 26 provides -- particularly those that are not

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1 familiar with our Centre, it does provide a
 2 little bit of--you know, it's probably the
 3 best way to look and figure out what it is we
 4 do and how we go about it. So I will start
 5 this video. Hopefully it will start.

6 (VIDEO PLAYING)

7 Sometimes there are moments in life where
 8 the unthinkable happens. In those moments,
 9 life can depend on decisions made in seconds.
 10 At the Offshore Safety and Survival Centre, or
 11 OSSC, we help you put in the hours of
 12 preparation necessary so that you and everyone
 13 around you survives those crucial moments, so
 14 you'll be ready for the challenge. It's here
 15 that you'll learn how to think safe, act safe
 16 and be safe.

17 The Offshore Safety and Survival Centre
 18 is an industrial training and research centre
 19 of the Fisheries and Marine Institute of
 20 Memorial University, the most comprehensive
 21 institute of its kind in North America, and a
 22 globally recognized leader in its field.

23 The OSSC delivers the highest quality of
 24 safety, survival and emergency response
 25 training available to over 7,000 clients every
 26 year, clients from all over the world. The

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1 OSSC contributes to safety in a wide variety
 2 of industries, including marine
 3 transportation, offshore petroleum, fishing
 4 and other industrial sectors.

5 It is important to understand to follow
 6 the safety management systems employed by
 7 these sectors. Before getting into the do's
 8 and don'ts of emergency response, at the
 9 Offshore Safety and Survival Centre, we
 10 understand that safety begins as a mind set.
 11 The OSSC recognizes that the safety culture
 12 upheld by many of our client organizations is
 13 second to none. We have built our success on
 14 promoting the best safe working practices and
 15 we encourage you to share your best safety
 16 practices with us. In order to act safe, it's
 17 important to first think safe. To achieve a
 18 safe work environment, standards must be met
 19 at the highest level. At the OSSC, we aim to
 20 meet those very high standards by going beyond
 21 what is required by current legislation.

22 Our ISO 9001 accredited educational
 23 institute offers courses approved by
 24 authorities such as the Canada Newfoundland
 25 and Labrador Offshore Petroleum Board, Canada
 26 Nova Scotia Offshore Petroleum Board,

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1 Transport Canada and the International
 2 Maritime Organization. Part of what sets our
 3 courses apart is the ability to simulate a
 4 crisis in a way that is challenging to the
 5 trainee, but executed within a carefully
 6 controlled risk managed environment.

7 Our highly qualified and certified
 8 instructional team will take you out of the
 9 classroom and work safely in real-life
 10 simulated emergencies. In this way, we
 11 prepare our students to be ready for the
 12 challenge.

13 The Offshore Safety and Survival Centre
 14 is committed to providing a safe and healthy
 15 work and training environment. The OSSC
 16 adheres to all legislation, policies and
 17 procedures of the Occupational Health and
 18 Safety Act, Memorial University and our own
 19 specific safety and risk management practices.
 20 We employ specific exercise risk management
 21 procedures to mitigate the risk of an incident
 22 or accident. This includes procedures to
 23 identify and control workplace hazards, an
 24 active and involved occupational health and
 25 safety committee, as well as providing
 26 appropriate equipment and training to

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1 employees concerning workplace health and
 2 safety. Every manager, every member of the
 3 faculty and every staff member is familiar
 4 with their practical working conditions and
 5 they are required to report any hazards or
 6 violations to their immediate supervisor.
 7 At the OSSC, our approach to safety
 8 management incorporates risk assessments,
 9 safety critical activities, and reducing the
 10 potential for the unexpected.
 11 Before the course begins, clients are
 12 subject to medical and fitness requirements
 13 and should meet all course prerequisites. The
 14 course begins to be taught by an instructional
 15 team who will have the highest level of
 16 training and qualifications related to the
 17 particular field of study. Our instructor
 18 student ratios are kept low to allow for
 19 closer interaction and the frontline personnel
 20 are capable and authorized to deal with any
 21 situation.
 22 Finally, a full safety orientation for
 23 all students is a critical requirement that
 24 takes place prior to participating in any
 25 practical exercise. Students must know
 26 exactly what is expected of them, so that they

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1 can think and act accordingly. Only then will
 2 everyone truly be safe.
 3 I hope that provided a little bit of an
 4 overview. That particular video was shot
 5 partly at our Foxtrap Campus and partly in our
 6 Southside Campus. I will show a little bit of
 7 Part 2 and Part 3 of the video a little bit
 8 later on which has a little bit more detail
 9 about the activities that take place on those
 10 campuses. As noted in that video, the OSSC is
 11 part of the Marine Institute, and the Marine
 12 Institute is an ISO 9001 accredited
 13 educational institute, and as such, it's
 14 subject to regular internal and external
 15 audit. I'm going to bring up Safety Exhibit
 16 99. This is our Certificate of Registration.
 17 We have had this ISO 9001 system in place for
 18 six years, so I think it's gone through a
 19 couple of re-registrations, but we basically
 20 have a system which complies with the
 21 requirements, the design and development
 22 provision of education and training,
 23 industrial and applied research, industrial
 24 assistance to fishers and marine related
 25 industries, both provincially, nationally, and
 26 internationally, and if we go down to the next

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1 page here -- because our institute is located
 2 at a number of different geographical
 3 locations, we have -- each location has to be
 4 separately certified, separately registered,
 5 and subject to its own audit. So we've got
 6 the Fisheries Marine Institute, the main
 7 campus which is at Ridge Road. You'll see the
 8 Foxtrap Campus, Little Soldiers Pond, which is
 9 the Offshore Safety and Survival Centre. We
 10 have the Pier 25 which is our marine base on
 11 the south side of the harbour, and we also
 12 have Stephenville Campus out on the west coast
 13 of Newfoundland. So I'm probably the most
 14 audited person in the universe, I think. So
 15 within that, we have a safety management
 16 system. Because OSSC specifically undertakes
 17 exercises and practical exercise which involve
 18 risk and possible harm to our students, we
 19 have a safety management system which is quite
 20 extensive, but this was in place for many
 21 years, but when we put the ISO 9001 system in
 22 place at the Marine Institute, we rolled our
 23 system into the ISO 9001 system, so that it
 24 becomes an integrated -- completely integrated
 25 management system. The situation, I guess,
 26 this means that all our safety systems are

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1 subject now to internal and external audits.
 2 We have an orientation video. Part 2 and Part
 3 3 of the video I'd like to just show now.
 4 They're not too long. I think it's about ten
 5 minutes total. These show a little bit more
 6 of the activities that take place, the safety
 7 management systems that are in place at
 8 Southside and for the Foxtrap Campus.
 9 MS. FAGAN:
 10 Q. Before you start the video, because you did
 11 mention audits. You had mentioned in here
 12 that you're audited internationally. Have you
 13 been audited by any other regulators or any
 14 other authorities beyond the ISO auditing
 15 process?
 16 MR. RUTHERFORD:
 17 A. We're audited by ISO, which basically audits
 18 for policies, procedures, and our management
 19 structure and what we do, but we're also
 20 audited by -- we can be audited by regulatory
 21 bodies, so we are subject to audit -- regular
 22 audit by Transport Canada who we deliver
 23 courses to. We have been audited by the C-
 24 NLOPB. We recently undertook, which I think
 25 we'll be talking about a little bit later,
 26 there was course review undertaken by CAPP

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1 which was a form of audit. We're also audited
 2 by suppliers. We've had audits by Husky Energy
 3 and Petro Canada. So we're subject to frequent
 4 audits. People come to see -- you know, for
 5 good reason because we do put people into
 6 situations that are -- you know, do subject
 7 people to risk, so I think we are audited and
 8 people watch us very carefully.

9 MS. FAGAN:
 10 Q. Thank you.

11 MR. RUTHERFORD:
 12 A. We'll just play this. Here at the Offshore
 13 Safety and Survival Centre, Foxtrap Campus, we
 14 provide training in a range of areas,
 15 including sea survival, fire fighting,
 16 confined space, and helicopter emergency
 17 procedures. Fire fighting training takes place
 18 at our especially equipped fire field, which
 19 sea survival training takes place in our
 20 survival tank, which includes a helicopter
 21 underwater escape trainer, or HUET. For the
 22 safety of everyone on the campus there's a
 23 dedicated emergency response plan to deal with
 24 a variety of emergencies. Please take note of
 25 the marked escape routes and emergency
 26 procedures posted throughout the building.

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1 In the event of a real emergency, you
 2 will hear one continuous alarm bell to
 3 evacuate the building. Students must
 4 immediately gather at a clearly identified
 5 muster station. Your instructor will conduct
 6 a roll call to ensure everyone is accounted
 7 for. If a medical emergency arise, the
 8 technical personnel assigned to your practical
 9 exercise will immediately respond to the
 10 situation. They are trained as medical first
 11 responders and are re-certified to current
 12 medical protocols and standards on a regular
 13 basis. If the response required is other than
 14 minor in nature, we will activate the OSCC
 15 medical emergency response plan. A team of
 16 trained technical personnel, including
 17 paramedics will respond. The Offshore Safety
 18 and Survival Centre is extensively equipped
 19 with first aid equipment, including portable
 20 trauma kits and automated external
 21 defibrillators. These kits are readily
 22 available to medical response personnel.

23 Accident and incident reporting are
 24 important aspects of an effective safety
 25 management system. If you see an incident,
 26 accident, or unsafe practice, advise your

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1 instructional team immediately. Part of our
 2 safety culture is to prevent accidents before
 3 they happen. At the OSCC, we want to ensure
 4 that everyone involved is safe.

5 Any practical session on the fire field
 6 is first preceded by classroom instruction and
 7 a minimum of two instructors are present for
 8 all major fire fighting exercises. Technical
 9 personnel are also assigned to each course.
 10 They prepare the fire field and required
 11 equipment prior to the exercise, with your
 12 safety in mind. For each exercise, you will
 13 be issued personal protective equipment that
 14 you are required to wear at all times. Your
 15 instructors are also equipped with personal
 16 radios and a thermal imaging camera that will
 17 assist in ensuring your safety. Prevailing
 18 weather conditions are always taken into
 19 account when preparing for fire field
 20 exercises. During any fire field exercise,
 21 the following safety procedures must be
 22 followed. Your instructor is in charge at all
 23 times, listen and following instructions
 24 carefully. Report any medical conditions or
 25 concerns. Appropriate personal protective
 26 equipment must be worn at all times. Smoking

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1 is absolutely prohibited. Neither chewing gum
 2 nor facial hair are permitted while wearing a
 3 breathing apparatus. No lighters, jewellery,
 4 or cell phones are permitted. Report
 5 accidents, incidents, or unsafe practices
 6 immediately.

7 Your instructors will ensure that every
 8 student is accounted for before and after an
 9 exercise, and, of course, your instructors are
 10 also responsible for ensuring your safety at
 11 all times.

12 At our survival tank, our well trained
 13 instructors are responsible for ensuring safe
 14 conduct during all practical exercises. So
 15 we'll do that right now. We can do an head
 16 count. One, two, three, four. At least one
 17 instructor is on the pool deck at all times
 18 while an exercise is in progress. During in
 19 water exercises, a certified life guard is on
 20 deck as well. Technical personnel are on hand
 21 to ensure that all equipment is properly
 22 maintained and ready for use. Prior to
 23 entering the water, your instructor will show
 24 you proper procedures for that exercise, and
 25 as required, they remain in the water during
 26 practical sessions. Where required, equipment

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1 used during practical exercises is fully
 2 serviced, inspected, and cleaned by a licensed
 3 servicing company to ensure your personal
 4 safety and hygiene. During any survival tank
 5 exercise the following safety procedures must
 6 be observed. Your instructor is in charge at
 7 all times. Listen and follow instructions
 8 carefully. Report any medical conditions or
 9 concerns. Appropriate personal protective
 10 equipment must be worn at all times. You are
 11 encouraged to wear long loose fitting clothing
 12 for these exercises. No gum is permitted, no
 13 diving is permitted, no running on the pool
 14 deck. Report accidents, incidents, or unsafe
 15 practices immediately.

16 Here at the survival tank, your course
 17 may include training in this unit, the
 18 helicopter underwater escape trainer, or HUET.
 19 Because of the inherent risk in this type of
 20 training, we follow strict risk management
 21 procedures in all HUET exercises. Technical
 22 personnel are responsible for conducting an
 23 inspection of the helicopter underwater escape
 24 trainer prior to each exercises. The
 25 following personnel are assigned to a HUET
 26 exercise to ensure everyone’s safety; two

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1 instructors who will be in the water with you
 2 at all times, a certified life guard, a crane
 3 operator, two in-water safety swimmers
 4 equipped with scuba, and a safety swimmer
 5 supervisor, also equipped with scuba on deck.
 6 You will wear personal protective equipment in
 7 a size appropriate for you. This equipment is
 8 serviced, inspected, and cleaned after each
 9 use by a licensed servicing company to ensure
 10 your personal safety and hygiene. Please be
 11 sure to follow all survival tank safety
 12 procedures while participating in helicopter
 13 underwater escape training.

14 Thank you very much for your attention.
 15 We have demonstrated to you the importance of
 16 safety in all our courses at the Offshore
 17 Safety and Survival Centre. While it’s
 18 important to follow the rules, remember safety
 19 begins as a mindset, recognizing that we are
 20 all responsible for ourselves and each other.
 21 We then ensure that we are working within a
 22 true safety culture. So remember if you first
 23 think safe, then act safe, everyone will be
 24 safe.

25 Here at the Offshore Safety and Survival
 26 Centre’s southside marine base, we provide

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1 training in open water sea survival, fast
 2 rescue craft handling, life boat operations,
 3 and oil tanker safety. This facility features
 4 a variety of marine and offshore life boat
 5 launching systems, rescue boats, and an ocean
 6 going training vessel. For the safety of
 7 everyone on the campus there’s a dedicated
 8 emergency response plan to deal with a variety
 9 of emergencies. Please take note of the
 10 marked escape routes and emergency procedures
 11 posted throughout the building.

12 In the event of a real emergency, you
 13 will hear one continuous alarm bell to
 14 evacuate the building. Students must
 15 immediately gather at a clearly identified
 16 muster station. Your instructor will conduct
 17 a roll call to ensure everyone is accounted
 18 for. Should a medical emergency arise, the
 19 technical personnel assigned to your practical
 20 exercise will immediately respond to the
 21 situation. They are trained as medical first
 22 responders and are re-certified to current
 23 medical protocols and standards on a regular
 24 basis. If the response required is other than
 25 minor in nature, we will activate the OSCC
 26 medical emergency response plan. A team of

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1 trained technical personnel will respond.
 2 Portable trauma kits, including automated
 3 external defibrillators are readily available
 4 to medical response personnel. Accident and
 5 incident reporting are important aspects of an
 6 effective safety management system. If you
 7 see an incident, accident, or unsafe practice,
 8 advise your instructional team immediately.
 9 Part of our safety culture is to prevent
 10 accidents before they happen and we want to
 11 ensure that everyone involved is safe at the
 12 OSSC.

13 Your instructors are responsible for
 14 ensuring your safety during small boat
 15 operations and open water sea survival
 16 exercises. Any practical session in small
 17 boat operations is first preceded by classroom
 18 instruction. Technical personnel are assigned
 19 to all small boat training courses. We
 20 prepare life boats, rescue boats, and required
 21 equipment prior to the exercise with your
 22 safety in mind. For each exercise, you will
 23 be issued personal protective equipment that
 24 you are required to wear at all times. Your
 25 instructors are also equipped with personal
 26 radios and location devices to assist in

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1 ensuring your safety. Prevailing weather
 2 conditions are always taken into account when
 3 preparing for both small boat operations and
 4 open water sea survival exercises. During any
 5 small boat operations or open water sea
 6 survival exercises, the following safety
 7 procedures must be followed. Your instructor
 8 is in charge at all times, listen and follow
 9 instructions carefully. Report any medical
 10 conditions or concerns. Appropriate personal
 11 protective equipment must be worn at all
 12 times. Smoking is prohibited. Jewellery
 13 lights or cell phones are permitted. No gum
 14 is permitted while participating in an open
 15 water exercise. Report accidents, incidents,
 16 or unsafe practices immediately. Before and
 17 after an exercise, your instructors will
 18 ensure that every student is accounted for.
 19 One, two, three, four, five, six, seven,
 20 eight, nine -- and, of course, instructors
 21 will monitor you closely throughout the
 22 exercises.
 23 Open water sea survival training is one
 24 of the exercises you may participate in while
 25 at the southside marine base. For the safety
 26 of everyone, we have extensive safety

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1 practices in place due to the inherent risk of
 2 this type of training. Training in a survival
 3 tank is mandatory prior to any open water sea
 4 survival exercise. The following personnel are
 5 assigned to open water sea survival exercises
 6 to ensure everyone's safety; the instructor on
 7 the deck, instructor in the water, fast rescue
 8 boat crew, including technical personnel with
 9 medical first responder trainer, training
 10 vessel crew, and two in-water safety swimmers.
 11 Before an exercise takes place, your
 12 instructional team and the master of the
 13 training vessel will review the weather
 14 conditions in order to decide a suitable
 15 location and if the exercise is a go or a no
 16 go. Before beginning any sea survival
 17 exercises, students receive a briefing on
 18 board the training vessel, outlining shipboard
 19 polices and procedures, including emergency
 20 procedures and muster points for real
 21 emergencies, location of emergency equipment,
 22 lounge area, and smoking policy. You'll also
 23 be briefed on potential hazards, including
 24 vessel motion, overboard discharges, and
 25 rubbing strake, ascending and descending
 26 ladders and scramble nets, and bow and stern

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1 areas. You will wear personal protective
 2 equipment in a size appropriate for you. This
 3 equipment is serviced, inspected, and cleaned
 4 after each use by a licensed servicing company
 5 to ensure your personal safety and hygiene.
 6 Students are responsible to make sure they
 7 fully understand what is expected of them and
 8 to listen and follow any instructions. Safety
 9 swimmers and the instructor in the water will
 10 monitor and assist you at all times. The fast
 11 rescue craft is also standing by. Trauma kits
 12 and hypothermia response equipment are kept
 13 and maintained on board the training vessel.
 14 If for any reason the master or instructional
 15 team feels that conditions are not ideal, the
 16 exercise will be terminated.
 17 Thank you very much for your attention.
 18 While we have demonstrated to you the
 19 importance of safety within the delivery of
 20 all courses at the Offshore Safety and
 21 Survival Centre, and while it's important to
 22 follow the rules, remember safety begins as a
 23 mindset. Recognizing that we are all
 24 responsible for ourselves and one another, we
 25 then ensure that we are working within a true
 26 safety culture. So remember if you first

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1 think safe, then act safe, everyone will be
 2 safe.
 3 Sorry for the duplication there. I think,
 4 basically there was a little bit between the
 5 Foxtrap Campus and the Southside Campus, but I
 6 think it does give -- those videos do give
 7 people a better understanding for those who
 8 are not familiar with our Centre of the
 9 activities that take place at our Centre and
 10 how we manage those activities. That video
 11 can be found at Exhibit 23 if anybody is
 12 interested. I'm going to move on now from the
 13 Centre to look at the basic framework that
 14 provides the oversight of training for the
 15 offshore petroleum industry in the Canadian
 16 east coast.
 17 MS. FAGAN:
 18 Q. Mr. Rutherford, before you do that, just for
 19 the viewers at home, if they go to Exhibit 23,
 20 what they'll likely see is a link to a website
 21 and that's a much more efficient way of
 22 pulling down the video, so that if somebody
 23 wants to look at that video again. Most of
 24 the parties already have the list and they see
 25 that on the list, it's a direction to a link,
 26 and the link will not likely cause as much

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<p>1 trouble for your computer as trying to 2 download the actual video. So that's why 3 that's done. So for those that are trying to 4 review this later on, go to the link. Now I 5 don't like to interrupt your flow, but I have, 6 so I'll let you go back to the training 7 because I understand now you're going to drill 8 down a little bit and get into some of the 9 actual courses that pertain to the helicopter 10 transportation.</p> <p>11 MR. RUTHERFORD: 12 A. Absolutely, yeah.</p> <p>13 MS. FAGAN: 14 Q. Because you've said you offer 80 courses. 15 We're only going to focus on the few that are 16 relevant to the transportation of the offshore 17 workers.</p> <p>18 MR. RUTHERFORD: 19 A. Thank you, counsel. So basically the training 20 for the offshore petroleum industry here in 21 Eastern Canada, information was provided by 22 CAPP last week, but I'm going to go into it 23 just a little bit and touch on the bits that 24 actually affect our operations. Basically, 25 the majority of the courses that we deliver, 26 as mentioned before, are delivered in</p>	<p>1 certificates. I think information on these 2 can be found in the CAPP exhibits last week, 3 but also we'll get into Exhibit 12, I think. 4 At the Offshore Safety and Survival Centre, we 5 primarily focus on Section 3 of this document 6 and that's what we're going to be talking 7 about today. We do provide courses for -- 8 marine courses for the standby vessels, but 9 I'm going to focus primarily here on what we 10 do for the offshore petroleum production and 11 drilling installations. So Section 3.1 covers 12 aspects of the personal safety training, and 13 this is the safety training that's required. 14 Everybody that goes offshore to drilling 15 platforms or operations has to undergo certain 16 levels of personal safety training. There is 17 offshore survival introduction, which we'll 18 get into. We'll get into these in more detail 19 later, so I'll just list them out at the 20 moment; basic survival training, basic 21 survival training recurrent, hydrogen sulphide 22 training, workplace hazardous materials 23 information systems, transportation of 24 dangerous goods, basic first aid, advanced 25 first aid, and cardiopulmonary resuscitation, 26 CPR Level C. Section 3.3 training in the</p>
<p>1 accordance with the Canadian Association of 2 Petroleum Producers, and in accordance with 3 Atlantic Canada Offshore Petroleum Industry 4 Standard Practice for training and 5 qualifications of personnel, as ratified by 6 the Petroleum Board, and the current version 7 of that was issued in April, 2008. The CAPP 8 Industry Standard Practice Document is 9 subdivided into eight chapters and they're 10 shown here on the slide. We have drilling 11 installations, personnel qualifications and 12 training, production installations, personnel 13 qualifications and training. These two 14 sectors just identify what training is 15 required for those two types of operations. 16 Section 3 is mandatory safety training for all 17 petroleum installations. Under Section 4, 18 we've got a section on mobile offshore 19 drilling units and the marine certifications 20 required for mobile offshore drilling units. 21 Section 5 covers standby, supply support 22 vessel, personal qualifications and training. 23 Section 6 is emergency preparedness and 24 response for all petroleum installations, and 25 Section 7 are exemption and equivalency 26 procedures. Section 8 is recognition of</p>	<p>1 offshore petroleum industry, many of the 2 emergency duties are undertaken by specialized 3 teams of emergency responders. So we 4 undertake a fair amount of training for these 5 teams and the type of training that we cover 6 off here is offshore fire team, offshore fire 7 team recurrent which is a continuing 8 proficiency, helicopter landing officer, 9 rescue craft team, survival craft coxswain. A 10 note at the bottom there, Section 3.2, which 11 you may think we missed out, basically that 12 refers to technical training, such as crane 13 operators, we don't deliver that at the 14 Offshore Safety and Survival Centre, most of 15 that is delivered by other private industry 16 suppliers or by the College of the North 17 Atlantic. So we don't touch on those.</p> <p>18 MS. FAGAN: 19 Q. So before you move to this slide, as I 20 understand it, CAPP last week provided 21 information on the courses and what you've 22 included in your exhibits in 12 and 13 are, I 23 believe, the index, and then the outline of 24 the courses. So you've taken the segments 25 that apply to these particular courses and 26 included those in your exhibits. So that if</p>

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1 somebody is looking at the exhibits, what
 2 they'll understand is what's contained are
 3 portions of the entire program that are
 4 relevant. So we have the index and then we
 5 have our --
 6 MR. RUTHERFORD:
 7 A. There's the index there.
 8 MS. FAGAN:
 9 Q. But not all of the index has been included?
 10 MR. RUTHERFORD:
 11 A. No, it's only the parts -- we've only included
 12 the parts that are relevant. if you want to
 13 go for the full information, go to the
 14 exhibits that were provided by the Canadian
 15 Association of Petroleum Producers.
 16 MS. FAGAN:
 17 Q. So Exhibit 13, as you can see, is only the
 18 section that deals with the programs that
 19 we're going to focus on because we're
 20 interested in helicopter transportation and
 21 what's relevant to that. So many of the other
 22 courses that's offered, Mr. Rutherford won't
 23 be dealing with them.
 24 MR. RUTHERFORD:
 25 A. Just to touch base here on the Training and
 26 Qualifications Committee, again this was --

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1 this was provided. Paul Barnes of CAPP did
 2 provide information to the hearing on this,
 3 but just basically to refresh everyone's
 4 memory and just to provide the oversight for
 5 what we do, there is a Training and
 6 Qualifications Committee, and this Training
 7 and Qualifications Committee is a multi
 8 stakeholder committee which reviews and
 9 updates the Canadian East Coast Offshore
 10 Petroleum Industry Standard Practice for the
 11 training and qualifications of personnel. The
 12 Training and Qualifications Committee does
 13 consist of one representative from each of the
 14 Boards, the Canada Newfoundland Offshore
 15 Petroleum Board and the Canada Nova Scotia
 16 Offshore Petroleum Board. There are two
 17 representatives from the Canadian Association
 18 of Oil Well Drilling Contractors, the CAODC;
 19 three representatives from the Canadian
 20 Association of Petroleum Producers. That's as
 21 it stands at the moment within the Terms of
 22 Reference of the Committee in their current
 23 document. Representatives of the Marine
 24 Institute and Survival Systems do attend these
 25 meetings by invitation, and that's been since
 26 early 2005. Prior to that, we weren't part of

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1 this committee. Previously before 2005, if
 2 there were issues brought to our attention by
 3 the committee, it would just be communicated
 4 to us by the committee, but we do have an
 5 invite to sit on the committee now, although
 6 we're not actual voting members of the
 7 committee. We'll touch base on the Training
 8 and Qualifications Committee. They review the
 9 standard practice of training and
 10 qualifications every year. I noted that the
 11 current version is April, 2008. It has been
 12 delayed. I think it's due for -- I think
 13 they're going to try and get it out next
 14 month, but it has been delayed a little bit
 15 for some reason. Recommendations for any
 16 changes to training standards are managed
 17 through a change request form which is
 18 submitted to this committee. A change request
 19 form can be submitted by anybody. It can be
 20 committee members, or we can submit a change
 21 request form. That change request form will
 22 then go to the committee members and they will
 23 then review the change and at the committee
 24 meetings they would determine whether we
 25 approve the change, modify it, or send it
 26 back. If there is a need to update any course

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1 requirements between issues of the training
 2 standards, for instance, if we have a
 3 situation we had with the HUEBA course, which
 4 was introduced, between issues of the
 5 standard, those changes are communicated to
 6 stakeholders generally by letter or e-mail so
 7 that the information will come out to us and
 8 we're aware of it, but it will then roll into
 9 the next issue of the standards. There's
 10 three courses that are contained within the
 11 standard practice which relate to safety and
 12 survival training, or basic safety and
 13 survival training. This is training which is
 14 undertaken by people going offshore, prepares
 15 them for aspects of emergency response,
 16 provides awareness of the various hazards
 17 offshore, and also undertakes a practical
 18 training related to sea survival. So the three
 19 courses we have are basic survival training
 20 course -- this is a course that must be
 21 completed by anyone new coming into the
 22 industry prior to their first tour of duty
 23 offshore. The basic is a five day course and
 24 it's valid for three years. The basic
 25 survival training refresher course provides
 26 for continuing proficiency so that people who

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1 have been offshore, every three years they
 2 have to come back and to the refresher course.
 3 This particular course just provides for
 4 continued proficiency, and it's a little bit
 5 more practical orientated than the five day
 6 course, it really focuses on elements of
 7 practical training. We have a course called
 8 the survival introduction course. This is a
 9 course that's put in place for visitors,
 10 people who are not working offshore generally,
 11 they are people who are only going to be
 12 offshore for a short term, for a short period
 13 of time. I believe Commissioner Wells indeed
 14 took this course before he went offshore as
 15 part of this Inquiry. It's completed
 16 basically for people who haven't got a BST or
 17 a BST-R. It provides -- it's a one day course
 18 valid for three years. Generally people who
 19 are going offshore have done this course will
 20 be under the supervision of somebody offshore,
 21 so they're not -- they don't go through the
 22 full range of training because somebody will
 23 be keeping an eye on them while they're
 24 offshore.
 25 MS. FAGAN:
 26 Q. I notice that we're about one minute to the

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1 break time and you're now going to provide a
 2 little bit more detail on each one of these
 3 course, so this would be a good time to break
 4 before we get into that detail.
 5 COMMISSIONER:
 6 Q. Okay, we'll take fifteen minutes.
 7 MR. RUTHERFORD:
 8 A. That'll be good. My throat is getting dry.
 9 (RECESS)
 10 MS. FAGAN:
 11 Q. Okay, we're back from the break and Mr.
 12 Rutherford is now going to go through a couple
 13 of slides that will explain the basis survival
 14 training, and we're going to focus on the
 15 basic course and the recurrent course, and a
 16 little bit on the introduction course, and
 17 I'll let you take it away.
 18 MR. RUTHERFORD:
 19 A. Thank you, counsel. I must apologize, my
 20 voice was starting to run out of steam there
 21 just before the break. I got a little bit of
 22 a rasp in the throat, but counsel has very
 23 kindly given me a cough drop, so hopefully
 24 I'll be in much better form right now, at
 25 least for a little while, anyways. Moving
 26 into the basis survival training course, which

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1 as noted before, is the course that everybody
 2 is required to take before they go offshore in
 3 Eastern Canada, and anyone coming into the
 4 industry is required, and the objective of
 5 this course is basically to provide personnel
 6 with a basic understanding of the hazards
 7 associated with working in an offshore
 8 environment, the knowledge and skills
 9 necessary to react effectively to offshore
 10 emergencies, and the ability to care for
 11 themselves and others in an offshore -- in a
 12 survival situation. So it is -- keep in mind,
 13 it is a basic level course. These are people
 14 who have not been exposed to the industry
 15 before and it just provides the grounding.
 16 This is going to be a little bit dry because
 17 I'm just going to go through some of the
 18 issues in relation to course content. I think
 19 it's just important that we know what is
 20 covered in this course just for the record. So
 21 the BST course, we deal with hazards and
 22 emergencies associated with working offshore,
 23 deal with emergency preparedness and response,
 24 prevention detection and control of fire,
 25 sections on self-contained breathing apparatus
 26 and the use of these, personal flotation

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1 devices. There's a section on what to do in
 2 the event of installation abandonment, how to
 3 use inflatable life rafts, use of totally
 4 enclosed motor propelled survival craft, life
 5 boats. It also covers off issues such as the
 6 enemies of survival, which basically teaches
 7 people what they need to do to respond in a
 8 survival situation. Cover off some aspects of
 9 search and rescue. Undertake, as we saw in
 10 the video there, practical sea exercises
 11 offshore here, offshore St. John's.
 12 Helicopter safety and emergency procedures,
 13 and helicopter underwater escape training,
 14 HUET exercises, one day dedicated wholly to
 15 issue relating to helicopter aspects - aspects
 16 of helicopter safety. We also deal with such
 17 things as personnel transfer devices, such as
 18 Billy Pugh and Frogs. Demonstration of
 19 emergency personnel descent devices which we
 20 have a Skyscape device for in the event of
 21 emergency, people having to evacuate a
 22 platform of a rig. Demonstration of the use
 23 of smoke hoods, and as of May 5th this year,
 24 we have compressed air helicopter underwater
 25 escape breathing apparatus training. I say
 26 May 5th. I think actually the e-mail in the

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<p>1 exhibit came to me on May 6th, but we'll deal 2 with that later. The next course we have 3 there is BST recurrent course and this is 4 where we provide the continued proficiency and 5 it's a shorter course because it doesn't focus 6 so much on the classroom activities, it 7 focuses primarily on all of the practical 8 activities, and the objective of this course 9 is to provide the continued proficiency in the 10 use of safety, survival, rescue equipment 11 techniques. It also is intended to update 12 individuals. In three years, there can be 13 changes that take place to survival and 14 survival technologies, so it provides an 15 update to people working offshore on any 16 updates to procedures or equipment. So this 17 course, much shorter, is discussion of 18 offshore hazards, deal with personal life 19 saving equipment, looks at installation 20 abandonment, survival rescue equipment and 21 techniques. Again we have a practical sea 22 exercise in the course, we have safety and 23 emergency procedures associated with 24 helicopter transport, we have helicopter 25 underwater escape trainer exercises, and again 26 we have the compressed air, HUEBA, exercises</p>	<p>1 covers off many of the same aspects; offshore 2 hazards, emergency response, installation 3 abandonment, evacuation systems, life saving 4 appliances, personal flotation devices. There 5 are practical pool exercises that covers off 6 survival theory, survival distress signals, 7 covers off rescue and rescue equipment, 8 helicopter safety and emergency procedures, 9 helicopter underwater escape trainer 10 exercises, and compressed air. So there's a 11 fair bit of information there in the one day. 12 This course doesn't cover off -- we don't get 13 an opportunity in this course to do exercises 14 in the open water because it's only a one day 15 course. 16 MS. FAGAN: 17 Q. So the sea day which you would get in the 18 other two, and we heard Mr. Decker talk about 19 the sea day, isn't part of the one day course, 20 but in all three courses, I understand, 21 everybody will have to do the HUET training 22 and everybody will end up having to do the 23 underwater breathing apparatus. So those two 24 components, as well as the other ones that 25 you've described, that physical pool "get 26 soaking wet" type aspect of the training.</p>
<p>1 introduced this year. 2 MS. FAGAN: 3 Q. And the last course is the one day course? 4 MR. RUTHERFORD: 5 A. Yeah, this last course is the one day course 6 which I'm going to turn over to Commissioner 7 Wells to tell us all about because he's just 8 done it. 9 MS. FAGAN: 10 Q. What's the differences really between the one 11 day course, and where is the focus on the one 12 day course which is for visitors, such as the 13 Commissioner? 14 MR. RUTHERFORD: 15 A. The focus of this course is basically to 16 provide visitors to offshore installation 17 awareness of hazards associated with marine 18 environment, understanding their 19 responsibilities during an offshore emergency 20 and the ability to care for themselves and 21 others in a survival situation. As I said 22 before, if you go on as a visitor, you will be 23 provided a fair degree of oversight by 24 somebody who will be assigned to look after 25 you at an offshore situation, so you won't be 26 left to your own devices. So this course</p>	<p>1 MR. RUTHERFORD: 2 A. Absolutely. 3 MS. FAGAN: 4 Q. Has to happen? 5 MR. RUTHERFORD: 6 A. Yeah. One thing I might just mention on the 7 subject of sea day, since you raised it, 8 obviously we've got a situation that is 9 occasionally, because of our requirement to 10 manage risk, there's times that we can't 11 always deliver the sea day just because the 12 weather is too rough. We have a system in 13 place where if either the skipper of the 14 vessel or the instructors consider that this 15 is too risky to undertake an exercise, then we 16 will have it postponed. We do around about 17 120/140 sea exercises a year and possibly 20 a 18 year do get postponed in this way. What the 19 procedure is in these instances, because it is 20 not always easy to get back and do these 21 exercises, is that we will have -- we are 22 permitted by the Offshore Petroleum Board and 23 by the helicopter operator to issue a letter. 24 A letter indicates that the participants have 25 completed all parts of the course except for 26 the sea exercise, and this will allow them to</p>

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<p>1 travel offshore for a limited period, 90 days.</p> <p>2 They have to come back and do their sea</p> <p>3 exercise, but just because of the sheer issues</p> <p>4 of logistics, we have a situation where if you</p> <p>5 can't get that sea day completed, that's what</p> <p>6 will happen. I believe that Robert Decker did</p> <p>7 mention that in his testimony, that he was</p> <p>8 exempted a sea day. You don't actually get</p> <p>9 exempted it, you get a deferment. So you're</p> <p>10 allowed a limited period to go offshore</p> <p>11 without the sea day exercise.</p> <p>12 MS. FAGAN:</p> <p>13 Q. So that reference to an exemption would likely</p> <p>14 have been one of those situations where the</p> <p>15 weather or some other factor, it was too</p> <p>16 rough, and you get a 90 day grace. You can</p> <p>17 continue to go off and you've got 90 days to</p> <p>18 get in and get your sea done?</p> <p>19 MR. RUTHERFORD:</p> <p>20 A. Absolutely. I think Robert Decker's instance</p> <p>21 is something that happens very, very rarely,</p> <p>22 that the weather was just absolutely too</p> <p>23 frigid. There was a concern that people could</p> <p>24 get hypothermic on that day. That's not</p> <p>25 something that happens to us very often.</p> <p>26 That's, generally speaking, the reason for a</p>	<p>1 Organization, which is a division of the</p> <p>2 United Nations, there's no one international</p> <p>3 standard for offshore petroleum jurisdictions.</p> <p>4 Generally speaking, each nation involved in</p> <p>5 offshore petroleum activities will have its</p> <p>6 own regulations and standards, although a</p> <p>7 number of nations will accept the standards</p> <p>8 that are developed by other authorities,</p> <p>9 particularly, and I'll get into later, OPITO,</p> <p>10 which is a United Kingdom standard, is</p> <p>11 adopted, I think, in about 30/35 different</p> <p>12 countries around the world. They have adopted</p> <p>13 that standard. The reason I've selected to</p> <p>14 look at the United Kingdom and Norway is</p> <p>15 because both of these jurisdictions which are</p> <p>16 widely involved in petroleum operations in</p> <p>17 cold water environment, they have very mature</p> <p>18 safety regimes which are similar to Canada.</p> <p>19 So I think that they provide a reasonable</p> <p>20 comparison. There are other regimes,</p> <p>21 particularly in the North Sea. We have the</p> <p>22 Netherlands and Denmark, but they're much</p> <p>23 smaller operations, and I don't think it would</p> <p>24 serve any great value to address them.</p> <p>25 There's also another, the International</p> <p>26 Association of Drilling Contractors, is</p>
<p>1 deferment would be the weather is just too</p> <p>2 rough.</p> <p>3 MS. FAGAN:</p> <p>4 Q. Now the next few slides, I understand, is</p> <p>5 going to deal with international standards,</p> <p>6 and you had indicated in your description,</p> <p>7 your bio, that you are involved in an</p> <p>8 international committee and that you're now</p> <p>9 going to go through some of the standards in</p> <p>10 the United Kingdom and in Norway, and why have</p> <p>11 you chosen those jurisdictions as a</p> <p>12 comparison, and I think that's what's in your</p> <p>13 next slide as to why you've gone to those?</p> <p>14 MR. RUTHERFORD:</p> <p>15 A. Just before I get into that, I should mention</p> <p>16 that the OSSC courses that correspond to the</p> <p>17 CAPP requirements, BST, BST-R, and OSI are</p> <p>18 Exhibits 14, 15, 24. There is an exhibit</p> <p>19 there also which is a student manual. This</p> <p>20 manual is actually in the process of being</p> <p>21 updated at this present time, but the other</p> <p>22 courses are up to date, the course outlines.</p> <p>23 So just getting into the training comparisons,</p> <p>24 offshore petroleum industry, unlike the marine</p> <p>25 industry which has international standards</p> <p>26 through the International Maritime</p>	<p>1 looking at developing standards for drilling</p> <p>2 contractors worldwide. That is progressing,</p> <p>3 but it hasn't really been gelled, so I won't</p> <p>4 get into that, but I'll get into a little bit</p> <p>5 on the United Kingdom and Norway, and just --</p> <p>6 I guess, just a caution, the information I'm</p> <p>7 presenting here is based on my knowledge as</p> <p>8 part of International Association of Safety</p> <p>9 and Survival Trainers, talking with a number</p> <p>10 of training institutions worldwide. If you</p> <p>11 want to have the -- you may want to, if this</p> <p>12 is of particular interest to you or value to</p> <p>13 you, maybe it's worth going back to the source</p> <p>14 references just to confirm that everything is</p> <p>15 accurate. I believe everything I have here is</p> <p>16 close to the truth, but just -- is the truth,</p> <p>17 but you might just want to check source</p> <p>18 documents. On the United Kingdom standards</p> <p>19 that we'll get into here, in 1982 an offshore</p> <p>20 petroleum board was set up, and this offshore</p> <p>21 petroleum board was under the oversight of</p> <p>22 what was the Department of Energy. Basically</p> <p>23 this offshore petroleum board was probably</p> <p>24 similar to CAPP in the Canadian jurisdiction.</p> <p>25 I don't know how many are aware in 1988 in the</p> <p>26 North Sea, there was a very severe incident,</p>

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1 the Piper Alpha disaster which resulted in the
 2 loss of 167 lives in that instance. After
 3 that disaster, there was -- Lord Cullen was
 4 selected to put in place an Inquiry to look at
 5 offshore safety and improvements to offshore
 6 safety in the UK, and as an outcome of that
 7 Inquiry, they established OPITO, which was an
 8 independent non-profit organization with a
 9 mandate to market training courses outside the
 10 UK, but the marketing is sort of a separate, a
 11 sort of a lower level category. Basically,
 12 the idea here was that OPITO was independent
 13 basically of the direct control of the
 14 operators. OPITO reported to what was a
 15 health and safety executive. So it was kind of
 16 similar to our Department of Labour. It
 17 became -- safety training was taken away from
 18 the operator's direct control, although there
 19 was a lot of participation here. OPITO
 20 courses and standards are now the most widely
 21 adopted training standards worldwide. In
 22 2007, and I don't know, this is a fairly
 23 recent edition, OPITO sort of developed a
 24 little bit further and they created what's
 25 called an "Oil and Gas Academy". What the
 26 purpose of this is is really -- it's gone a

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1 little bit further rather than just sitting
 2 standards, setting requirements for courses.
 3 It actually -- the Academy will work with
 4 institutions and training institutions to
 5 develop course content and to various aspects
 6 of improving offshore safety, and this, I
 7 think, has come about because OPITO is now
 8 adopted in many places in the world, and many
 9 places in the world that have -- don't really
 10 have a strong educational training safety
 11 culture, so they've gone a little bit where
 12 they help people develop these capabilities.
 13 So it was launched basically as an industry
 14 focal point, the skills, learning, workforce
 15 development. Just a little bit on the
 16 academy, it's a self-sustaining employer and
 17 trade union led organization committed to
 18 developing and sustaining a safe, skilled, and
 19 effective workforce now and in the future. To
 20 achieve this, it has a mandate to work in
 21 collaboration with industry, employers,
 22 learning and training providers, education
 23 academia, and partnership organizations. I
 24 should mention here that OPITO and the academy
 25 are basically funded through -- in every
 26 training delivery there is a certain

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1 percentage taken off of the delivery which
 2 goes back to fund this organization. The
 3 equivalent OPITO standards to what we have
 4 here in the BST and BST-R are the basic
 5 offshore safety induction and emergency
 6 training, which is the BOSIET Course, and
 7 there's a further offshore emergency training
 8 which is the FOET Course.
 9 MS. FAGAN:
 10 Q. Now before you give us some details on the
 11 equivalent courses in these jurisdictions, I
 12 just have a couple questions on the process
 13 because you've mentioned that the process is a
 14 little different there than it is here after
 15 the disaster. The reporting, and maybe I have
 16 this wrong, was moved from the Department of
 17 Energy -- the coordination of the training
 18 moved from the Department of Energy and the
 19 oil operators to the Department of Labour.
 20 Would that be a fair comment?
 21 MR. RUTHERFORD:
 22 A. The equivalent of the Department Labour,
 23 Health Safety Executive, yeah.
 24 MS. FAGAN:
 25 Q. Health Safety Executive?
 26 MR. RUTHERFORD:

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1 A. Yeah.
 2 MS. FAGAN:
 3 Q. And from your knowledge, can you provide any
 4 comment, do you think that it would be
 5 something worth exploring, is there any
 6 benefits that we may take here from the
 7 approach, the OPITO approach, and I'm not
 8 saying, you know, that we should necessarily
 9 throw out the system we have, just from your
 10 experience, is there any value or good aspects
 11 of that process?
 12 MR. RUTHERFORD:
 13 A. Yeah, and as with most things in life, there's
 14 a balance, and there's good and bad aspects of
 15 it, I think. The good aspects of it are that
 16 because it is a funded independent
 17 organization, basically you have in place
 18 professional people, whose job it is to
 19 basically manage offshore training standards.
 20 So there's people that are dedicated to that.
 21 I think the situation we have a little bit
 22 here in Canada is it's always part of somebody
 23 else's job, so it's not entirely -- we don't
 24 have something set up specifically with an
 25 organization whose job it is, and clear job it
 26 is, to do that. The downside, I guess, and

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<p>1 I'll get into a little bit when I talk about</p> <p>2 some of the OPITO training is that because it</p> <p>3 reports to the equivalent of the Department of</p> <p>4 Labour and Health Safety Executive, it has a</p> <p>5 tendency to be -- their much more cautious in</p> <p>6 terms of what they allow people to do during</p> <p>7 training. We will, in Canada, I think, push</p> <p>8 the envelope a little bit in terms of training</p> <p>9 risk -- that that we don't manage the risk,</p> <p>10 but it's because we have control of it, we can</p> <p>11 push that a little bit, and I think when it</p> <p>12 comes back to the Department of Labour, you</p> <p>13 tend to get a little bit -- they're very much</p> <p>14 more cautious.</p> <p>15 MS. FAGAN:</p> <p>16 Q. So --</p> <p>17 MR. RUTHERFORD:</p> <p>18 A. So there's good and bad.</p> <p>19 MS. FAGAN:</p> <p>20 Q. Good and bad. So we took the recent</p> <p>21 development, which is the HUEBA, the</p> <p>22 underwater breathing apparatus. We've heard</p> <p>23 evidence last week that that took a fairly</p> <p>24 long time.</p> <p>25 MR. RUTHERFORD:</p> <p>26 A. Uh-hm.</p>	<p>1 think it's -- you know, in a risk adverse, in</p> <p>2 an organization that really doesn't like</p> <p>3 pushing that envelope, I don't think it would</p> <p>4 have necessarily been introduced. So on the</p> <p>5 other side, because they have -- they are</p> <p>6 independent, they can push forward through</p> <p>7 training requirements a little bit more</p> <p>8 quickly, and the operators will have to</p> <p>9 generally abide by them. So it's probably a</p> <p>10 little bit more -- it's a bit more of a</p> <p>11 streamlined approach, but it has -- as with</p> <p>12 everything, it comes with its own negative</p> <p>13 consequences too.</p> <p>14 MS. FAGAN:</p> <p>15 Q. So they may have dealt with it quicker, but</p> <p>16 the likely result is we wouldn't have gotten</p> <p>17 the device through?</p> <p>18 MR. RUTHERFORD:</p> <p>19 A. Yeah, so I would suspect, but that's --</p> <p>20 MS. FAGAN:</p> <p>21 Q. Now you're going to go through, just give us a</p> <p>22 brief description of what they do in these two</p> <p>23 jurisdictions and then you're going to do a</p> <p>24 comparison, is that correct?</p> <p>25 MR. RUTHERFORD:</p> <p>26 A. Yeah, well, I'm going to go through the BOSIET</p>
<p>1 MS. FAGAN:</p> <p>2 Q. Almost nine years, and there were suggestions</p> <p>3 that, and I think it might have come from Mr.</p> <p>4 Earle or some other counsel, that perhaps if</p> <p>5 there was a leader or somebody was tasked or</p> <p>6 devoted to that particular project, it may</p> <p>7 have moved along a little quicker. At the</p> <p>8 same time, you're going to get into the</p> <p>9 details, and I understand this device is not</p> <p>10 being used in the North Sea. So can you</p> <p>11 comment on how their approach may have applied</p> <p>12 to that breathing device?</p> <p>13 MR. RUTHERFORD:</p> <p>14 A. It's a little bit hard to comment on that.</p> <p>15 What I can say, I guess, is that OPITO did</p> <p>16 adopt a breathing device, but what they have</p> <p>17 adopted is a rebreather device, which has much</p> <p>18 lower risk associated with training activity.</p> <p>19 I think for sure it would have moved quicker,</p> <p>20 but I'd be very surprised if they would have</p> <p>21 moved to adopt a compressed air breathing</p> <p>22 device which has significantly more challenges</p> <p>23 associated with it. I think the compressed</p> <p>24 air breathing device, you know I don't think</p> <p>25 there's any doubt is the best device, but</p> <p>26 there are a lot more challenges, and I don't</p>	<p>1 and the FOET courses first, and then I'll get</p> <p>2 into Norway.</p> <p>3 MS. FAGAN:</p> <p>4 Q. Okay.</p> <p>5 MR. RUTHERFORD:</p> <p>6 A. And then provide a comparison. So the BOSIET</p> <p>7 is initial offshore safety emergency response</p> <p>8 training and assessment for personnel new to</p> <p>9 the offshore oil and gas industry, like our</p> <p>10 BST course. You'll see there an optimal</p> <p>11 duration of 21 hours and five minutes. This</p> <p>12 is from the OPITO guidelines. That gives you</p> <p>13 the indication that they are very, very</p> <p>14 prescriptive about the time -- the type of</p> <p>15 exercises that takes place, how those</p> <p>16 exercises are going to be carried out, exactly</p> <p>17 what qualifications have to be required of</p> <p>18 instructors, et cetera, and exactly what sort</p> <p>19 of equipment has got to be used, right down to</p> <p>20 very detailed specifics of dimensions of</p> <p>21 equipment. So it's a very, very prescriptive</p> <p>22 organization, but they do give an optimal</p> <p>23 duration. They accept the fact that people --</p> <p>24 you know, every training provider is going to</p> <p>25 be different, there may be different numbers</p> <p>26 of people in courses, but that just gives an</p>

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<p>1 indication of how prescriptive they are. 2 Their certificate validity is four years as 3 opposed to our three. What's covered off in 4 the BOSIET course is safety induction, which 5 is an industry overview and installation 6 overview. They do offshore hazards, managing 7 offshore safety, controlling offshore hazards, 8 regulating offshore safety. We don't really 9 get into the regulation too much in our 10 course. Living and working offshore a little 11 bit, we don't get into that too much. 12 Helicopter safety escape, helicopter travel, 13 helicopter emergencies, just like us they do 14 HUET, helicopter underwater escape training 15 exercises. As I mentioned before, they use a 16 rebreather, and I'll get into that later. 17 They do sea survival evacuation, evacuation 18 escape, and emergency first aid, but they 19 don't do that -- they don't do that in an open 20 sea environment. Again I'll get into it a 21 little bit later, but they are -- because of 22 their approach to risk, they don't allow any 23 trainee to go into water under 15 degrees 24 centigrade, and they deal with fire fighting 25 and self-rescue, which is fire fighting 26 offshore and self-rescue. On the --</p>	<p>1 significant expense associated with that, 2 obviously, of course. The FOET course, this 3 one is the equivalent of our BST-R course. 4 MS. FAGAN: 5 Q. And where is this one? 6 MR. RUTHERFORD: 7 A. Eh? 8 MS. FAGAN: 9 Q. FOET? 10 MR. RUTHERFORD: 11 A. It's further offshore safety and emergency 12 training, emergency response training, and 13 this is, again like our BST-R, it's designed 14 for personnel who have completed the earlier 15 course or who are refreshing another FOET 16 course. Optimal duration for this one is 17 eight hours, it's a one day course for the 18 certificate validity of four years, and 19 there's not a whole lot in it. The course is 20 helicopter escape and rescue, fire fighting, 21 self-rescue, emergency first aid. 22 MS. FAGAN: 23 Q. So is this the HUET again? 24 MR. RUTHERFORD: 25 A. Yes. 26 MS. FAGAN:</p>
<p>1 MS. FAGAN: 2 Q. What's the -- do we have a temperature limit 3 on our training, do our workers get the 15 -- 4 MR. RUTHERFORD: 5 A. Two degrees or lower perhaps -- 6 MS. FAGAN: 7 Q. Two degrees is the limit here, and 15 degrees 8 would be the limit in OPITO? 9 MR. RUTHERFORD: 10 A. Fifteen in the UK, yeah. I mean, it's -- it's 11 good grounds for putting it in. I think they 12 had -- when they grew up in their early days, 13 they did have a number of incidents, but what 14 we've been able to do, I guess, because of 15 experience with particular suits and the way 16 we've set up our maintenance and service of 17 all the immersion suits, and the way we select 18 our immersion suits, we manage that risk 19 through other ways. So it's something that 20 you've got to -- you know, if we weren't 21 careful about that aspect, if we weren't 22 getting our suits -- every time somebody uses 23 them, we send them back to a supplier, a 24 certified supplier, for maintenance, you know, 25 that's -- we wouldn't be able to manage that 26 risk. That comes with -- there's a</p>	<p>1 Q. So their refresher has the HUET type training? 2 MR. RUTHERFORD: 3 A. Yes, indeed. 4 MS. FAGAN: 5 Q. And their main course has the HUET training? 6 MR. RUTHERFORD: 7 A. Yes, that's seen as the major issue there to 8 keep refreshing is the helicopter escape 9 training. 10 MS. FAGAN: 11 Q. Okay. 12 MR. RUTHERFORD: 13 A. I'm just going to bring up here now -- this is 14 not really directly related to the helicopter 15 passenger transportation, but it was brought 16 up, I think earlier in the Inquiry, the issue 17 of occupational health and safety standards, 18 and I think it's just worthwhile bringing up a 19 course that's just been brought into the UK 20 jurisdiction that came in in October, called 21 MIST, and it's what's called a Minimum 22 Industry Safety Training. This course is 23 designed to introduce fundamentals of safety 24 elements of the offshore oil and gas industry 25 to people coming into the industry, and giving 26 people the appreciation of potential hazards</p>

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<p>1 and controls that might be encountered by 2 personnel offshore. This is -- expanding a 3 little bit out from the BOSIET, I guess they 4 realized they need a little bit more 5 information on hazards and making people aware 6 of what they're going to be facing. The 7 expected duration of this one is ten hours and 8 it's delivered entirely in a computer based 9 format. It can be delivered by a training 10 institution or delivered by the employer. 11 What this course does, it requires people to 12 go into it, they have to respond, and there's 13 assessments that take place all the way 14 through the course. So the employer is aware 15 that the people coming into the industry are 16 fully aware of the risks and hazards that 17 they're likely to be encountering, and the 18 sort of things that are covered in this 19 course, introduction to hazard, offshore 20 environment, working safely, including safety 21 observation systems, understanding the risk 22 assessment process, tasks offshore that 23 require permits to work. There's personal 24 responsibility in maintaining asset integrity, 25 using manual techniques every day, there's 26 controlling use of hazardous substances,</p>	<p>1 standards. The Norwegians are very much -- 2 their regime is very similar to the one we 3 have here in Canada where the offshore 4 operators, there's a society called OLF, which 5 is an association of offshore operators. 6 They're a little bit different in as much as, 7 I think, possibly due to the geography in 8 Norway and the way that the industry is 9 developed, they tend to have training 10 suppliers or providers that one major company 11 will have its preferred training providers, 12 and another major company may have other 13 providers. So there tends to be little bits of 14 differences that take place in the actual 15 training courses, depending on who they're 16 working for. It tends to be a little bit more 17 -- the training provider works more directly 18 for a company, but the equivalent of OLF 19 courses to the Canadian standards are basic 20 safety and emergency courses, basis safety and 21 emergency training refresher course. Again 22 we'll just go through those. Basic safety and 23 emergency course is designed to motivate the 24 individuals to actively promote a better and 25 safety working environment. Emphasis on these 26 courses is very much placed on preventative</p>
<p>1 knowledge and practice of working at height, 2 and being aware of mechanical lifting 3 activities, and the reason I bring this one 4 up, I think, is this one will be a reasonably 5 easy course to introduce, or something similar 6 to introduce offshore here, and we might want 7 to look at something in terms of helicopter 8 passenger transportation, just making sure 9 that people really truly do understand the 10 risks there. 11 MS. FAGAN: 12 Q. So just let me stop you there. This is a new 13 course that's been brought in in the UK? 14 MR. RUTHERFORD: 15 A. Yeah. 16 MS. FAGAN: 17 Q. But it's not a requirement here? 18 MR. RUTHERFORD: 19 A. It's not a requirement here, no, this is just 20 a -- 21 MS. FAGAN: 22 Q. But in your view, it's something that we could 23 consider? 24 MR. RUTHERFORD: 25 A. It's something we might want to look at, yeah. 26 I'm going to move into the Norwegian</p>	<p>1 measures that can forestall injuries or damage 2 that environment. They take an approach where 3 training people to think up front what's 4 likely to happen to them, and it's very, very 5 -- it looks at prevention very much. The 6 course is designed for offshore personnel. 7 Again there's a training basic safety course 8 for the Norwegian offshore. This is an OH & S 9 course as well. This one is required as a 10 prerequisite for the basic safety emergency 11 course. The OPITO are recommending this course 12 takes place after the BOSIET. The basic 13 safety is a five day duration and it's 14 refreshed after four years. The course is 15 comprised of these elements. There's an 16 health safety environment culture, so again 17 it's a little bit outside of what we do here. 18 They deal very much with environmental issues 19 as well as safety in the course. First aid is 20 required for everybody. We in Canada, and in 21 the UK, the first aid tends to be outside of 22 the basic course. They look at joint 23 evacuation, which is evacuation including 24 search and rescue activities and various 25 aspects of evacuation processes. Fire 26 prevention. They do a sea rescue course, they</p>

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<p>1 do an open sea course in Norway, and they do 2 do helicopter evacuation in Norway, which is 3 reasonably recent. Again, I'm sorry, it's a 4 little bit dry, but hopefully we'll get there. 5 The basic safety and emergency training 6 refresher course is again the one that's 7 equivalent to our BST-R, and this is designed 8 again for people to upgrade their knowledge 9 and keep themselves refreshed on standards. 10 The course is applicable to persons who have 11 previously completed basic safety and 12 emergency courses. The duration of this course 13 is two days, similar to our BST-R, and the 14 validity is four years, which is a little bit 15 more than our course. 16 MS. FAGAN: 17 Q. Now before you get into the table, you had 18 mentioned the first aid. Is the first aid 19 taught or in some way provided to the workers 20 offshore Newfoundland? You'd said something 21 about it's not part of the BST, but do they 22 get it in another course or somewhere else? 23 MR. RUTHERFORD: 24 A. They do get it in other courses. It depends 25 on the -- offshore Canada, there's a number of 26 people allocated as first aid and first aid</p>	<p>1 of our course of five days. The OPITO UK has a 2 basic safety requirement of 21 hours, which is 3 basically three days. OLF Norway has five 4 days. We should remember that OPITO has 5 decided in this MIST requirement, which is 6 another ten hours computer based training. 7 Under the refresher training, we have two days 8 in CAPP, we have eight hours in the UK, and we 9 have two days in Norway. So Norway and Canada 10 tend to be -- in terms of duration of courses 11 are very, very similar. The validity in 12 Canada is three years, so we have to come back 13 and be refreshed after three years, whereas 14 the other two jurisdictions, the UK and 15 Norway, it's four years. When we look at 16 aspects such as the open sea exercise, we 17 require it here in our jurisdiction, and they 18 require it in the Norwegian jurisdiction, but 19 it's not permitted in the UK jurisdiction. 20 Looking at the emergency breathing devices, 21 Canada, as we will be talking about later, and 22 we're all aware, we have the pressurized air 23 breathing system. OPITO and Norway both use a 24 rebreather. Now basically what they're using 25 is a hybrid system where by they utilize -- 26 it's a rebreather, but there is pressurized</p>
<p>1 responders and these people provide, but 2 basically first aid training is required in 3 accordance with legislation. For the number 4 of people on board, a certain number of people 5 have to have first aid training. 6 MS. FAGAN: 7 Q. Okay, so -- 8 MR. RUTHERFORD: 9 A. In Norway, they basically provide as part of 10 the course. There is -- everybody gets a 11 little bit of first aid. 12 MS. FAGAN: 13 Q. I believe you have a table coming up soon. 14 MR. RUTHERFORD: 15 A. Yeah. This again is a table, something that's 16 not -- this is just something I put together 17 for the purpose of the Inquiry, and really 18 just for the purposes of providing a snapshot 19 which is reasonably easy to understand of some 20 of the differences between the various 21 training jurisdictions. You'll see at the top 22 line there, there is CAPP, which is a Canadian 23 standard, in the centre is the OPITO UK 24 standard, and on the right is the OLF 25 standard. If you look at our standard here in 26 Canada, our basic safety, we have a duration</p>	<p>1 air in the event of an emergency situation, 2 but they don't actually train on the 3 pressurized air. The training actually only 4 utilizes the rebreather part of it. 5 MS. FAGAN: 6 Q. So now we've had the rebreather described as 7 sort of like a bag, almost like a large ziploc 8 baggie sort of idea with a hose that comes 9 off. Is that the device that you're talking 10 about when you say "a rebreather"? 11 MR. RUTHERFORD: 12 A. It is, and I think when Greg Harvey provides 13 his presentation on the HUEBA, on the device 14 we have here, he also has -- he has a 15 rebreather, so he'll show that to the Inquiry. 16 So just some comments on the bottom there. I 17 think our training here generally focuses on 18 practical elements of emergency response. We 19 do try and push as far as we possibly can the 20 practical, just to push people as close as we 21 can to real life situations without putting 22 them at harm in Canada. They tend -- OPITO and 23 the UK, as I mentioned before, they're a 24 little bit more cautious, high sensitive to 25 training risks, so they tend to -- their 26 training exercises tend to be a little bit</p>

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1 less rigorous then they are in the Canadian
 2 jurisdiction. Again the Norwegians tend to be
 3 similar to Canada, but they do have a very
 4 strong focus within their training. It's very
 5 much on preventative activities, also have
 6 issues relating to environmental issues,
 7 regulations, and first aid. So we really -- I
 8 think in our courses, we probably push the
 9 envelope the most in terms of the actual
 10 practical exercises that we expose people to.

11 MS. FAGAN:
 12 Q. Okay. Now we heard evidence from Mr. Decker
 13 that, I believe, his position was that
 14 consideration should be given to having
 15 training more often. I believe it was
 16 something to the point that every three years
 17 wasn't enough to keep you proficient, and we
 18 can see from this chart that in the other two
 19 jurisdictions it's actually extended out to
 20 four years between. Can you provide any
 21 comment or insight on the time period between
 22 the training and then each refresher course?

23 MR. RUTHERFORD:
 24 A. Yeah, I think -- this is another one of those
 25 situations where you have to try and find a
 26 reasonable balance. The problem with any of

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1 this type of practical training, where you're
 2 training people for emergency situations and
 3 response to emergency situations, you know,
 4 the -- you try -- people don't have a lot of
 5 time to think in emergency situations, so you
 6 really need to be able to keep them refreshed
 7 in their skills and their knowledge, so that
 8 they don't lose that, but it's balanced out
 9 with the practicalities of -- you know, you're
 10 operating an operation offshore, so what's a
 11 reasonable amount of time for people to come
 12 back in terms of retraining. As you'll note
 13 there in the chart, we do take -- the
 14 frequency here in Canada is higher than it is
 15 in other jurisdictions. One of the things, I
 16 guess, that we can look at -- it's probably
 17 not practical to reduce that time just because
 18 we would not be able to operate, I don't
 19 think, offshore if we did that, but we could
 20 possibly look at a couple of options like
 21 computer based courses or something that
 22 people could do to at least refresh their
 23 knowledge, not necessarily their skills in
 24 between courses, but that's something that may
 25 come out of the Inquiry, I don't know.

26 MS. FAGAN:

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1 Q. Are there other jurisdictions -- you provide
 2 training to a number of other industries. Do
 3 other sectors provide the refresher? You had
 4 mentioned that the fishing industry had just
 5 gone through a lot of training in '07, I
 6 believe. Do they have these refresher
 7 segments?

8 MR. RUTHERFORD:
 9 A. No, I think probably the best -- we'll compare
 10 it first to the marine transportation industry
 11 and I'll talk about the fishing industry. As
 12 I noted there before, the marine
 13 transportation industry is governed by the
 14 international maritime organization. They
 15 have what is called the standard for training
 16 certification of watchkeepers, and the
 17 training required for people going offshore or
 18 sailing internationally, they have basic
 19 survival training course, they have training
 20 in life boats, and they have training in fire
 21 fighting. They will basically take just over
 22 three weeks training coming into the industry,
 23 but there is no -- as it stands at the moment
 24 in Canada, and there is no requirement for
 25 refreshing this providing you continued to
 26 activity engage in your occupation at sea.

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1 Some jurisdictions in the world have gone out
 2 on a limb and said we do have to come in and
 3 do refresher training. This is currently
 4 before the International Maritime Organization
 5 at the moment, and I think it will happen that
 6 there will be a requirement for certain amount
 7 of practical refresher training, and things
 8 that you cannot do while you're on a ship,
 9 such as fire fighting, or some of the sea
 10 survival activities that can't take place, but
 11 that -- and the intent, I think, is to come up
 12 with a five year -- possibly a five year
 13 refresher, but it's not currently in place at
 14 the moment. In terms of our fishing industry
 15 and small boats in the local coastal, the
 16 basic training we've just introduced there or
 17 has just been introduced here in Canada, is a
 18 three day course. It provides skills in
 19 emergency response and sea survival, and
 20 various aspects there associated with that.
 21 This course doesn't -- again there's no
 22 requirement to refresh this course. So when
 23 somebody comes through and does that course,
 24 there's no -- that's it, basically, for the
 25 rest of their lives, as it stands at the
 26 moment. I would comment here on -- you know,

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1 the fishing industry is probably the most --
 2 it is the most dangerous industry. We lose
 3 eight to nine people every year in the fishing
 4 industry, and I think it's worth noting that
 5 Iceland, which generally has zero losses, does
 6 have a refresher requirement into their
 7 training and they come in every five years to
 8 refresh. So there is, I think, a need to look
 9 at that, but it's outside of the scope of this
 10 Inquiry, but just as a comparison to what
 11 other training requirements are in other sort
 12 of --
 13 MS. FAGAN:
 14 Q. I thought it might be of interest to see if we
 15 can learn something from the other industries.
 16 MR. RUTHERFORD:
 17 A. Yeah.
 18 MS. FAGAN:
 19 Q. It appears that the offshore petroleum
 20 industry is training more right now as far as
 21 with the refreshers, and in Canada even more
 22 so than the other jurisdictions?
 23 MR. RUTHERFORD:
 24 A. Yeah, I mean, I've got to say from where I sit
 25 as a trainer provider, I mean, the offshore
 26 petroleum industry here in eastern Canada is

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1 extremely proactive with regard to training.
 2 I mean, it's -- I don't think -- we do get
 3 occasional complaints from people we do too
 4 much training, we'd like to reduce this, but
 5 generally speaking, I think the industry has
 6 been quite proactive in training activities.
 7 MS. FAGAN:
 8 Q. On the risk envelope, just before you move on,
 9 you had mentioned that the water temperature
 10 and the different breathers. Is there any
 11 difference in the HUET training in the other
 12 jurisdictions? For example, you know, the
 13 windows, or the sizes of the windows, or the
 14 lack of windows, do they all have windows that
 15 you have to punch out, or are they just holes?
 16 Is there any comparisons there?
 17 MR. RUTHERFORD:
 18 A. They all currently have windows, but in the UK
 19 jurisdiction a few years ago, they went
 20 through again one of these issues that there
 21 was a study done which indicated that trainees
 22 were being subject to too much stress going
 23 through this training, so there was a period
 24 in time where they weren't allowed to put
 25 windows into their HUET, helicopter underwater
 26 escape trainers. That got reversed just over

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1 a year ago. I think they realized, you know,
 2 the training really wasn't as effective as it
 3 should be without the windows in. So there
 4 was a change of heart there. There is
 5 guidance -- there still is guidance to OPITO
 6 relating to the size of the windows. I think
 7 there was a study done by Susan Coleshaw which
 8 went into OPITO, which basically identified a
 9 minimum size that windows were allowed to be
 10 for training, so again because of their
 11 concerns relating to stress of the people
 12 going through training.
 13 MS. FAGAN:
 14 Q. What about Norway, does Norway have windows or
 15 just holes?
 16 MR. RUTHERFORD:
 17 A. Norway has windows. Again Norway tends to be
 18 very similar to us in terms of how it
 19 approaches training.
 20 MS. FAGAN:
 21 Q. Okay. Now I understand you're going to give a
 22 little bit of information now on the escape
 23 trainer. Is that where we are?
 24 MR. RUTHERFORD:
 25 A. I'm just going to talk a little about the
 26 helicopter escape training part of the course

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1 in a little bit more detail. The outcome of
 2 any helicopter accident or incident will
 3 obviously have -- depend on the nature and
 4 causes of the incident. It'll also depend on
 5 the weather and sea conditions at the time,
 6 survival equipment worn, and the behaviour of
 7 the individuals involved. If we have a
 8 situation where we have an uncontrolled crash
 9 into the water, there's a very high likelihood
 10 that serious injury is going to result to the
 11 crew and passengers, whilst if a helicopter is
 12 able to land what's called a "controlled
 13 ditching", this is much less likely. However,
 14 we need to keep in mind that even if you do
 15 have a controlled ditching on the water, if
 16 you land into a rough sea or an inclement sea
 17 environment, you know, injuries could still
 18 result and you will still have the situation
 19 where people are not going to survive, but
 20 there was evidence from accident reports
 21 demonstrate -- this was from a Civil Aviation
 22 Authority paper generated in 2003 which looked
 23 at a number of helicopter incidents, and I
 24 won't go into this in any great detail because
 25 I think Greg is going to talk on this. Around
 26 about 60 percent of all water impacts, the

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1 helicopter inverted or sank immediately. So
 2 this is what helicopter escape training is all
 3 about, it's training for those times, you
 4 know, can we get off -- if it lands on the
 5 surface, what do we do, but if there's a good
 6 chance it's going to invert, this is what
 7 we're training for. So we provide an
 8 appreciation to our trainees of basically the
 9 disorientation that's going to result from an
 10 inversion of the helicopter, and we provide --
 11 basically, it's intended to provide skills and
 12 knowledge of how people should react to that
 13 inversion. This is again a little bit dry, as
 14 is my throat. I'm just going to go through
 15 the learning objectives of the helicopter
 16 safety emergency procedures section of it,
 17 just so that we -- and I'll go through it
 18 fairly quickly. It is included, I think, in
 19 our evidence there under -- there's a
 20 presentation, an Exhibit 18, which goes
 21 through it, and I'll get to that a little bit
 22 later. The learning objectives, we look at
 23 issues such as flight preparations, discuss
 24 the personal preparations to be conducted
 25 prior to the heliport, describe heliport check
 26 in, helicopter pre-boarding procedures,

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1 examine characteristics of helicopter
 2 passenger transportation suit systems. We
 3 discuss pre-flight inspection procedures for
 4 the HUEBA, and we demonstrate correct pre and
 5 post checks of the flight suit, demonstrate
 6 pre-flight checks on the HUEBA, and performing
 7 the correct donning and doffing procedures for
 8 the flight suit and the flight preparations.
 9 Still continuing on flight preparations, we
 10 demonstrate donning the transit type survival
 11 suit which HUEBA equipment. Helicopter
 12 safety, we identify the danger zones for
 13 passengers approaching a helicopter. This
 14 should be a top level, actually. Explain the
 15 precautions to be taken when approaching a
 16 helicopter's danger zones, discuss the
 17 recommended personal conduct during a
 18 helicopter flight, list the safety equipment
 19 carried aboard helicopters, use a safety card
 20 to identify and locate emergency exits,
 21 discuss the purpose and proper use of
 22 helicopter safety equipment. So that's
 23 helicopter safety. Under implied emergencies,
 24 we look at the categorization of helicopter
 25 implied emergencies, analysing what types of
 26 emergencies can take place, and what are the

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1 possible outcomes. We look at the three
 2 phases of helicopter in-flight emergencies;
 3 pre-ditching, ditching, and post-ditching,
 4 identify escape routes from the helicopter.
 5 Again, under the procedures, looking at
 6 the compressed air breathing apparatus, and
 7 again, Greg is going to get into this in a
 8 little bit more detail, but looking at the
 9 need for the HUEBA, identify time required to
 10 egress a capsized helicopter, examine factors
 11 affecting individual breath hold time, examine
 12 Boyle's Law and the relationship between
 13 pressure and volume, discuss direct effects of
 14 pressure on human body, describe the mechanism
 15 of lung over pressurization and Greg will
 16 touch on all of that. Identify cause,
 17 treatment and prevention of arterial gas
 18 embolism, describe the purpose of HUEBA,
 19 describe the two major types of HUEBA,
 20 identify the main components, describe the
 21 function of the main components. Identify
 22 limitations, describe operating principles,
 23 describe the procedure of deploying, describe
 24 the clearing procedures, identify importance
 25 of breathing normally, never holding your
 26 breath. Identify HUEBA malfunctions,

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1 including free flow and flooded, describe
 2 actions to take in the event of a malfunction,
 3 and practice carrying out breathing actions
 4 using this equipment, atmospheric pressure and
 5 dry conditions, demonstrate deployment,
 6 operation in shallow water. Demonstrate
 7 breathing actions in shallow water, including
 8 breath under water. Deploy and clear HUEBA
 9 while under water, breathe inverted under
 10 water, and deploy and clear while inverted.
 11 What might be obvious from this, compared
 12 to other aspects of our training courses,
 13 which have generally tended to--that the
 14 guidance from CAPP has been very, very much
 15 top level. You know, we will cover this topic
 16 and it's left a little bit up to the training
 17 provider. Where this has come in, it's--
 18 again, it's become very, very much more
 19 prescriptive. There's very, very detailed
 20 requirements that we have to go through in
 21 these courses, specifically because it is a
 22 risk associated with it.
 23 The helicopter underwater escape
 24 training, the HUET, we will participate in
 25 introductory safety breathing, respond to
 26 alarm phases of simulated emergency, open

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<p>1 emergency exits at appropriate time, use 2 emergency exits at appropriate time, 3 participate as a passenger in simulated in- 4 flight emergencies. We'll do a number of HUET 5 exercise where we exit on the surface of the 6 water. We exit when partially submerged and 7 upright and we exit the HUET when capsized, 8 learn how to launch a helicopter life raft and 9 we use the helicopter life raft in a simulated 10 survival situation.</p> <p>11 This next two slides are just a brief 12 summary of the learning objectives of all the 13 practical exercises that take place in the 14 helicopter practical--in the helicopter 15 passenger transportation training, and again, 16 I'll go through it pretty quickly. It's 17 helicopter safety emergency procedures, 18 demonstrate pre and post checks of flight 19 suit, demonstrate pre-flight checks HUEBA, 20 perform donning doffing procedures, 21 demonstrate donning of transit type survival 22 suit. There's one here use the safety card to 23 identify and locate the emergency exits, be 24 aware of the safety card, practice carrying 25 out breathing actions using the HUEBA 26 equipment. Demonstrate deployment operation</p>	<p>1 it. I was advised by Greg actually just this 2 morning that they've been working on an update 3 to this one. So there is now a new update 4 just as of the last couple of weeks, an 5 updated presentation, but -</p> <p>6 MS. FAGAN: 7 Q. I understand that the updated version may 8 just--there's a few slides where some of the 9 photographs have been changed to reflect the 10 new suits.</p> <p>11 MR. RUTHERFORD: 12 A. That's right.</p> <p>13 MS. FAGAN: 14 Q. And we need not go through this entire 15 presentation. I understand that you may-- 16 you're now about to describe the HUET and 17 pages 23, 24 and 25 are still photographs of 18 the HUET and I think they're still the same 19 pictures as what's--it's the same HUET and 20 you're going to describe the HUET and the 21 features of the HUET, because there were some 22 questions raised, and I'll ask you to address 23 some issues on some of the training and the 24 HUET itself. But so in this photograph, I 25 understand that this is a picture of the 26 trainer, the underwater escape trainer.</p>
<p>Page 106</p> <p>1 of HUEBA equipment in shallow water, less than 2 one metre and Greg will get into that, again, 3 the reason for that, and we're looking at 4 breathing under water using HUEBA deploy and 5 clear while under water. And continuing on 6 that, participate in an introductory safety 7 breathing, response to alarm phase of 8 simulated emergency, open emergency exits, use 9 emergency exits, participate as passengers in 10 simulated in-flight emergencies, and the issue 11 related to exits of the HUET.</p> <p>12 So that really is, I guess it's just-- 13 just covers off all the--what we're trying to 14 achieve in terms of the training and those are 15 all the basic elements that we cover. So 16 those are things that might want to be looked 17 at to see if there's anything that needs to be 18 added to that or changed in that area.</p> <p>19 I'm going to get on to the facilities 20 that we have for delivery of helicopter 21 underwater escape training. Just before I get 22 on to that, I think there's a transportation 23 classroom presentation, Exhibit 18. I think 24 we'll just go into that briefly, and show 18.</p> <p>25 This is just a presentation that we would 26 use in the classroom. You can take a look at</p>	<p>Page 108</p> <p>1 MR. RUTHERFORD: 2 A. It is. It's the trainer that we have at the 3 Offshore Safety and Survival Centre in 4 Foxtrap, yes.</p> <p>5 MS. FAGAN: 6 Q. And that this was obtained some years ago by 7 the Institute?</p> <p>8 MR. RUTHERFORD: 9 A. Yeah. I'll get into the detail. This is a 10 McLean and Gibson helicopter underwater escape 11 trainer. This is--basically, this was 12 designed and developed in the 1980s in the 13 United Kingdom. It was originally a concept 14 that was thought of or put in place by the 15 Robert Gordon Institute of Technology, which 16 had a similar safety and survival training to 17 ourselves and one of the very first 18 organizations in the world really set up 19 dedicated to providing training for offshore 20 petroleum workers. The gentleman that was 21 involved very much in the design or working on 22 this is a Dr. Joe Cross, who was the head of 23 that institution at the time, and he's still 24 alive and he's still--he can't travel well, 25 but he might be somebody--he has a wealth of 26 information on helicopter transportation and</p>

<p style="text-align: right;">Page 109</p> <p>1 helicopter transportation safety training and 2 he may be somebody the Inquiry might want to 3 talk with, but he is still around. But 4 basically this was--when it was put in place, 5 this particular helicopter underwater escape 6 trainer was the gold standard really for 7 trainers. At the time, there was some 8 training going on but they tended to use 9 shallow water egress chairs, which were just 10 open chairs. This was the first attempt 11 really to try and put in place something that 12 better resembled a real helicopter situation. 13 I'll go back to the PowerPoint there now. 14 Just as I noted, there was a number of those, 15 that type of helicopter underwater escape 16 trainer were installed worldwide. I think at 17 the time, the market hadn't really developed 18 to the state it has now and the company, after 19 producing a number of these, went out of 20 business because the market wasn't 21 sufficiently mature. But they were a good 22 unit. Just a couple of notes there on what 23 changes we've made to this simulator since it 24 was installed. We have put in push out 25 windows on these windows. We have three 26 window sizes, 480 by 380 millimetre, 480 by</p>	<p style="text-align: right;">Page 111</p> <p>1 MR. RUTHERFORD: 2 A. Yeah. 3 MS. FAGAN: 4 Q. So the windows in the trainer are a little bit 5 smaller than what's in the S-92? 6 MR. RUTHERFORD: 7 A. Yeah, they are, and we find that, you know, 8 this provides, you know, a reasonable 9 challenge for people coming through training 10 without exposing them to too much risk. We 11 can manage this and most people can get 12 through the smallest of these windows. I 13 should note there, the report that was put in 14 place for OPITO, they had indicated that the 15 minimum size should be 480 by 430 millimetres, 16 so we have two windows that are actually 17 smaller than their recommended minimum sizes, 18 but I can tell you, I've bene through that 19 smallest window many, many times. So if I can 20 get through it, I'm sure many people can. 21 MS. FAGAN: 22 Q. And they are smaller than what's on the S-92? 23 MR. RUTHERFORD: 24 A. They are, yeah. 25 MS. FAGAN: 26 Q. So if you can get through the trainer's, what</p>
<p style="text-align: right;">Page 110</p> <p>1 400 millimetre, and 650 by 470 millimetre. 2 First, two of those sizes are fairly similar 3 to what's on the S-92. They're a little bit 4 smaller than what's on the Sikorsky, and the 5 last one of those is similar to the emergency 6 exit, but again, a little bit smaller than the 7 ones on the emergency exit that's on the 8 Sikorsky. 9 MS. FAGAN: 10 Q. Do you have the sizes? 11 MR. RUTHERFORD: 12 A. Yeah, I do here somewhere, in one of the--I 13 will get into it. 14 MS. FAGAN: 15 Q. Okay. 16 MR. RUTHERFORD: 17 A. Yeah, I've got the windows in the Sikorsky are 18 508 millimetre by 422 millimetre and the 19 emergency exit is 915 millimetre by 610 20 millimetre. 21 MS. FAGAN: 22 Q. So your medium window is 480 by 400? 23 MR. RUTHERFORD: 24 A. It is, yeah. 25 MS. FAGAN: 26 Q. And there's a small window, 480 by 380?</p>	<p style="text-align: right;">Page 112</p> <p>1 you're saying the S-92's windows are larger? 2 MR. RUTHERFORD: 3 A. Yeah. 4 MS. FAGAN: 5 Q. Now with respect to the windows, I do 6 understand that it's not only the size of the 7 windows but sometimes the placement of the 8 windows can be different, and are the windows 9 in the HUET at the Centre, where are they from 10 a placement point versus the S-92? Are they 11 higher, lower, are they next to the seats? 12 MR. RUTHERFORD: 13 A. Our windows are actually lower than the ones 14 on the S-92 and they're lower by a 15 significant--it's 21, about 21 inches I think 16 that they're lower. That, I think, to us is a 17 little bit of a--we would like--I think the 18 issue related to fidelity, which we'll 19 probably get into on simulators, is it's 20 important to a point. I think, when we talk 21 about the physical fidelities of simulators 22 there is differing viewpoints. In 1999, I 23 think there were two papers or two people put 24 together. One was looking at -- Susan 25 Coleshaw basically recommended that physical 26 fidelity wasn't that important. What's more</p>

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<p>1 important is your task analysis, what you're 2 actually doing in terms of your helicopter 3 training. But I think at the same time, there 4 was another organization, another couple of 5 researchers, Mills and Muir, who were doing 6 some work for Shell Petroleum, who indicated 7 that we should try, to the greatest extent 8 possible, to try and get physical fidelity of 9 the simulator. So the jury's out a little bit 10 on it, but I think when we get to things like 11 windows and window locations, I think it's 12 certainly worth our while taking a look at 13 this because whilst we do in our training, we 14 do tell people part of the training is become 15 aware of the specific helicopter you're flying 16 on. Make sure you know the situation for the 17 helicopter you're flying on. Make sure you 18 know how you're going to be able to get out in 19 the event of an emergency. That having been 20 said, I think it might be worth our while just 21 having a look at that aspect of our simulator 22 to see if there's any way that it can be done 23 to put these windows in a better position or a 24 more--in a position that better represents the 25 offshore here. 26 Keep in mind though that when we do put</p>	<p>1 this particular picture. I think we've got 2 one here that does. 3 MS. FAGAN: 4 Q. I believe it is back on that page, page 11. 5 MR. RUTHERFORD: 6 A. Is it? 7 MS. FAGAN: 8 Q. Yeah, it's dark because it's all blue. 9 Everything is blue. On the - 10 MR. RUTHERFORD: 11 A. Oh yeah, okay, there it is, yeah. 12 MS. FAGAN: 13 Q. Just it's the exact same colour as the seats. 14 MR. RUTHERFORD: 15 A. Yeah, it is. 16 MS. FAGAN: 17 Q. So it looks like a large box along the - 18 MR. RUTHERFORD: 19 A. Yeah, this is shown here on the port. 20 MS. FAGAN: 21 Q. On the port side. 22 MR. RUTHERFORD: 23 A. On the port side, that's the auxiliary fuel 24 tank. My understanding is that this has been 25 changed over. Now it's now on the starboard 26 side, but that's fairly recent and I don't--</p>
<p>Page 114</p> <p>1 training--people through training in this 2 simulator, they don't only work offshore in 3 Canada. We do provide that this training is 4 supposed to be basic training and it's 5 supposed to position people really with skills 6 and knowledge to fly in any helicopter in any 7 jurisdiction. So those sort of things have to 8 be looked at in terms of the balance there. 9 MS. FAGAN: 10 Q. Okay. Could you go to Exhibit 18? That's the 11 presentation exhibit. Because I believe there 12 is a photograph of the interior of the S-92 13 and then there is a photograph of the interior 14 of the HUET and it demonstrates the difference 15 in the location of the windows. I believe 16 you'd be looking for about page 11 in the 17 presentation and this is what the students 18 see. So this page, there is a photo--is that 19 the interior of the S-92? 20 MR. RUTHERFORD: 21 A. That is the interior of the S-92, yes. 22 MS. FAGAN: 23 Q. And that depicts the auxiliary fuel tank as 24 well? 25 MR. RUTHERFORD: 26 A. No, the auxiliary fuel tank is not shown in</p>	<p>Page 116</p> <p>1 Pat may be able to talk about that. 2 MS. FAGAN: 3 Q. Yeah, and I understand Mr. Dohey may have some 4 exact measurements or Mr. Harvey, but for now, 5 we are dealing with, right now, the issue of 6 the location of the window versus the seat and 7 so this picture would depict where the window 8 is in relation to the seat, the height of the 9 window, and if you could just move to page 20 10 of the presentation, then the group can see 11 how the window is in relation to the seat in 12 the trainer. I think it's 20 or 21. 13 MR. RUTHERFORD: 14 A. This one would show our trainer. This is an 15 older picture, but it is our trainer, and 16 shows the location. So you can see it is 17 significantly lower in our training simulator. 18 MS. FAGAN: 19 Q. And can you move to the next page as well? 20 MR. RUTHERFORD: 21 A. Yeah, this is somebody just about to exit our 22 window, yeah. 23 MS. FAGAN: 24 Q. And that would be another window. 25 MR. RUTHERFORD: 26 A. Indeed, yeah.</p>

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1 MS. FAGAN:
 2 Q. And this, just for the group, this would be a
 3 person seated in the trainer at the Centre?
 4 MR. RUTHERFORD:
 5 A. Absolutely, yeah.
 6 MS. FAGAN:
 7 Q. And the earlier photographs with the blue
 8 seats, they are the--that's the interior of
 9 the S-92, correct?
 10 MR. RUTHERFORD:
 11 A. That is true, yeah.
 12 MS. FAGAN:
 13 Q. Okay. There were other questions raised about
 14 the fidelity of the training, the number of
 15 people that are trained in the HUET. Do you
 16 have any comment with respect to that
 17 particular issue that was raised?
 18 MR. RUTHERFORD:
 19 A. Yeah, I can comment on it. I think we
 20 basically limit--during our role exercises, we
 21 limit the number of people in the HUET for a
 22 number of reasons. One of them is that the
 23 training really is--because it's important and
 24 people come into our training with very, very
 25 different levels of skills, capability,
 26 nervousness and everything else. We try to

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1 keep the instructor/student ratio very small
 2 so that the instructor can observe the student
 3 at all times. For the purpose of risk too, in
 4 the event that we--when we're inverting the
 5 helicopter, if anyone gets into trouble, we
 6 have a couple of divers in the water. But if
 7 we have too many people in the HUET during
 8 those exercises, then it becomes a little bit
 9 more difficult to manage the risk associated
 10 with those exercises. So we do monitor our
 11 students with safety divers and I mentioned
 12 our seatbelts, et cetera, in the HUET, we have
 13 emergency releases that the divers can pull in
 14 the event a student does get into difficulty.
 15 We do maintain an air gap above. But we do
 16 have people that get into challenging
 17 situations.
 18 We used to do inboard/outboard training
 19 within the HUET so that people--you'll be
 20 inboard and somebody else trying to get out of
 21 the window. Again, we got into a situation
 22 where people were--it's very difficult in a
 23 training environment. You're putting people
 24 into quite an elevated level of risk when you
 25 can't get out your window until someone else
 26 has got out of it. We were finding that

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1 people were getting stressed doing this
 2 training. We did get situations where people
 3 were getting kicked in the face, et cetera.
 4 When you think about the new helicopter
 5 passenger transportation suit and the boots
 6 that are fitted to that, if we were into
 7 situations where people are getting kicked in
 8 the face, we're going to be into some
 9 significant injuries and concerns for us. So
 10 for the underwater escape exercises, we focus
 11 on the specific procedures that people are
 12 going to use, but we don't--we try to manage
 13 the risk at manageable levels.
 14 We do engage in the surface evacuation,
 15 because for the surface evacuation, it's
 16 extremely important there that if you're on a
 17 helicopter that's landed on the surface of the
 18 water, the last thing you want to do is all
 19 move together and upset it. So it has to be a
 20 controlled team work environment. So for that
 21 particular training, we will put all of the
 22 trainees in at once and we will teach them how
 23 to evacuate the helicopter, but maintaining
 24 under the control of the person leading it,
 25 and ensure that they do it smoothly and
 26 safely. So there again, the issue is it's a

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1 balancing of training risk against benefit and
 2 that's the way we've--over time we found that
 3 that provides for us the best balance, but
 4 again, it's something we can look at in the
 5 Inquiry. We can certainly take a look at it.
 6 MS. FAGAN:
 7 Q. Just so that I understand the two different
 8 procedures, training procedures, there's one
 9 procedure where everybody is in the helicopter
 10 and they get out and get into a life raft or
 11 get out and get into the water, but the
 12 helicopter is not submerged and upside down?
 13 MR. RUTHERFORD:
 14 A. It's not submerged. It's not inverted, no.
 15 MS. FAGAN:
 16 Q. It's not inverted?
 17 MR. RUTHERFORD:
 18 A. No.
 19 MS. FAGAN:
 20 Q. And so there is an exercise where everybody is
 21 in the helicopter?
 22 MR. RUTHERFORD:
 23 A. Yeah.
 24 MS. FAGAN:
 25 Q. But the helicopter is not submerged?
 26 MR. RUTHERFORD:

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1 A. Yeah.
 2 MS. FAGAN:
 3 Q. And the exercises where the helicopter is
 4 submerged is the one, is the second type of
 5 exercise where you have the risk of those
 6 boots kicking people in the face?
 7 MR. RUTHERFORD:
 8 A. Yeah. We focus on individuals and being very,
 9 very--you know, keeping the individual
 10 response to the training requirements is what
 11 we focus on in that situation.
 12 MS. FAGAN:
 13 Q. Just another couple of questions. You had
 14 mentioned the seatbelts. Can you describe the
 15 belt that's used in the HUET versus the belt
 16 that's--the seatbelt, the restraint--I
 17 understand from some of the earlier evidence
 18 that it's a four-point harness which would be
 19 a harness that goes over the shoulder and
 20 across the lap and is clasped in the centre.
 21 Is that the same as the restraint that's used
 22 in the trainer? And if not, why the
 23 difference?
 24 MR. RUTHERFORD:
 25 A. Well, no, it's not. The four-point harness is
 26 put in place now in the current generation of

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1 helicopters. When our helicopter escape
 2 trainer was built, it was more common to have
 3 a lap belt. That's what we have in place at
 4 the present time on our trainer. We are
 5 looking at the possibility of putting in a
 6 four-point harness and that's just we're
 7 working with the University to design a seat
 8 that will replace what we have there now. But
 9 I think one thing that needs to be, I guess,
 10 kept in mind, again it comes back to, you
 11 know, what's important in terms of fidelity.
 12 People coming into our training course, I
 13 think, without exception, I think, everybody
 14 has sat in a whole variety of seats.
 15 Everybody has used a whole variety of belts.
 16 What we basically do in our training is tell
 17 them, you know, become familiar with a
 18 particular belt and the particular seats, et
 19 cetera, that are in your helicopter. Make
 20 sure you know exactly where they are. So what
 21 we focus on really is the thing that nobody
 22 has done when they come in to do this type of
 23 training is they haven't been strapped into an
 24 upside down, dropped in the water and caused
 25 to, you know, force their way outside of a
 26 window. These are--and we don't have a whole

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1 lot of time in training, so that's really
 2 where we focus our efforts. That's not saying
 3 that it's not--you know, if physical fidelity
 4 can be achieved, then it's not a bad thing.
 5 It's never a bad thing, but it's not the
 6 central focus of the training. It's not
 7 something that's given us a great deal of
 8 concern. However, we are looking at seeing if
 9 we can improve on it.
 10 MS. FAGAN:
 11 Q. Thank you. I don't know if you're finished
 12 with the trainer and we're now going to move
 13 on to the suits, and we had lots of evidence
 14 last week on the suits. So can you just
 15 describe the suits that are presently being
 16 used and then I have a number of questions on
 17 that particular piece of equipment as well.
 18 MR. RUTHERFORD:
 19 A. Okay. The helicopter passenger transport,
 20 helicopter underwater escape training, all
 21 takes place utilizing a Helly Hansen
 22 helicopter passenger transportation suit.
 23 This was selected for use by the offshore
 24 petroleum industry. We received our first
 25 suits in November the 1st of 2007. It was
 26 selected in June the 12th, 2007, but they were

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1 delivered and we started our use of them in
 2 November the 1st of 2007.
 3 The suits that we use for training
 4 purposes are identical to those which would be
 5 worn by the helicopter passengers, with a
 6 couple of provisos. We do mark them as
 7 training suits and the reason for this is more
 8 for Helly Hansen's purposes than ours.
 9 Because our suits are serviced by Helly
 10 Hansen, they go back to Helly Hansen's service
 11 department after every use. They didn't want
 12 to get a situation where our suits get
 13 mistaken for the suits in normal service, and
 14 the reason for this is that, you know, are
 15 suits are subject to continued use in a
 16 chlorinated environment. So they were
 17 specifically marked on the back as training
 18 suits. The training suits, we don't outfit
 19 them with personal locator beacons or lights
 20 because during training, we don't want these
 21 sort of things, things going off, so that's
 22 not included on the suit. I note there
 23 they're subject to the use, the more use in
 24 chlorinated water. We do lease from service
 25 by the manufacturer after each use, but it is
 26 possible over time that properties of seals

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1 change a little bit.
 2 Notice there that suits are sized for
 3 best fit, not necessarily individually sized.
 4 For training purposes, you know, the role that
 5 we play there is providing people the
 6 information on how to use the suits and the
 7 features of the suits. We're not exposing
 8 people to cold water or cold water risk. So
 9 we don't have to necessarily precisely fit
 10 every suit to every individual. What we do is
 11 size for a best fit. Now we do maintain a
 12 large inventory of suits and generally we'll
 13 find something that's reasonably
 14 accommodating, but they're not actually sizing
 15 the suit for use. It's a little bit of a
 16 different category.
 17 MS. FAGAN:
 18 Q. Could you turn to Exhibit 98, which I
 19 understand is the lease between the Centre and
 20 Helly Hansen? I have a couple of questions on
 21 what needs to be done when the suits are
 22 serviced and why you need those things done in
 23 order to have effective training.
 24 MR. RUTHERFORD:
 25 A. We, at the Centre there, basically make use of
 26 the same suits that are used offshore. We

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1 have them leased through a sole source
 2 agreement with the helicopter passenger suit
 3 supplier and fundamentally after every use,
 4 the suits will go back. They will be cleaned,
 5 disinfected to ensure there's no hygiene
 6 issues, and they will be inspected. We have,
 7 within our standing offer agreements, I think
 8 we got two here, one is last year and one was
 9 this year, we have an indication there of how
 10 much it cost to service each suit. We have
 11 included in these service requirements the
 12 sort of things that happen in training. You
 13 know, people can tear off seals. They can
 14 break zippers. They can--face seals are in
 15 place. So they take pretty heavy use. So
 16 what has to happen, these go back and get
 17 serviced and are brought back to us. It's a
 18 pretty heavy commitment in terms of, you know,
 19 from the safety training provider because you
 20 see there it's \$350,000 a year we spend just
 21 in servicing this particular suit. That's
 22 just our helicopter passenger transportation
 23 suits. We have another suit, which is an
 24 immersion suit, which is supplied by another
 25 supplier, and we have to pay that money too.
 26 So this is where--the reason why courses can

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1 be quite expensive.
 2 MS. FAGAN:
 3 Q. And I noticed here a cylinder replacement.
 4 Some of the aspects during training require
 5 you to use the different features of the suit.
 6 So what is the cylinder--I mean, we have the
 7 HUEBA, which is the breathing device, but is
 8 this the breathing device or is this a
 9 different -
 10 MR. RUTHERFORD:
 11 A. This is a cylinder which would inflate the--
 12 provide the inflatable collar that's included
 13 in the suit. So we will, during the training
 14 exercise, we will get the students to inflate
 15 that. So every time we do that, there's a
 16 charge associated with refilling that
 17 cylinder.
 18 MS. FAGAN:
 19 Q. So every time you blow up the floatation
 20 device on the suit, then that has to be folded
 21 back down and dealt with and replaced?
 22 MR. RUTHERFORD:
 23 A. Yeah.
 24 MS. FAGAN:
 25 Q. What about the gloves and the spray hood, the
 26 spray shield? Do you use those, and is that a

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1 requirement? Is that prescribed as a
 2 requirement or is that something you've chosen
 3 to do? Do you know?
 4 MR. RUTHERFORD:
 5 A. Well, we choose to do it. I mean, we teach
 6 people how to use all aspects of the suit. So
 7 as part of our training, we will have
 8 everybody utilize the gloves, have everybody
 9 utilize the face shield. Now those don't have
 10 to be replaced after every use. That cost
 11 there is only in the event it gets damaged.
 12 So if we damage any of those items, then they
 13 will be replaced. So we basically have a
 14 blanket order, which is, you know, the maximum
 15 amount of money we expect to spend during the
 16 course of the year. We'll draw down on that
 17 order. So it depends on how many repairs that
 18 happen during the course of the year.
 19 These are expensive suits. They're more
 20 expensive than our immersion suits to maintain
 21 and service. We have our immersion suits,
 22 which were also discussed, I guess, in the
 23 Inquiry. There's been a number of comments
 24 made to the Fitzwright immersion suit. We
 25 have around 250 of those suits. They come in
 26 pretty well--again, we're talking about a

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1 universal suit. We have three sizes of that
 2 suit. We have a small, a universal, and the
 3 jumbo. The universal does fit most people, is
 4 used for most people, 150 pounds to 250
 5 pounds, I guess. Above 250, we go into the
 6 jumbo and below that, we have the small. But
 7 we'll get into some features, I guess, of the
 8 suit. The fact that these are not precisely
 9 sized, they are very, very good suits in terms
 10 of keeping people warm and dry, because
 11 they've got certain features like continuous
 12 cuffs and continuous seals. We use them all
 13 the time in our sea exercises and we very
 14 rarely have any problems with them.

15 MS. FAGAN:
 16 Q. So do the immersion suits require the same
 17 cost? You spend \$350,000 a year on the
 18 transportation suits. Do the immersion suits,
 19 do you know approximately what kind of cost
 20 would it be to service those?

21 MR. RUTHERFORD:
 22 A. We have more uses, but we're still less. It's
 23 probably about 250,000. As I say, it's a
 24 cheaper suit to service and maintain than this
 25 one is. This is an expensive suit.

26 MS. FAGAN:

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1 Q. Now before you move to this slide, I have one
 2 or two more questions. I don't want you to
 3 move into this device, because we're going to
 4 break for lunch, so I'll ask one or two
 5 questions on the suits and then if I'm not
 6 done, we'll start up again after the break.

7 MR. RUTHERFORD:
 8 A. Okay.

9 MS. FAGAN:
 10 Q. Were you--was the Centre involved in the
 11 selection process of the suits?

12 MR. RUTHERFORD:
 13 A. No, we weren't.

14 MS. FAGAN:
 15 Q. Okay. Do you think that the Centre could have
 16 added value to the selection process, and if
 17 so, why or did it not matter?

18 MR. RUTHERFORD:
 19 A. I think we could add a lot of value to the
 20 selection. I think that what needs to be
 21 taken account of, I guess, is that not only do
 22 our instructors spend day in, day out, day in,
 23 day out in suits, they also see the number of
 24 people that come through in training. They
 25 know the sort of issues and the things that
 26 cause difficulties to people in training. So

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1 I think there's a lot of value that can be
 2 added by a training provider. I think
 3 probably these suits were looked at by our
 4 friends in Nova Scotia, because they were
 5 originally a Nova Scotian based company. We
 6 did get--prior to the implementation in
 7 November the 1st, we did get an opportunity, I
 8 think late October, a suit was provided to us
 9 to have a look at and we had a number of
 10 comments back to Helly Hansen on that, and
 11 Helly Hansen did actually come into our
 12 facility. A couple of their representatives
 13 came in to see us in February, I think
 14 February of 2008. We went through some of the
 15 issues that we were looking at in the suits,
 16 and there was a few things that I think the
 17 sort of reason why training providers can
 18 provide good knowledge is that there were some
 19 issues relating to, I guess, face seals which
 20 didn't have a lot of give. It's fine to have
 21 something tight but I think people come in all
 22 sorts of shapes and sizes, so generally
 23 speaking, if you're going to have immersion
 24 suits, helicopter passenger transportation
 25 suits, unless you're going to individually fit
 26 every suit, you really have to have suits

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1 designed so that the important parts of them
 2 have some flexibility, so that you can--so
 3 that, you know, you don't--because they don't
 4 fit everybody. Everybody has detail
 5 differences in their sizes. And it's also
 6 important, from our perspective as a training
 7 provider in as much as if seals, et cetera,
 8 are too tight, then we'll end up with a lot
 9 more damage to them when they're donned and
 10 doffed, which causes--it's quite expensive.

11 So those things, a couple of things there
 12 were raised. I think there were some issues
 13 with that suit in that respect, face seals,
 14 the wrist seals. The gloves were identified
 15 at that time as being a little bit clumsy.
 16 They could be easier. Issues also identified
 17 relating to how the breathing apparatus device
 18 was going to be attached to the suit, how it
 19 was--so that it wouldn't--there was a
 20 challenge, I guess, when you put this
 21 breathing device on a suit, you're trying to
 22 make something safer, but you could be in a
 23 situation where if you got something that's
 24 hanging loose, you're actually creating a
 25 hazard by doing that. So they really need to
 26 be tied in a little bit tighter. I think they

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<p>1 also had some issues relating to the fit 2 relating to legs and leg lengths because what 3 was tending to happen in the underwater escape 4 training is that people have different leg 5 lengths and they weren't--tended to find that 6 some of these heavy boots were getting dragged 7 behind or coming loose. So there was another 8 possibility of entrapment.</p> <p>9 So I think Helly--Helly were actually 10 very receptive. At that time, we told the 11 issues there that were raised with them and my 12 understanding is the new suits coming out has 13 taken account of all of these factors. So it 14 has--they have taken these comments away and 15 looked at it. I haven't seen the new suit 16 yet, but in discussions with them, they have 17 indicated that they have incorporated comments 18 from the training providers.</p> <p>19 I would like to say, I mean, there's two 20 ways that training providers can provide 21 comments to suppliers. We can either-- you 22 know, they can provide equipment to us and 23 we'll just provide, you know, a report from an 24 instructor. We're happy to do that with any 25 type of safety equipment. We can also engage, 26 if they wish us to, in a more formal research</p>	<p>1 A. Yeah. We received a letter from Hibernia 2 Management Development Corporation, I believe 3 it was in June of 2007, indicating that they 4 would be selecting a suit, a new suit, and 5 that it would be implemented on November the 6 1st, which to the best of my recollection did 7 happen.</p> <p>8 MS. FAGAN: 9 Q. So when you were shown the suit in October, 10 was that October of '07, a month or so before 11 you received the suit?</p> <p>12 MR. RUTHERFORD: 13 A. Yeah, we did get a suit a month or so before 14 we received the final suit.</p> <p>15 MS. FAGAN: 16 Q. And when were the comments provided with 17 respect to the suit?</p> <p>18 MR. RUTHERFORD: 19 A. I wasn't directly involved in this one. My 20 assistant operations was in consultation with 21 Helly Hansen. Helly Hansen did come to our 22 training centre in February of 2008. So 23 between that time, the comments went back to 24 Helly Hansen and they came in to our Centre to 25 have a look at some of the issues.</p> <p>26 MS. FAGAN:</p>
<p>Page 134</p> <p>1 project where we can undertake specific tests 2 on behalf and provide them with a technical 3 report at the end of it. So we can do both 4 ways and that will be sort of funded, but 5 we're certainly happy to look at anything. 6 Anything that's relating to safety training 7 offshore, we're always happy to take it in 8 and, you know, try it out basically.</p> <p>9 MS. FAGAN: 10 Q. Well, I'll leave it there because we're at the 11 break, and we'll come back at 2:00. Thank 12 you. 13 (LUNCH BREAK)</p> <p>14 MS. FAGAN: 15 Q. All right. When we broke for lunch, Mr. 16 Rutherford, you were dealing with the suits 17 and what value the Centre, as a trainer, could 18 have in providing either some feedback or a 19 study into the suits that are being worn. You 20 also said that you had been asked for your 21 comments and you did provide your comments. 22 From a timing perspective, just so that we're 23 clear, you said that the decision for the 24 suits was June of 2007 and that you had the 25 suits November 2007?</p> <p>26 MR. RUTHERFORD:</p>	<p>Page 136</p> <p>1 Q. Okay. So the discussions between the Centre 2 and Helly Hansen was after the suit had been 3 selected?</p> <p>4 MR. RUTHERFORD: 5 A. Yeah.</p> <p>6 MS. FAGAN: 7 Q. Okay. When Mr. Decker testified, he indicated 8 that there was escaping air in the suit and he 9 discussed the procedure where you remove the 10 trapped air from the immersion suit and he 11 indicated that this was either not taught 12 during the helicopter transportation suit or 13 it was difficult. Can you explain the 14 differences in the trapped air, I guess, event 15 in the two different suits and what's your 16 experience in the training?</p> <p>17 MR. RUTHERFORD: 18 A. Yeah, indeed. In the immersion suit, we do 19 provide training to our trainees basically to 20 ensure that as much of the trapped air is out 21 of the suit as possible before getting in or 22 jumping into the water, basically for the 23 reason of ensuring that they don't up end or, 24 you know, basically they don't have air 25 rushing pass their face as they drop in the 26 water. The situation with the helicopter</p>

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1 passenger transportation suit is because
 2 you're sitting inside a helicopter, there's no
 3 way that you could actually do any of these
 4 exercises aimed at burping your suit, as well
 5 as the fact that the helicopter passenger
 6 transportation suit comes under a different
 7 set of standards, which has a maximum and a
 8 minimum buoyancy. So there's got to be a
 9 means of making sure that we don't exceed what
 10 is a maximum buoyancy for the suit, so you
 11 don't get trapped inside the helicopter. For
 12 that reason, these particular suits, there's
 13 various devices that--these suits use what's
 14 called a Si-tec valve and a Si-tec valve is
 15 used in typical diver suits and it's a valve
 16 designed to release air from the suit but not
 17 allow water to come into the suit.
 18 I know Robert Decker did indicate he had
 19 air that came up past his face. I don't know
 20 that's--it could have been maybe the face seal
 21 wasn't as tight as it should have been. It
 22 might be that the Si-tec valve was--it's
 23 capacity might have been exceeded or it might
 24 have been that the suit currently, in the
 25 current suit, version of the suit, that valve
 26 is actually adjustable. We do train not to

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1 touch it in the helicopter passenger
 2 transportation, but sometimes it's possible
 3 that got turned in, it would affect that. So
 4 that I guess would have to be looked at by
 5 TSB. But the new version of the suit, I know,
 6 that's coming out, those valves are no longer
 7 adjustable and not only do they only have one
 8 valve, they will have two valves on it.
 9 There's one on the hood and one on the
 10 shoulder. So there's two valves on that suit
 11 to release air. But basically, the air is
 12 released automatically on a passenger
 13 transportation suit.
 14 MS. FAGAN:
 15 Q. One other area that Mr. Decker covered was his
 16 core body temperature and when you train, what
 17 is the temperature in the pool?
 18 MR. RUTHERFORD:
 19 A. Our temperature in our pool tends to be around
 20 about the--it can be 14, 15, 16 degrees.
 21 MS. FAGAN:
 22 Q. And on the sea days, which are the days where
 23 they wear the immersion suits out in the
 24 ocean, I understand the temperature of your
 25 threshold limit can be as low as two degrees?
 26 Is that correct?

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1 MR. RUTHERFORD:
 2 A. Two degrees, yeah.
 3 MS. FAGAN:
 4 Q. Mr. Decker was in the helicopter
 5 transportation suit when the incident occurred
 6 in March, and he indicated that at the time of
 7 rescue, his body core temperature was 28
 8 degrees. Is this lower than you would have
 9 expected, given the time he was in the water?
 10 MR. RUTHERFORD:
 11 A. Yeah, it is. I think, if I remember rightly,
 12 the particular standard that those suits were
 13 designed to, we're looking at being able to
 14 maintain no more than a drop of two degrees
 15 core body temperature every six hours. So he
 16 obviously dropped more than that. Now the
 17 question is was it because the suit, there was
 18 problems with the suit, it wasn't put on right
 19 or there was other aspects relating to the
 20 suit. We do know he did indicate that he
 21 didn't get the gloves on and the gloves do
 22 form part of the seal of those suits. So
 23 there is obviously one area where he could
 24 take in water. So it does appear that he has
 25 taken in more water than would have been
 26 expected and he did lose more temperature than

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1 would have been expected.
 2 MS. FAGAN:
 3 Q. Okay.
 4 MR. RUTHERFORD:
 5 A. But having said that, we should also be very
 6 cautious that people are all so very different
 7 and when it comes to survival situations,
 8 people's response is so very different too.
 9 MS. FAGAN:
 10 Q. So these statistics or test parameters are
 11 just an indication or an average?
 12 MR. RUTHERFORD:
 13 A. They're an indication, but they're not--
 14 they're an indicator. They're not--you know,
 15 people are not machines. People have their
 16 own responses to situations.
 17 MS. FAGAN:
 18 Q. So you could get somebody who's larger or
 19 smaller react differently?
 20 MR. RUTHERFORD:
 21 A. Yeah. I mean, we know in this room, we got
 22 people here that's boiling hot. People here
 23 are freezing cold.
 24 MS. FAGAN:
 25 Q. I would now ask you to move to the helicopter
 26 underwater escape breathing apparatus, and I

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1 understand you're going to give a brief
 2 overview with respect to the implementation,
 3 because we heard a lot of evidence last week
 4 on the implementation. We'd like to know how
 5 the Centre fit within that nine-year
 6 implementation process, and then we're going
 7 to have Mr. Harvey do the demonstration. One
 8 of the reasons for having the demonstration is
 9 we hope that that will explain and demonstrate
 10 how complicated that particular device is with
 11 respect to all of the aspects, risk aspects
 12 and training aspects that have to be
 13 considered. So can you first go through the
 14 implementation? Then we'll get Mr. Harvey up.
 15 MR. RUTHERFORD:
 16 A. Yeah. I guess stepping back a little bit from
 17 the slide I've got up there, we first were
 18 made aware of that there will be an
 19 implementation of a breathing device, I guess,
 20 in 2002. CAPP sent us a letter indicating
 21 that they're considering implementing a
 22 breathing device, and it was a letter which
 23 included a number of other things, which are
 24 being looked at by CAPP. So we were aware of
 25 it. It wasn't--from our perspective, it
 26 wasn't considered much of a concern at the

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1 time. I guess our perception of it at the
 2 time would be that what would be implemented
 3 was something like a rebreather system, which
 4 had been introduced in the United Kingdom. We
 5 were familiar with that and it was reasonably
 6 easy to implement.
 7 Understanding is that they started to--
 8 CAPP and the operators were starting to look
 9 at other particular types of systems around
 10 and looking at different types of breathing
 11 devices and were looking very much at the
 12 pressurized air system as being really the
 13 optimal, the best solution to the evacuation
 14 situation people are likely to face. We
 15 became aware of that late 2004 that that had
 16 been selected by the operators and the Task
 17 Force for the CAPP implementation was put in
 18 place on early 2005, which we were invited to
 19 be part of. So we really got involved in the
 20 implementation of this device early in 2005.
 21 The recommendations of that Task Force, I
 22 guess, 2008, the end of the Task Force, the
 23 Task Force recommended following implementing
 24 as soon as proper procedures were in place a
 25 compressed air unit as a chosen emergency
 26 breathing apparatus for offshore petroleum

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1 industry helicopter travel. Implementing this
 2 consistently across all petroleum industry
 3 operations in both Nova Scotia and
 4 Newfoundland and incorporate the compressed
 5 air unit as a component of the required safety
 6 training to include dry familiarization and
 7 in-pool training.
 8 Between 2005 and 2008, a lot of things
 9 did happen. I mean, there was a lot of
 10 discussion going on about managing risk
 11 because I think we were getting medical advice
 12 indicating concerns relating to the management
 13 of risk. There was a number of issues
 14 relating to transportation of the unit on the
 15 helicopter. I think it wasn't until 2007 they
 16 got the approval from Transport Canada that
 17 they could actually transport this device on
 18 the helicopter. There was issues relating to
 19 integration with suits. So there was a lot of
 20 things went on between 2005-2008. I don't
 21 know whether I'm--in the process of all that,
 22 we were aware that the system was going to be
 23 put in place, so it still wasn't entirely sure
 24 which way things were going. We did arrange
 25 for training on rebreather devices for our
 26 instructors, just in case it went that way.

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1 We also, during 2007, we provided training to
 2 our instructors on this particular device. We
 3 also moved ahead on some of the aspects that
 4 we could move ahead on, such as the
 5 development of the--we had to put a shallow
 6 end in our pool to allow us to do the shallow
 7 water training. So no matter what device was
 8 going to be selected, that moved ahead in
 9 2007, and we also ordered up -- just so that
 10 we would be ready to go, we did order up all
 11 the EBS units, although we didn't actually
 12 unpack them until we were sure which way the
 13 system was going.
 14 MS. FAGAN:
 15 Q. If you hadn't used the devices, why didn't you
 16 unpack them?
 17 MR. RUTHERFORD:
 18 A. If we haven't used them?
 19 MS. FAGAN:
 20 Q. Yeah, why didn't you unpack the -
 21 MR. RUTHERFORD:
 22 A. Well, there was--at the end of--it was still
 23 not quite sure which way it was going to go
 24 because they still hadn't managed to resolve
 25 some of the issues, how the training was going
 26 to be delivered and manage the risk associated

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<p>1 with it. We ordered the devices up because 2 they are--there's only one supplier of these 3 devices. They tend to be long lead items and 4 they're only built--they're only manufactured 5 in batches. So you have to be able to get 6 into a batch. So we ordered them and said, 7 well, we're going to be ready. If there's a 8 decision made to move ahead, we're going to be 9 ready to move ahead. We didn't unpack them 10 just in case the decision went the other way 11 and we had to ship them back again, because 12 this we can't afford. So that's basically 13 what we did.</p> <p>14 But so we had a number of issues that 15 went in during that time. We had to-- 16 technical support personnel also had to be 17 trained in servicing and hygiene. This was 18 done by the supplier of the unit. So that all 19 took place in around 2007. We had to design 20 training courses, risk management procedures. 21 This was going on. The CAPP committee was 22 looking at these aspects, so we didn't get too 23 much into this until such time until the CAPP 24 report came out in 2008 saying we're going to 25 go ahead.</p> <p>26 Must say, the facility modifications we</p>	<p>1 time, we were--you know, we were reasonably 2 ready to go, but until such time as we had the 3 precise nature of the way that training was 4 going to be delivered until such time as we 5 understood exactly how we were going to manage 6 the risk, we couldn't actually move ahead. So 7 that basically, we were sort of sitting there 8 waiting to see which way it was going to go.</p> <p>9 MS. FAGAN: 10 Q. So you had the facilities and equipment ready, 11 but the training, this risk component with 12 respect to the training was still being sorted 13 out by the Task Force?</p> <p>14 MR. RUTHERFORD: 15 A. Yeah, it was still an issue to how it was 16 going to be addressed, yeah.</p> <p>17 MS. FAGAN: 18 Q. Okay. You have pulled up a slide now, 57. 19 Can you just describe--there are six 20 photographs. Can you just explain what's in 21 each photograph?</p> <p>22 MR. RUTHERFORD: 23 A. Yeah, on the top left-hand corner, you'll see 24 somebody sitting in a HUET there actually 25 wearing the breathing device. If you move 26 down to the bottom left there, that is the</p>
<p>Page 146</p> <p>1 did, we had to put in place a HUEBA servicing 2 room. We also designed and constructed a 3 chair for doing shallow water breathing to do 4 the shallow water training for the device and 5 we procured the units.</p> <p>6 MS. FAGAN: 7 Q. From a timing perspective, when was everything 8 ready to go? Your shallow end of the room, of 9 the pool. You had your servicing room. You 10 had to build a chair and you bought a number 11 of units. So at what point did the Centre 12 have its facilities and equipment ready?</p> <p>13 MR. RUTHERFORD: 14 A. We had our facilities and equipment ready by 15 late 2007, but there was still some issues 16 that had to be resolved as to how the training 17 was going to be delivered, and I think there 18 was a--at the end, I think it was at the end 19 of 2007, there was still--I believe it was 20 2007 or 2008. 2008, I think there was still 21 decisions being taken as to which--how this 22 training was going to go about because the 23 Task Force was sent by CAPP to look at various 24 training providers, to look at other systems 25 that were around there again. So we still 26 hadn't been entirely settled. So at that</p>	<p>Page 148</p> <p>1 training platform that we put in place. 2 Obviously it was--we had a pool that was 3 consistent depth, four metres right across it. 4 It was prohibitively expensive for us to 5 change and we couldn't take the pool out of 6 service because of training activities to 7 actually build a shallow end, so we designed 8 basically a shallow platform which allowed us 9 to undertake the training.</p> <p>10 On the top middle there, you'll see the 11 chair that was used in the end, which we 12 utilized for delivering of this training. The 13 issue in the end of the day, it was determined 14 that the training, the best way of delivering 15 the training was to provide an inversion. It 16 was important to do this. However, we needed 17 to carefully control the depth at which the 18 trainee went under the water, just to avoid 19 issues of embolism essentially which Greg will 20 get into. So this was the chair that was 21 designed.</p> <p>22 On the bottom, you'll see the unit and 23 again, Greg will show you a real model of 24 that. On the top right, just shows how the 25 unit was integrated into the suit at the time 26 and down at the bottom right there, just a</p>

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1 view of the chair.
 2 So just the next slide here, we provided
 3 a demonstration of training course and
 4 training method to industry representatives
 5 March the 6th, 2009 and the reason we pulled
 6 industry in to go through this, because it was
 7 still--there was still some going--it still
 8 hadn't been firmed up exactly the best way to
 9 deliver the training. On the one side is
 10 managing the risk. There was a requirement to
 11 do only shallow water training. On the other
 12 side, to provide the most effective training,
 13 you really need to be able to put somebody in
 14 a situation where they're being turned upside
 15 down and breathing down and utilizing the unit
 16 in a semi-realistic environment. In the end,
 17 you know, we utilized that chair and pulled
 18 industry in and the Task Force just to show
 19 everybody who was looking at this unit,
 20 looking at the decisions, was fully familiar
 21 with what we consider would be the appropriate
 22 approach or the appropriate balanced approach
 23 to this training. So we had seven or eight
 24 people, I think, came in from industry and I
 25 think at the end of the day, you know, they
 26 were quite satisfied that this was probably

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1 the best way for us to move ahead, which we
 2 did.
 3 The new training course received CAPP
 4 approval May the 5th or I think it was May the
 5 6th, it was fully implemented. We were fully
 6 implemented by May the 11th. I think a copy--
 7 if you look at Exhibit--yeah, this was a--this
 8 is the notification we received from CAPP, the
 9 final approval of the CRF's. I talked about
 10 those earlier, the change request forms that
 11 went into CAPP, and these were--these forms
 12 had been circulated to all the committee
 13 members so they indicated that the course was
 14 approved. So once this was received by us as
 15 being approved, again it went through our own
 16 academic processes. We had to take this
 17 through our own process to get the course
 18 through what we call our Non-Degrees Programs
 19 Committee. So that took just a couple of days
 20 to get back to us during that week. Anyone
 21 that knows anything about academic processes
 22 knows that we were--that's very fast. We had
 23 people ready to go. They were just waiting
 24 for this to come through.
 25 MS. FAGAN:
 26 Q. So you received approval on the 6th and you

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1 got it through your academic approval process
 2 in five days?
 3 MR. RUTHERFORD:
 4 A. Less than five days. It was a couple of days.
 5 Then we had to schedule all our courses, and
 6 if you look at--I'll just open this up,
 7 because I think this is important to show
 8 people in terms of how we implement this and
 9 how we schedule our resources. The OSSC, we
 10 schedule all our resources on a weekly basis.
 11 What goes out to everybody is a weekly
 12 schedule. We have one going out to the OSSC
 13 in Foxtrap. We have another one goes out to
 14 SERT, the Emergency Response Training Centre
 15 on the west coast. The schedule basically has
 16 a number of aspects to it. We're looking at
 17 issues relating to facility equipment,
 18 information and equality safety notes, program
 19 information. This says, the following new
 20 courses and changes have been approved by MPC
 21 effective the May the 8th, it says there.
 22 These are the HUEBA courses that were approved
 23 then. So we received that. So final note
 24 there, thank you to all the faculty and staff
 25 dedicated their time, energy, et cetera, to
 26 implementation of the HUEBA, because a lot of

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1 people put a lot of time into this.
 2 But then we go down into these are the
 3 instructor and instructor resources to
 4 everything we do, but I'll go down here a bit
 5 further and we look at--just to give some
 6 people an indication of when we put courses
 7 like this in, we're already sort of blocked
 8 full, so this has to be added in around other
 9 courses we've got. We got a basic oil spill
 10 response course which is going on all week.
 11 We have STCW, which is marine transportation
 12 courses going on all week. We have--there's a
 13 BST recurrent course which is going on there
 14 Monday and Tuesday. We have another BST-R
 15 course which is going on Tuesday and
 16 Wednesday. We have--and then we see the--then
 17 the BST-R courses would have included the
 18 HUEBA portion into those courses. We had a
 19 confined space entry course going on, H2S
 20 course, and then we see some, the HUEBA
 21 courses. These are the stand-alone courses
 22 that were added to ensure that we could meet
 23 the requirement of people that weren't coming
 24 up for BST recurrent courses. So as you can
 25 see, these were basically put on in the
 26 evening, 4:30 to 8:30 courses. 4:30 to 8:30,

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1 again 4:30 to 8:30. We had courses in on six
 2 there. 4:30 to 8:30, then we had courses
 3 going on in the weekend, Saturday and Sunday,
 4 and again, another one on Saturday, another
 5 one. So I think we put--on the first week
 6 operation, we had at least ten HUEBA courses
 7 going, which would be 120 people. So we were--
 8 - and we had no issues at all with any of
 9 those courses. We have marine basic first
 10 aid. Marine first aid and tanker
 11 familiarization, rescue boat, and most STCW
 12 courses. We have a lot of sea-day only
 13 course. That's one of your sea-day only that
 14 on a this course, and a WHMIS course. I think
 15 that's all for that week.
 16 But I think it was challenging putting
 17 all this--I think when it came in, originally
 18 the intent was that this was going to be
 19 introduced into our BST, BST-R courses, but it
 20 was going to be voluntary for everybody else
 21 until such time as everybody had been trained.
 22 As a result of the incident on March the 12th,
 23 the decision was made by the offshore industry
 24 that they were going to train everybody as
 25 soon as possible on this device. So
 26 basically, that put a lot of pressure to move

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1 courses and move courses very, very quickly,
 2 and I think everybody sort of pulled their
 3 weight and did everything they could to make
 4 that happen.
 5 MS. FAGAN:
 6 Q. So are you saying that prior--obviously this
 7 has been talked about and discussed for a
 8 number of years. So it was clearly in the
 9 works prior to the March 12th incident, the
 10 implementation of this?
 11 MR. RUTHERFORD:
 12 A. Very much so, yeah.
 13 MS. FAGAN:
 14 Q. Very much so.
 15 MR. RUTHERFORD:
 16 A. Yeah.
 17 MS. FAGAN:
 18 Q. So are you saying that the plan, prior to
 19 March 12th, was that as workers, as recurrent
 20 time came up, as each worker filtered through
 21 and his three--he or her, three year time
 22 period elapsed and they were due to complete
 23 their BST recurrent, that's when they'd
 24 receive their HUEBA training. So you know,
 25 you would just--if you were out there and you
 26 were a year away from having to do your

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1 recurrent, once you went to do your recurrent,
 2 then you'd get your training. However, after
 3 March 12th, the decision was everybody is
 4 going to be trained immediately?
 5 MR. RUTHERFORD:
 6 A. Yeah, it was partly that.
 7 MS. FAGAN:
 8 Q. Is that what you mean by voluntary? Because
 9 you say it was voluntary.
 10 MR. RUTHERFORD:
 11 A. Well, or people could self select. Basically,
 12 people that were coming back to do their
 13 training course, their BST-R course, would do
 14 the HUEBA course. But people could choose and
 15 the companies could basically choose to send
 16 people in ahead of that time. We would have a
 17 number of stand-alone courses where we'd be
 18 starting to train. The intent, I think, the
 19 offshore industry wanted to get this in as
 20 fast as possible and make sure that everybody
 21 was trained as quickly as possible, but it
 22 wasn't--at that time, it wasn't considered
 23 they were going to make this mandatory for
 24 everybody offshore to have this training in
 25 place prior to a certain date. After March
 26 12th, that was kind of--that was accelerated

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1 so it was pushed ahead to make sure that
 2 everybody that went offshore did have this
 3 training.
 4 MS. FAGAN:
 5 Q. And how many people have been trained on this
 6 breathing device since implementation? Your
 7 first course was the week of May 11th. How
 8 many have you trained since then?
 9 MR. RUTHERFORD:
 10 A. We had done--well, the end of October, we had
 11 done 1350. I think it's probably about just
 12 over 1500 now.
 13 MS. FAGAN:
 14 Q. Where did the--there must have been a budget
 15 or a cost associated with gearing up for this
 16 training and where would you get the funding
 17 for something like that? Because we heard
 18 from Mr. Barnes, the witness for CAPP, that an
 19 organization called PRAC provided some
 20 funding. So perhaps you could just explain
 21 that process?
 22 MR. RUTHERFORD:
 23 A. Yeah. One of the challenges for anyone that's
 24 involved in any way in any public institution
 25 is how do you find money to actually make
 26 things happen. We have to generally--we are a

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1 cost recovery unit. There's a limited budget
 2 in terms of what we can do, operational
 3 budget, which doesn't always provide us
 4 necessary funds to do capital acquisitions.
 5 We had a situation, I guess, with this
 6 particular training, implementation of this
 7 particular training was going to cost us a
 8 significant amount of money. It's 180--we had
 9 estimated somewhere between 170 and \$200,000
 10 to implement. Originally, there was talk that
 11 the offshore industry were actually going to
 12 provide us with the actual units and in the
 13 end, I think, for some reason, I don't--that
 14 was retracted. They decided that we would pay
 15 for this out of our delivery of courses and it
 16 would go onto the delivery of courses. It's a
 17 little bit challenging for us because, again,
 18 as a public institution, we have--our finances
 19 go year by year. So we have to--necessarily,
 20 it's not always easy to recover our money back
 21 into the previous year.
 22 So what we looked at doing, I guess
 23 there's two approaches. One, when I went to
 24 our executive of the Marine Institute and
 25 indicated that this was coming in, it was an
 26 important training. It was required. It was

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1 going to be introduced to the offshore and it
 2 was extremely important that we introduce it,
 3 and basically said we would like, you know, to
 4 have permission to expend funds against this,
 5 and they did approve it, and I did say that
 6 what I would do is try and find ways to
 7 recover some of the money that was going to be
 8 expended. So what I did was applied to PRAC,
 9 which was--PRAC is Petroleum Research Atlantic
 10 Canada. They have money available for
 11 research activities, and because this was sort
 12 of a training developmental project with a
 13 slight--a certain amount of research activity
 14 associated with it, developing a risk
 15 management protocols, et cetera.
 16 MS. FAGAN:
 17 Q. Wait now. I know you're trying to find the
 18 exhibit. Just go over to TRIM. That's right,
 19 okay.
 20 MR. RUTHERFORD:
 21 A. Because of that, they did approve funding, a
 22 certain percentage of our funding. So that
 23 was--this was the final report we put in to
 24 PRAC.
 25 MS. FAGAN:
 26 Q. And I believe you're referring to Exhibit 94?

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1 MR. RUTHERFORD:
 2 A. Exhibit 94, yeah.
 3 MS. FAGAN:
 4 Q. And 94 is the final report with respect to
 5 funding by PRAC?
 6 MR. RUTHERFORD:
 7 A. Yeah.
 8 MS. FAGAN:
 9 Q. What is PRAC?
 10 MR. RUTHERFORD:
 11 A. That's Petroleum Research Atlantic Canada, and
 12 it's a funding pool that's put in place by the
 13 offshore operators and it's a funding pool
 14 that we can access for certain research and
 15 development projects.
 16 MS. FAGAN:
 17 Q. So the money -
 18 MR. RUTHERFORD:
 19 A. So it is an offshore--the money does come from
 20 the offshore petroleum industry.
 21 MS. FAGAN:
 22 Q. So it comes from the industry, the operators
 23 for the most part?
 24 MR. RUTHERFORD:
 25 A. Yeah.
 26 MS. FAGAN:

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1 Q. So the operators provide money to this
 2 research group called PRAC?
 3 MR. RUTHERFORD:
 4 A. Yeah.
 5 MS. FAGAN:
 6 Q. And that's where you received funding?
 7 MR. RUTHERFORD:
 8 A. Yeah.
 9 MS. FAGAN:
 10 Q. And this is the final report with respect to
 11 the funding that was provided?
 12 MR. RUTHERFORD:
 13 A. Yeah. We did originally intend completing all
 14 this by the 31st of August, 2008. As you see,
 15 it was delayed a little bit there while they
 16 were still looking at various types of
 17 systems, but so we had to ask for an extension
 18 on this proposal, but basically what we did
 19 here, just this gives an indication of what we
 20 did, what we had to do in terms of facilities,
 21 modifications. Because I got money from PRAC,
 22 we have to provide a report to them. So it
 23 provided us, you know, a report that does
 24 track some of the things that were going on,
 25 which I think is useful to people here. So it
 26 looks at the facilities modifications, our

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<p>1 equipment acquisition, various--our training 2 instructors, technical support personnel. The 3 risk management, we looked at the risk 4 management in conjunction--the HUEBA Task 5 Force was looking at risk management. We were 6 also looking at it internally to determine 7 what was the best way of delivering the 8 training. As well to that, we looked at this 9 particular trainers. We thought that we could 10 deliver the training, we could manage our 11 risks effectively doing this, but we could 12 provide an effective training capability. So 13 we have to--this just gives an indication of 14 what it cost us.</p> <p>15 When we submitted the proposal, we were 16 looking at MI providing \$140,000 in cash, PRAC 17 \$50,000, and in kind, which is time for people 18 who are fundamental--people who are full time 19 at the Marine Institute, we just put our--it's 20 not actual cash expenditure, but it's in-kind 21 resources of our personnel. We'd estimated 22 \$176,000 at that time. When it came in, when 23 we concluded this project, it was \$167,000. 24 We have actually expended a little bit more 25 than that because we have now trained a few 26 extra people up and we've trained--we've got</p>	<p>1 in the back here, and information on project 2 expenditures. This tells you here exactly 3 what the money was spent on. So the actual 4 EBS system, the actual units, we expended 5 close on \$62,000 for those. The grates for 6 the pool modifications, around \$41,000, and 7 then you see the outfit of the service room, 8 construction of service room. So it provides 9 a reasonable understanding there, I think, of 10 what we were involved in.</p> <p>11 MS. FAGAN: 12 Q. A good source document if somebody wants to 13 see what went into the actual implementation 14 of the device.</p> <p>15 MR. RUTHERFORD: 16 A. Yeah.</p> <p>17 MS. FAGAN: 18 Q. Now you had mentioned that you had some 19 instructors trained in the rebreather and then 20 you also had the instructors trained in using 21 this device. Was there anything else 22 required, any standards that had to be met or 23 any certificates that had to be met in order 24 to implement the training?</p> <p>25 MR. RUTHERFORD: 26 A. Yeah, we had to have--our instructors require</p>
<p>1 another chair, but that's--at the end of the 2 project, when we set up, this is what it cost 3 us to do.</p> <p>4 MS. FAGAN: 5 Q. So on about 170,000, 50,000 came from PRAC? 6 MR. RUTHERFORD: 7 A. Yeah.</p> <p>8 MS. FAGAN: 9 Q. And about another 100 came from the Marine 10 Institute? 11 MR. RUTHERFORD: 12 A. From the Marine Institute, yeah.</p> <p>13 MS. FAGAN: 14 Q. And then there was about 20,000 in kind? 15 MR. RUTHERFORD: 16 A. Yeah.</p> <p>17 MS. FAGAN: 18 Q. Which would have been existing resources 19 devoted to this particular project or 20 implementation? 21 MR. RUTHERFORD: 22 A. It would, yes, yeah, and I think here in the 23 back here we've got--we had to submit the 24 training courses into that. This is the HUEBA 25 Task Force recommendation to CAPP that I 26 included here, December 2008. That's included</p>	<p>1 to have dive medicals. That was required by 2 our Department of Labour because they were 3 involved in compressed air breathing devices. 4 We did have to have occupational--they're to 5 be trained in occupational SCUBA diving. Greg 6 will get into this a little bit more. He can 7 tell a little bit more about that, what was 8 required of his people there to deliver the 9 training. I think--just thinking about what 10 else there was. The other thing really 11 related to the training of the technicians, 12 because we had to have the manufacturer come 13 in and provide training in servicing and 14 hygiene aspects relating to the use and 15 servicing of the device, because these are 16 going to be utilized, you know, frequently in 17 chlorinated water. We have to take them-- 18 after every use, they have to go through a 19 servicing and cleaning.</p> <p>20 MS. FAGAN: 21 Q. And the cylinders have to be refilled? 22 MR. RUTHERFORD: 23 A. Refilled, yeah.</p> <p>24 MS. FAGAN: 25 Q. Now I don't know if that is all you have to 26 add on this device, and if we're ready for Mr.</p>

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<p>1 Harvey to present or if there's anything else</p> <p>2 you'd like to add?</p> <p>3 MR. RUTHERFORD:</p> <p>4 A. I think my next slide says HUEBA presentation,</p> <p>5 Greg Harvey, instructor. So that probably is</p> <p>6 an indication that somebody is telling me -</p> <p>7 MS. FAGAN:</p> <p>8 Q. I think that's Mr. Harvey's -</p> <p>9 MR. RUTHERFORD:</p> <p>10 A. - they've had enough of me.</p> <p>11 MS. FAGAN:</p> <p>12 Q. - cue to take the stand and you will get a</p> <p>13 break. Just for the group, when Mr. Harvey is</p> <p>14 finished, Mr. Rutherford has a few comments,</p> <p>15 just a couple of slides on current standards</p> <p>16 and some opportunity for the future, and then</p> <p>17 we'll put the panel together for questions.</p> <p>18 So Mr. Rutherford, you get a break, if you</p> <p>19 would like to come down, and Mr. Harvey, you</p> <p>20 can step forward, if you would?</p> <p>21 MR. GREGORY HARVEY, EXAMINATION BY MS. ANNE FAGAN</p> <p>22 MS. FAGAN:</p> <p>23 Q. And Mr. Harvey's presentation is at Exhibit</p> <p>24 97, so I'd ask the Registrar to bring up</p> <p>25 Exhibit 97, if she would. Just perhaps go</p> <p>26 down to the bottom where it indicates TRIM</p>	<p>1 benefits of it. While I'm doing that, I</p> <p>2 brought an additional unit here, so just maybe</p> <p>3 to get things going, to be passed around, and</p> <p>4 make sure I give you the one that doesn't have</p> <p>5 any air in it.</p> <p>6 MS. FAGAN:</p> <p>7 Q. I understand during the training, you pass</p> <p>8 around a cylinder that's not full until you</p> <p>9 get the students in the pool. Is that</p> <p>10 correct?</p> <p>11 MR. HARVEY:</p> <p>12 A. No, every student gets a full cylinder.</p> <p>13 MS. FAGAN:</p> <p>14 Q. But once they're -</p> <p>15 MR. HARVEY:</p> <p>16 A. In the classroom, it's a controlled setting,</p> <p>17 so they get it when--once they've seen the</p> <p>18 presentation and when I'm in control, so I</p> <p>19 know they're not going to do anything foolish</p> <p>20 with it.</p> <p>21 MS. FAGAN:</p> <p>22 Q. But this group is getting a cylinder that's</p> <p>23 not full.</p> <p>24 MR. HARVEY:</p> <p>25 A. It'll be a while before I get to it in the</p> <p>26 presentation, but just to get it going. So</p>
<p>Page 166</p> <p>1 contents and 97 is towards the top, third one</p> <p>2 from the top. I don't know if the system is</p> <p>3 exactly configured the same where they--the</p> <p>4 technicians have two PowerPoints and three</p> <p>5 videos all embedded.</p> <p>6 MR. HARVEY:</p> <p>7 A. Actually, yes, if we could go back to the</p> <p>8 presentation, it's linked through the</p> <p>9 presentation.</p> <p>10 MS. FAGAN:</p> <p>11 Q. Okay.</p> <p>12 MR. HARVEY:</p> <p>13 A. And there's a video clip in there that won't</p> <p>14 play unless it's actually linked through the</p> <p>15 presentation. I can do it from here?</p> <p>16 REGISTRAR:</p> <p>17 Q. Okay.</p> <p>18 MS. FAGAN:</p> <p>19 Q. Slide 59.</p> <p>20 MR. HARVEY:</p> <p>21 A. Here we go, okay. I guess I've been asked to</p> <p>22 brief everyone or to talk about the HUEBA</p> <p>23 unit. I guess there's been lots of talk about</p> <p>24 it since pretty well day one of the Inquiry.</p> <p>25 So I'm going to be--I'm going to go through</p> <p>26 the operation of it, the features of it, the</p>	<p>Page 168</p> <p>1 before I jump right into the HUEBA unit</p> <p>2 itself, I'm going to talk a little bit about</p> <p>3 the rationale behind implementing helicopter</p> <p>4 underwater emergency breathing apparatus. I</p> <p>5 think it's important that everybody understand</p> <p>6 where this is coming from and just how</p> <p>7 important it is probably to the survival of</p> <p>8 people who might find themselves trapped under</p> <p>9 water in a helicopter. So I'm going to go</p> <p>10 through that with you. I'll also review the</p> <p>11 equipment. I've also brought a rebreather</p> <p>12 unit here and there's been lots of mention</p> <p>13 about this being used in the North Sea. I'll</p> <p>14 do a little demo of this as well to show you</p> <p>15 how this would work and how it would compare</p> <p>16 to the compressed air systems.</p> <p>17 Whenever you breathe compressed air under</p> <p>18 water, there's always a concern. There's</p> <p>19 hazards associated with it. So I'm going to</p> <p>20 review that with you as well and that'll</p> <p>21 probably explain or I hope it'll explain why</p> <p>22 we won't be using this unit in our HUET. So</p> <p>23 as Mr. Rutherford has already explained, all</p> <p>24 this training takes place on the shallow</p> <p>25 platform in our pool. At no point do students</p> <p>26 go over one metre in depth of water. So I'll</p>

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1 explain that in that part of the presentation,
 2 as well as look at the limitations of it, and
 3 at the end of the presentation, I'll actually
 4 take you through our practical. So show you
 5 exactly what the students will be going
 6 through in the pool and what we expect of
 7 them.
 8 Starting with the rationale. The
 9 International Association of Oil and Gas
 10 Producers, they publish a report annually on
 11 helicopter accidents around the world. They
 12 look at different types of operations. I've
 13 just picked out the offshore operations here.
 14 While it's a 2007 statistics, it's the most
 15 current report. In fact, it was only
 16 publicized probably within the last couple of
 17 months. So worldwide, as far as offshore
 18 helicopter operations go, and I guess I should
 19 add that most of these operations are within
 20 the Gulf of Mexico and the North Sea. There's
 21 over nine million passengers annually
 22 travelling offshore in helicopters and that
 23 means there's over 900,000 hours of flying
 24 time. In 2007, there was ten accidents. So
 25 when we talk about accidents, we're talking
 26 about either ditching, and when we talk about

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1 ditching, we usually think of a controlled
 2 descent or landing on the water, as opposed to
 3 a crash. In this case, an accident would be
 4 one or other. At some point, ten helicopters
 5 ended up in the water. Out of those ten
 6 accidents, there were five fatalities. So
 7 that's just a snapshot of what happened in
 8 2007 worldwide as far as offshore helicopter
 9 operations go. For a five year average,
 10 looking back five years from 2007, we can see
 11 that the five year average of 16 accidents
 12 with 5.8 fatalities. So, I guess, what we're
 13 trying to point out here is the accident that
 14 happened this year, it wasn't an isolated
 15 event, helicopters do go down. In fact, I
 16 think if you look at a five year average, it's
 17 about 1.8 accidents per 100,000 hours of
 18 flying time, and about .6 fatalities per
 19 100,000 hours of flying time. So helicopters
 20 go down. What happens to them when they land
 21 on the water. Well, I've chosen this report
 22 here because it's fairly current, 2006. It
 23 looked at 110 civil helicopter accidents as
 24 opposed to military over a five year period,
 25 and what the authors are showing us here is
 26 that 69 of the 110 accidents, 63 percent of

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1 them the helicopters capsized upon hitting the
 2 water. All the helicopters that fly offshore,
 3 they're designed to float, so they're either
 4 amphibious, so the shape and style and design
 5 of the helicopter will allow it to rest on the
 6 water and float, or in the case of the DS-32
 7 that's flying off here, they have extra enough
 8 flotation bags that can be inflated prior to
 9 or upon landing on the water to keep the
 10 helicopter upright and afloat. I guess,
 11 that's the good news. The bad news is that
 12 helicopters are top heavy, so their gravity is
 13 high, the engines and rotors are up high on
 14 top of the helicopter itself, so even though
 15 they've landed, there's still a likelihood
 16 that they could roll over before people have
 17 an opportunity to get out. So 63 percent of
 18 the helicopters that land on the water
 19 capsize. Out of that 63 percent, 38 of them,
 20 and I think if my math is correct, that works
 21 out to about 58 percent of them actually sink.
 22 So if we just take the numbers for what they
 23 are, your helicopter has a greater likelihood
 24 of rolling over and sinking than it does
 25 staying afloat on the surface of the ocean. I
 26 will point out here, though, that these

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1 numbers don't tell us how long it took for the
 2 helicopter to roll over and sink. In some
 3 cases, it was immediately upon landing on the
 4 water; in other cases, the helicopter might
 5 have stayed afloat for up to twenty minutes
 6 before it actually rolled over and sank. If
 7 we take the numbers at face value, you're more
 8 than likely to have your helicopter roll over
 9 and sink. So they go down, they roll over and
 10 sink. It doesn't matter how you ended up in
 11 the water, whether it was a controlled
 12 ditching, a limited control, a fly in, or an
 13 uncontrolled event, our helicopter still
 14 stands a greater likelihood of capsizing than
 15 it does of staying upright. I guess, the next
 16 question that has to be asked now is why are
 17 people not getting out of survivable events,
 18 and I put the emphasis on survivable here
 19 because this particular study I'm referencing
 20 here by Cliffords, he looked at survivable
 21 events, so accidents where you wouldn't expect
 22 anyone to survive weren't included in the
 23 survey. He looked at UK military fatalities
 24 between 1971 and 1992, and what he found was
 25 that 83 percent of all the fatalities, again
 26 in survivable events, were as a result of

<p style="text-align: right;">Page 173</p> <p>1 drowning as opposed to impact injuries. So in 2 other words, people were still alive when the 3 helicopter rolled over and there was really no 4 reason for them not -- there was no reason for 5 them to die other than drowning. So just a 6 quick review; helicopters go down, helicopters 7 roll over, helicopters sink, and we know that 8 in survivable events people are drowning in 9 these helicopters. I guess, the next question 10 is why are people drowning. I got four main 11 causes up here. You know, there are more, but 12 these are probably four of the big ones. 13 People are drowning in survivable events as a 14 result of incapacitation due to injuries. 15 These aren't necessarily life threatening 16 injuries, they're often what's referred to as 17 flailing injuries. So on impact, your arms and 18 your legs are free to fly around and now 19 you've beaten up your hand, you've dislocated 20 your shoulder, but you need that hand to 21 release the seat belt, you have to be able to 22 clear your exit, but you can't. That's the 23 type of injuries we're referring to here under 24 incapacitation due to injury. Disorientation; 25 when we turn somebody upside down in our HUET 26 under water, left becomes right, right becomes</p>	<p style="text-align: right;">Page 175</p> <p>1 sudden somewhere in the house somebody turned 2 on the hot water and all you got was a blast 3 of cold water, and as soon as the cold water 4 hits your skin, your first response is an 5 involuntary gasp, and that's fine in the 6 shower, but if you're about to roll upside 7 down underwater in a helicopter, at the same 8 time your face is going in the water, you're 9 taking that gasp, and there's a very good 10 likelihood that you're going to take in water 11 and drown. The gasp reflex is followed usually 12 immediately by loss of control of breathing. 13 So it's a gasp, and you start 14 hyperventilating, [witness demonstrates] you 15 don't have control of your breath. Once again 16 if your face is going in the water, that's not 17 a good situation. You're at high risk of 18 taking in water and drowning, and as we'll see 19 in an upcoming overhead, not only can it lead 20 to drowning, but cold water shock will 21 significantly reduce your breath hold time. So 22 if you're relying on your ability to hold your 23 breath to get out of that helicopter, then 24 that time could be as little as six seconds, 25 but an average time of about 20 seconds. I'm 26 getting ahead of myself. So up until May of</p>
<p style="text-align: right;">Page 174</p> <p>1 left, up becomes down, the bottom line is you 2 don't know where to -- or where you're going. 3 It's extremely disorienting. So we know people 4 are not getting out again of survival events 5 just because they don't know which way out is. 6 When they're up on the surface, they know out 7 is that way, but you turn them upside down, 8 that doesn't mean anything any more. We know 9 people are not getting out because their exit 10 has been delayed. That could be from a jammed 11 exit, so maybe they've had to make two or 12 three attempts to try to clear their exit, it 13 might be an issue with the seat belt, it might 14 be the guy before them has to go out through 15 the window or the emergency exit before they 16 can go out. So there's something that delayed 17 their exit. Those are three reasons why people 18 are drowning in survivable events. Having 19 said that, probably the single most cause for 20 people drowning in these events is cold water 21 shock, and I think it's been mentioned here a 22 number of times at the Inquiry, certainly 23 today, and what cold water shock is -- some of 24 you have might even experienced this this 25 morning. You might have been in the shower 26 lathering up nice and warm, and all of a</p>	<p style="text-align: right;">Page 176</p> <p>1 this year, HUET training has dealt with all 2 those issues. So if you came in and did HUET 3 training prior to May, we would have talked 4 about the importance of the brace position 5 with you, we would have got you practising the 6 brace position, locking your arms across your 7 chest, holding onto the suit, locking your 8 feet, your legs together, making sure your 9 seat belt is nice and tight and secure prior 10 to impact. By getting into proper brace 11 position and securing your seat belt, you 12 minimize or you reduce the risk of injuries or 13 flailing injuries, as I mentioned. 14 Disorientation. When you would have done our 15 HUET training, we would have explained to you 16 the importance of looking in the direction you 17 always want to go. So if I'm sitting in the 18 seat here and my emergency exit is right 19 beside me here, a window, I'm going to focus 20 on that emergency exit. When I'm hitting the 21 water, if I can, I'm going to clear the exit; 22 if I can't, I'll at least put my hand on it so 23 I've oriented myself in the direction I want 24 to go. So when I'm upside down under water, I 25 don't have to guess left, right, I know which 26 way I'm going, I've got something to direct</p>

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1 me. So we would have dealt with this
 2 disorientation issue. Cold water shock, we
 3 deal with it in training. The importance of
 4 the flight suit and the importance of getting
 5 the flight suit done up. So every time we take
 6 a student through an exercise, we have them
 7 repeat this over and over and over again to
 8 the point where, I think, sometimes they just
 9 get sick of it. We get some pretty funny
 10 stares, because we just say take your hood
 11 down, relax your zipper, and as soon as they
 12 get it down, we say helicopter is going down,
 13 get watertight. We want it to be second
 14 nature to them that that hood is up, zipper is
 15 up, and they are watertight so they can
 16 insulate themselves from the cold water
 17 because when the cold water hits your skin,
 18 that's what triggers the cold water shock. So
 19 if we can insulate ourselves from that cold
 20 water, it'll minimize the effects, or even
 21 prevent cold water shock. There's one thing
 22 we haven't dealt with in training, though, up
 23 until May past, and that was the actual time
 24 it would take to actually escape from a
 25 submerged helicopter, and how long can people
 26 actually hold their breath because up until

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1 May, this was all breath hold, it all depended
 2 how can you hold your breath. There's a lot
 3 of studies out there, a number of studies,
 4 that have looked at how long it would actually
 5 take to get out of a capsized helicopter.
 6 I've got one here by Tipton that was done in
 7 1997. There's one thing that most of the
 8 studies all agree on, and that is it will take
 9 significantly longer than people can actually
 10 hold their breath. So this particular study I
 11 got quoted here shows a time of between 40 and
 12 60 seconds. That's to get everybody out of
 13 that capsized helicopter. So if it's taking 40
 14 to 60 seconds to get out, how long can people
 15 actually hold their breath. So this study was
 16 done by Cheung in 2001, and he looked at
 17 offshore workers. So he took a sampling of
 18 offshore workers and there was a substantial
 19 population there. I'm going to go out on a
 20 limb and say I think there was 228 students
 21 going through a BST course, and what they did
 22 was they got them in the water, they were
 23 wearing a dry suit, a flight suit, got them in
 24 the water and timed how long they could
 25 actually hold their breath. So in cold
 26 temperature water in, let's say, a 25 degrees

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1 celsius, the average offshore worker can hold
 2 their breath for 37 seconds. Drop that water
 3 temperature down to something that's more
 4 reflective of what we have here in the
 5 summertime, our surface water goes up to 16/17
 6 degrees celsius. Under those conditions, the
 7 same worker can only hold their breath 29
 8 seconds. Drop it down to winter conditions,
 9 water temperature 1 degree celsius, you can
 10 see that breath hold ability now drops from 29
 11 seconds down to 15.9. So it's almost half. So
 12 at this point, you should be starting to clue
 13 in here there's a problem; 40 to 60 seconds to
 14 get out of a helicopter, the average offshore
 15 worker can hold their breath for, well, in
 16 winter conditions, 15.9 seconds. We throw
 17 cold water shock on top of that, and that
 18 breath hold time can drop down to as little as
 19 six seconds, with the average time less than
 20 20 seconds. So obviously there's a need to
 21 bridge that gap between actual breath hold
 22 time and the actual time it would take to
 23 escape from a helicopter. So there's two
 24 solutions out there, and I've brought both of
 25 them in here with me today, and the first one
 26 is the rebreather unit. It was introduced,

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1 or, I guess, not introduced, but Shell, this
 2 is over in the North Sea, started looking at
 3 the issues related to this breath hold and
 4 escape time as early as 1989, and what they
 5 wanted to do was to develop a system that
 6 extended the underwater breath hold time or
 7 underwater time of a passenger in a helicopter
 8 to get them to that -- to bridge the gap to
 9 get them to that 60 seconds. They wanted a
 10 system that didn't introduce additional
 11 dangers, whether that be in training, or
 12 actual use in the real world, and it had to be
 13 simple to use. The result was the rebreather,
 14 and I'll just do a quick demo of it here. So
 15 the way the rebreather would go on is it would
 16 go over your neck and it would be adjusted
 17 with the strap. It would secure either to the
 18 belt on the life jacket, as most operations I
 19 believe in the North Sea use a life jacket
 20 that goes on over the suit, and there's a
 21 little buckle here that would attach to the
 22 life jacket. It's positioned between the two
 23 lobes of the life jacket, and the way it would
 24 work is on impact with the water, the wearer
 25 would deploy it, and to deploy it, you just
 26 pull on the protective cover there and it

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<p>1 opens up, and what we have inside here is we 2 have what's referred to as a counter lung. 3 It's basically a bag and the counter lung 4 holds a volume of approximately nine litres of 5 air. Coming off the counter lung is a hose 6 that goes to a mouthpiece and the mouthpiece 7 has a plunger on it. I don't know if you can 8 hear that or not. The idea of the plunger is 9 that you wouldn't actually start putting the 10 air into the counter lung until you were just 11 about to go under water. So the plunger 12 allows you to put this into your mouth and 13 breathe atmospheric air, so you're just 14 breathing in air from the environment around 15 you, and when you exhale, the exhaled breath 16 is going back to the environment, as opposed 17 to into the counter lung. Just prior to 18 submersion, so just before your face goes in 19 the water now, of course, the mouthpiece would 20 be in, you'd hit the plunger, now when you 21 exhale, your exhaled breath is going into this 22 counter lung. Your exhaled breath contains -- 23 we breathe in about 21 -- the atmosphere is 24 made of 21 percent oxygen and about 78 percent 25 nitrogen, with about 1 percent other gases. 26 Our body metabolizes about 5 percent of that</p>	<p>1 idea is upon hitting the water, that cylinder 2 would fire off automatically and it would put 3 a breath in the bag for you. So in the worse 4 case scenario, you hit the water, you didn't 5 have that breath to put into the bag to begin 6 with, there will be a breath in the bag 7 waiting for you, and that was done in 1999. So 8 that's the rebreather. 9 MS. FAGAN: 10 Q. And you said this rebreather, this hybrid 11 rebreather that they're currently using in the 12 North Sea? 13 MR. HARVEY: 14 A. The hybrid -- the hybrid unit is being used on 15 the flights. 16 MS. FAGAN: 17 Q. Okay. 18 MR. HARVEY: 19 A. In training, because that compressed air 20 cylinder is introducing a hazard or a risk to 21 the trainees, it's not being used. So the 22 model I have here is the training version, it 23 doesn't have the high pressure cylinder on the 24 side of it. 25 MS. FAGAN: 26 Q. So if you were doing the OPITO course, that's</p>
<p>Page 182</p> <p>1 oxygen we breathe in. So we breathe in 21 2 percent oxygen, we exhale 16 percent oxygen. 3 That's normally lost in the environment. The 4 idea of the rebreather is it enables you to 5 recapture that 16 percent oxygen and reuse it. 6 The other thing that happens is when you 7 exhale your breath, you're moving the air 8 around in your lungs, there's dead space there 9 where your body is not getting access to the 10 air with the oxygen that we need. So by moving 11 that air around and recapturing it, it extends 12 our ability to stay under water. That's the 13 rebreather in its simplest form. This was 14 introduced in -- I'm going to say, 1996, and 15 so they started using it both in training and 16 offshore in the North Sea, but there was a 17 problem with it, and the problem with it was 18 it relies on the user to actually get a breath 19 into the bag. If there's no breath in the 20 bag, you've got nothing to rebreathe. So in 21 1999, they released what they called the 22 hybrid system and the hybrid system had an air 23 cylinder attached to it. There's just a plug 24 here, but there would be a little air cylinder 25 here and it holds about 3.5 litres of air, I 26 think, is what's in that cylinder, and the</p>	<p>Page 184</p> <p>1 what you would be using and then when you went 2 offshore, they'd have the cylinder attached? 3 MR. HARVEY: 4 A. Absolutely, yeah, to reduce the risk or to 5 eliminate the risk, I guess, of a lung over 6 expansion injury which is coming up in the 7 presentation, they've just taken that cylinder 8 off for training purposes. 9 MS. FAGAN: 10 Q. So you don't if it's everybody, is it 11 generally used, or is it only in certain -- 12 for certain companies or for certain -- 13 MR. HARVEY: 14 A. In, I'm going to say again 2005, I believe it 15 was, OPITO put it into their curriculum. So 16 certainly in the UK sector, for example, 17 everyone flying offshore has to meet the OPITO 18 standard, so everybody would get the training 19 in it, and I think in Mr. Rutherford's 20 presentation he also noted that in the 21 Norwegian sector they're also doing training 22 on the rebreather. 23 MS. FAGAN: 24 Q. Thank you. 25 MR. HARVEY: 26 A. So that's one solution. The other solution is</p>

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1 the compressed air system. I got a couple of
 2 slides in here coming up just to kind of give
 3 you the history of it. There seems to be a
 4 perception out there that this is something
 5 that just came into being as a result of the
 6 accident this spring, but I'm just going to
 7 show you that there is a history to this
 8 system, it is a well proven system, it's a
 9 well documented system, and over the years it
 10 has saved quite a few lives in actual use. I
 11 got up here military worldwide because they
 12 were the ones that really got the ball rolling
 13 on this. This is more just a reference slide
 14 here because the next slide I'm going to talk
 15 about all these different systems, and I just
 16 can't remember the acronyms, so I'm just going
 17 to name off the acronyms in the next one, and
 18 you can refer back to this slide, what's he
 19 talking about there, there they are there.

20 MS. FAGAN:
 21 Q. And as I understand it, everybody has a
 22 different acronym or a different name for many
 23 of these devices. They're similar, but not
 24 exactly the same?
 25 MR. HARVEY:
 26 A. A lot -- yes, a lot of them are the

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1 manufacturer's acronyms they've put on them.
 2 In the case of HUEBA, the offshore operators
 3 here, it's my understanding, they wanted to
 4 distinguish their system, the system they're
 5 using here from all the others, so they put
 6 the name HUEBA on it. Collectively, they're
 7 referred to as EBS, emergency breathing
 8 systems. So starting as early as 1975, the
 9 first HEBE unit was developed. It was a low
 10 pressure system, it consisted of a cylinder
 11 that was stored under or behind the seat, and
 12 these are military operations now. I'm not
 13 sure -- it's unclear from the literature
 14 whether it was actually ever used, but it's
 15 certainly credited with getting the ball
 16 rolling. They had to start somewhere, this is
 17 where they started, it got things moving. As
 18 early as the 1980s, the US Navy, Canadian
 19 Forces, started using a spare air, and spare
 20 air, you can still buy them today and they're
 21 common in the recreational dive industry,
 22 sport divers use them. It basically consists
 23 of a high pressure cylinder, storage cylinder,
 24 and incorporated into the cylinder is a first
 25 and second stage, and basically you just put
 26 the cylinder with the mouthpiece in your mouth

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1 and it just hangs kind of suspended from your
 2 mouth, and it provides the air on demand. In
 3 1986, the Canadian Forces switched to a HEED2,
 4 which was really an evolution of the spare air
 5 system. So the spare air was kind of just a
 6 generic system, and now they started looking
 7 and saying, well, we need something that's
 8 more tailored to our operations, so they
 9 started getting into the HEED2. In 1990, the
 10 US Navy switched to US Divers, or what's now
 11 referred to as Aqua-Lung. Their system, and I
 12 think it stands for Helicopter Air Crew
 13 Breathing Device, which was the first in the
 14 evolution of the SEA LV2, which is the system
 15 I'll be going through here. So this is where
 16 the SEA LV2 had its origins in 1990. By 1994,
 17 the Canadian Forces also switched to the same
 18 systems. By 1992, the Royal Navy started
 19 looking at a system they could use and what
 20 they went with was the STASS system. Again
 21 it's by a different manufacturer, but it looks
 22 very similar and behaves and has the same
 23 components as the system I'll be showing you
 24 here today. In 1993, the Royal Navy started
 25 looking at a P-STASS or one that passengers
 26 would be more -- it would be more suited to

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1 passengers as opposed to the flight crew and
 2 the military personnel. Of course, this
 3 brings us up to 2000 when CAPP starts looking
 4 into EBS emergency breathing systems. They
 5 didn't call it HUEBA at that time, it was just
 6 an EBS system. In 2004, as we've already seen
 7 through other's testimony here, they selected
 8 or they went with the US Divers, or what is
 9 now called Aqua-Lung, the SEA LV2. That's the
 10 unit I'm going to take you through here now.
 11 So just a little history on it, on the
 12 evolution of compressed air systems. The
 13 benefits of the HUEBA, you know, we talked
 14 about the issues and why people drown; well,
 15 hopefully if you provide the passengers with -
 16 you know, whether it's a compressed system or
 17 a rebreather system, something to allow them
 18 time to overcome any obstacle they might have
 19 encountered, and that might be their own
 20 panic, it might be that disorientation, they
 21 didn't get a chance to orient themselves on
 22 impact, and now they're upside down, it's
 23 going to take them time to figure out where
 24 they're to and where they have to go. There
 25 is an issue releasing that exit, they got to
 26 do it under water, considerably harder,

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1 instead of one bang, it's two or three bangs.
 2 They might have to go through alternate exits.
 3 Maybe that exit is blocked, maybe that exit is
 4 not available to them. The fuel cell, the S-92
 5 carries an auxiliary fuel tank. It's probably
 6 going to take them a little extra time to get
 7 over that fuel tank to their exit, clear their
 8 exit and get out. There's a number of reasons
 9 here why people might have to use the air
 10 system. So to the system we're using, I've
 11 got it called Aqua-Lung EBS because that's how
 12 the company refers to their units. So on the
 13 screen there, you can see the first evolution
 14 of the helicopter air crew breathing device.
 15 That proceeded to the second generation, which
 16 is survival egress or the MK Unit, and that
 17 brings us up to -- and I'm not going to go
 18 through those systems with you here other than
 19 point out there is an evolution in this, and
 20 this is the third generation system.
 21 MS. FAGAN:
 22 Q. The generation one, so is that the one from
 23 1990 with the US Navy, or approximately how
 24 long -- you have three generations, so --
 25 MR. HARVEY:
 26 A. 1990, yes.

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1 MS. FAGAN:
 2 Q. Three pictures.
 3 MR. HARVEY:
 4 A. That was the start of it there, yes.
 5 MS. FAGAN:
 6 Q. Okay, so the first one is the 1990 version?
 7 MR. HARVEY:
 8 A. 1990 US Navy switched to.
 9 MS. FAGAN:
 10 Q. And the generation three is what we're using?
 11 MR. HARVEY:
 12 A. The generation three, yes, that's correct.
 13 Somehow I skipped a slide there. I'll just
 14 back up. So the system we're using, Aqua-Lung
 15 is the manufacturer. They refer to their
 16 system as the Survival Egress Air, and as we
 17 saw, there's the MK version and the LV2, and
 18 what that refers to is really the second stage
 19 and I'll get into that in a minute. It's just
 20 the different second stage on it, and I've
 21 referred to this one as the SEA LV2 Exxon,
 22 because when Exxon ordered these units or
 23 decided they were going with it, they asked
 24 for a couple of features that weren't
 25 necessarily standard off the shelf. So if you
 26 go to Aqua-Lung, for example, us at the OSSC,

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1 if we want to order a part or something, we
 2 have to reference the SEA LV2 Exxon version
 3 just to ensure we get the -- they know what
 4 we're talking about. So the system itself,
 5 and I'll stand up just to go through this just
 6 so everybody in the room can see me. So what
 7 we have here is we have a high pressure
 8 cylinder, and what I mean by high pressure it
 9 stores normal atmospheric air, which I've
 10 already mentioned, contains 21 percent oxygen
 11 and 78 percent nitrogen. It stores that air
 12 at 3000 psi when the cylinder is full. It
 13 holds 1.5 cubic feet of air in the cylinder.
 14 So what I mean by that is if we had a balloon
 15 and we let all the air out and we captured in
 16 a balloon, it would fill a space of 1.5 cubic
 17 feet. The air that's gone in the cylinder is
 18 filtered, so while it is just normal
 19 atmospheric air, it goes through a filtration
 20 process where contaminants are removed, as
 21 well as moisture. The moisture is taken out of
 22 the air before it goes in there. That air at
 23 3000 psi is useless to us. If I stuck this
 24 hose in my mouth and turned it on, it would
 25 probably get very exciting in here, for me,
 26 anyway. So we have to be able to -- we have to

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1 be able to break that 3000 psi down to
 2 something that we can actually use. That's
 3 done by way of a first stage, and the first
 4 stage takes that 3000 psi or pounds of
 5 pressure of air and breaks it down or reduces
 6 it to what's referred to as an intermediate
 7 pressure, and in this particular case, the
 8 intermediate pressure is 135 psi. 135 is still
 9 no good to me, it's still way too much
 10 pressure for me to breathe from. That air is
 11 delivered through an LP hose, low pressure
 12 hose, to a second stage regulator, and that
 13 second stage regulator now takes that
 14 intermediate pressure and it breaks it down to
 15 an ambient or the surrounding pressure, and
 16 that's something I can actually use and
 17 breathe. That's the major components of the
 18 SEA LV2. Look closer now at each individual
 19 component. Just starting with the cylinder,
 20 there are markings on the cylinder around the
 21 neck of it, and I'll just quickly go through
 22 them just out of interest, I suppose. The
 23 first thing on the top there is DOT/3AL 3000.
 24 DOT is Department of Transportation in the
 25 States. So this cylinder is approved for use
 26 in the United States. 3AL refers to the

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1 material that it's made out of. It's an
 2 aluminum cylinder. 3000 refers to the
 3 pressure, the working pressure, of this
 4 cylinder, 3000 psi. The next numbering you
 5 see there on the overhead is AJ, and a bunch
 6 of zeros. That would be the serial number
 7 associated with this cylinder. The next line
 8 there is TC3ALM 207. So TC is Transport
 9 Canada, so it's approved for use in Canada.
 10 3AL again is the material it's made out,
 11 aluminum, and in this case for the working
 12 pressure, we've got an "M" signifying metric,
 13 and 207 meaning it's 207 bars. So that's the
 14 working pressure of the cylinder. Cliff Div.
 15 there, that's the manufacturer, that's who
 16 made the cylinder, and then we've got the date
 17 of manufacture with the month and the year
 18 stamped. So that's the stamping around the
 19 neck of the cylinder. From the cylinder,
 20 we'll go to the hose -- sorry, from the
 21 cylinder, we go to the first stage. I've got
 22 a PowerPoint presentation. The first stage we
 23 told you is going to break the pressure down
 24 from 3000 to an intermediate pressure. The
 25 first stage also has some features that are
 26 important to the user of the system, and one

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1 of those is the on and off knob. So we can
 2 actually turn this system off whereby if I
 3 wanted to use it, I wouldn't get any air from
 4 it. Offshore -- when the passengers flying
 5 offshore are issued their flight suit with the
 6 HUEBA on it, it's turned on. It's ready for
 7 use or it's armed, if you will. So that
 8 people can visually check that very quickly,
 9 there's a slit that runs around the inside of
 10 the on/off knob, and you can see it clearly on
 11 the presentation there. If you can see red in
 12 through that slit, your system is off. If you
 13 don't see any red, it's on. So I've got this
 14 on my suit, I can quickly glance down and see
 15 my system is armed and ready for use, no
 16 questions asked. Just because it's on,
 17 unfortunately doesn't mean it's going to work
 18 for you. It has to be on and there has to be
 19 air in the cylinder. So they've put a
 20 pressure gauge on there for you, so you can
 21 look, and I told you it holds 3000 psi when
 22 it's full. So in this case here, it should be
 23 3000 or in the green, if you will, and the
 24 pressure gauge calibrated in thousands of psi.
 25 You can appreciate it's a fairly small
 26 cylinder, so if it wasn't full, you wouldn't

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1 be getting every breath you're entitled to, so
 2 it's important that the wearers not only check
 3 that it's on, but a check that, in fact,
 4 there's air in it and it is full. Other
 5 features under first stage are the fill port.
 6 That's how we get the air in. There's
 7 basically a dust cap in there. That's of no
 8 significance to the wearers or the users. Hid
 9 away behind the swivel here is what's referred
 10 to as a burst disk. So if this cylinder gets
 11 exposed to high heat, the air inside will
 12 expand and rather than rupturing a cylinder
 13 and shrapnel going everywhere, this burst disk
 14 will rupture and the air will be released in a
 15 controlled fashion. That is the major
 16 features -- the features of the first stage.
 17 MS. FAGAN:
 18 Q. Now I don't know when we want to break. Do
 19 you want to break now or do you want to wait?
 20 COMMISSIONER:
 21 Q. Well, if you're getting into something else,
 22 we'll break, I guess.
 23 MS. FAGAN:
 24 Q. Well, he's going to go through -- there's a
 25 couple of more stages. I don't know if you
 26 want to break at 3:15 or if you want to break

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1 at 3:30.
 2 COMMISSIONER:
 3 Q. Yes, that's the usual time we break. We might
 4 as well before -- if you're going to go
 5 through two more stages, we'll break now.
 6 MS. FAGAN:
 7 Q. Okay, thank you.
 8 (RECESS)
 9 MS. FAGAN:
 10 Q. Okay, Mr. Harvey, I understand you're going to
 11 go through some of the other components. Now,
 12 I know there are many components to this
 13 apparatus, but the focus for us will be some
 14 of the riskier components and the more
 15 complicated aspects.
 16 MR. HARVEY:
 17 A. Okay, keeping that in mind, I'll just touch on
 18 the high points of the few slides leading up
 19 to the hazards. So, we mentioned that we had
 20 a high pressure cylinder, first stage, that
 21 broke the high pressure air down to an
 22 intermediate which was delivered to a second
 23 stage which broke it down to intermediate
 24 pressure. The major features of the second
 25 stage--well, first of all, it's small and that
 26 becomes very important when we deploy under

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<p>1 water because one of the things you have to do 2 when you deploy the regulator under water is 3 actually displace or clear the water out of 4 it. The fact that it's small makes that very 5 easy. So, from a training perspective where 6 someone had to use it in a real work, it's 7 very very easy to clear. It's an open circuit 8 demand valve. And what we mean by demand, 9 when you want air (witness demonstrating), you 10 get air; when you don't want any air, you 11 don't get any. It's air delivered on demand. 12 And what we mean by open circuit, as opposed 13 to the re-breather, we don't recapture our 14 air, it's just lost to the environment through 15 an exhaust on the second stage. The other 16 feature I'm going to point out on the second 17 stage is the purge button. It's just a 18 depression on the front face of the regulator 19 and when you push it in, you're opening the 20 puffer (witness demonstrating) and you allow 21 air to free-flow. That's one of the ways we 22 can use to clear or displace the water out of 23 the regulator should we have to deploy it 24 under water. So, that's the major features of 25 the second stage. 26 How does it work? Well, I've already</p>	<p>1 everything we've been doing. We instruct 2 students to deploy it after impact, but before 3 submersion, so the ideal situation would be 4 you hit the water, water is coming up, and you 5 need it, and it's set up on the left breast of 6 your flight suit, it's only a matter of 7 pulling it out of the dust cap, putting it in 8 your mouth and you're good to go. In the 9 situation where you find yourself under water, 10 then obviously we pull out, put in, clear it, 11 now you're good to go. So that's -- it's very 12 simple, very clean system to use. It does 13 have limitations, however. It's intended for 14 one thing and one thing only and that's 15 egress. You're in that helicopter, you're 16 upside down under water, it's there to get you 17 out, period. As far as the duration of the 18 cylinder and how long it will last, that 19 really depends on the individual. Everybody's 20 different. It depends on your breathing rate, 21 your work rate, how hard you're working. The 22 water temperature, we've already seen the 23 colder the water, the more you breathe, the 24 more you breathe, the less time it'll work. 25 The depth of water you're at, I'm going to 26 come back and revisit that one in a minute.</p>
<p>Page 198</p> <p>1 demonstrated it. (Witness demonstrating). 2 It's as simple as that. Put it in your mouth 3 and breath. The issue comes in is if you have 4 to deploy it under water. If you have to put 5 it in your mouth under water, then, as I 6 already mentioned, you're going to have to 7 displace or clear the water out of the second 8 stage. I'll just quickly demonstrate the two 9 ways to do that. One is referred to as the 10 blast method and it's as simple as (witness 11 demonstrating) a little puff of air. I just 12 displaced every bit of water in that second 13 stage. I'm good to go to breath. You might 14 not have that little puff in you; that's when 15 you can use the purge button. (witness 16 demonstrating) I just cleared every bit of 17 water out of that second stage and I'm good to 18 go to breath. That's how the unit works. 19 One of the beauties of this system here 20 is that it fits right into what we've been 21 teaching for the last twenty odd years in HUET 22 training. It doesn't change a thing. The 23 priorities are still to get water tight. The 24 priorities are still to brace for impact. On 25 impact, clear your exit and orient yourself 26 towards that exit. It fits right into</p>	<p>Page 200</p> <p>1 Do you have a face mask on, a dive mask. 2 People tend to be a lot more comfortable with 3 a dive mask on. It minimizes again the effects 4 of cold water shock. If you're more relaxed, 5 more comfortable, you're going to get more 6 time out of the cylinder. Is the cylinder 7 full? All these are factors to determine how 8 long you'll actually get out of the system. 9 Keep in mind, it's only intended for one 10 thing, and that's that egress. If something 11 has delayed your exit in getting out of that 12 helicopter, you have time to deal with it. 13 Malfunctions. Can anything happen to it? I 14 don't know if anything can happen to it. This 15 slide is taken from really the recreational 16 dive industry; I've just come up from a dive, 17 I've thrown all my gear down on the beach, 18 I've got sand and dirt into the system, it's 19 supposed to be maintained annually, I haven't 20 bothered with that, I got my air fill from a 21 not so reputable air station. You start 22 seeing these issues come up. Because these 23 systems, you know, they're not being used 24 offshore, because they're being well 25 maintained, the air is coming from a reputable 26 fill station, I'm not sure if you'd actually</p>

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1 see any of this, but here's the good news, if
 2 any of these things occur, so a freeze up, and
 3 what we mean by freeze up is in cold water,
 4 when you take a breath, the regulator can
 5 actually freeze open and just continue to flow
 6 air. So now instead of a demand regulator,
 7 it's a free flow regulator. You still have
 8 air. If the purge button gets depressed and
 9 stuck for some reason, you still have air, and
 10 that's all you're asking from the system is
 11 give me air. The second stage could flood on
 12 you. So in other words, remember when I said
 13 it was very easy to displace and get the water
 14 out of there, well, if the diaphragm on the
 15 front is torn or the exhaust valve isn't
 16 seating properly, or there's a problem with
 17 the mouthpiece, when you clear the water, more
 18 water can come back in; doesn't matter, you
 19 can still get air through that water, you can
 20 still breathe. At the end of the day, if
 21 something does happen, you're going to get the
 22 air you're looking for. You're going to have
 23 to live with the consequences of a little too
 24 much air, and maybe a little bit of water
 25 mixed in with your air, but you've got the air
 26 you need. That's the system, that's how it

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1 works, that's what it can do for you. Now I
 2 mentioned earlier that, and Mr. Rutherford
 3 mentioned it, all the training we do assumes
 4 it's done in the shallow end. In fact, we put
 5 a shallow end in our pool just to accommodate
 6 this system, and the reason is that when you
 7 breathe compressed air and the textbook says
 8 at a depth greater than one meter, you're at
 9 risk of a barotrauma injury or a lung
 10 overexpansion injury. I'm going to try to
 11 explain that to you now. Starting with Boyles
 12 Law, Mr. Boyle states that for any gas at a
 13 constant temperature, the volume of the gas
 14 will vary inversely with the pressure. So as
 15 pressure increases, volume decreases; as
 16 pressure decreases, volume increases. As an
 17 example, here in this room we're at one
 18 atmosphere of pressure, and one atmosphere is
 19 14.7 psi, or 1 bar, if you prefer the metric
 20 side of things. Every 33 feet or 10 metres of
 21 water is equivalent to 1 atmospheres. So every
 22 foot of sea water exerts .445 psi of pressure.
 23 So we go down to -- sorry, we go down 10
 24 metres. I just realized there's a problem
 25 with my slide there, I apologize. I got 0
 26 feet, 10 metres, that should be 00, and 10

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1 metres should be down under 33 feet. So we go
 2 down to 33 feet, 10 metres, we've gone down an
 3 atmosphere. So now we've got the weight of
 4 the air over us, which is one atmosphere;
 5 we've got the weight of the water, which is
 6 another atmosphere. We've just doubled the
 7 pressure. So for the balloon that's in the
 8 picture there, if we had -- I got one there,
 9 that could be at 1 cubic foot, whatever you
 10 want to call it, we had 1 cubic foot of air in
 11 that balloon, we take it down to 33 feet or 10
 12 metres, we've now just doubled the pressure.
 13 Because pressure and volume are inversely
 14 related, the volume of the balloon is now
 15 half, so now we only have half a cubic foot.
 16 This relates directly, as an example, to in a
 17 previous overhead where I said the amount of
 18 time you get out of the cylinder will depend
 19 on -- one of the factors is how deep you are.
 20 So, for example, just for argument sake, let's
 21 say in this room I got three minutes out of
 22 this system. So I put this in my mouth now
 23 and I breathe it down for three minutes,
 24 empty. I took this system now and I went down
 25 to 33 feet or 10 metres, I would only get half
 26 the time out of it, a minute and a half. If I

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1 went down another atmosphere, 66 feet, 20
 2 metres, I'd only get a third of the time, I'd
 3 only get a minute out of it. So that's an
 4 example of Boyles Law and how it relates to
 5 using the system. That is an issue, but it's
 6 not as big an issue as if I was down at 33
 7 feet and 10 metres and took a breath. So I'm
 8 down to 33 metres, I'm under water, I put this
 9 in my mouth and I fill my lungs up, nice big
 10 breath in the balloon there, so that one is
 11 one lung full of air, if you will, and now I
 12 stop breathing and I bolt to the surface. As
 13 I went down, pressure increased, volume
 14 decreases; as I come up, pressure decreases,
 15 volume increases. So when I come up from 33
 16 feet or 10 metres back to the surface,
 17 pressure is half, but volume is doubled, and
 18 that's where the problem comes in. In fact,
 19 it only takes one metre of water for you to
 20 rupture your lungs. I'm going to explain that
 21 now in a second, just to try to relate this to
 22 something maybe everybody can relate to, or
 23 maybe has even experienced, and that is if
 24 you're flying, you know, while the plane is at
 25 altitude, the air outside in your outer ear is
 26 at an equilibrium with the air in your middle

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1 ear, so inside your ear drum there's a space
 2 there and the air pocket inside, so the
 3 pressure is equalized on both sides of the ear
 4 drum, but as the plane comes down, pressure
 5 increases and if you don't equalize that
 6 pressure in your middle ear, now all of a
 7 sudden you start to feel discomfort and pain.
 8 That's an example of Boyles Law. The problem
 9 with us and using this system is our lungs
 10 because our lungs are an air-filled space. So
 11 any air-filled space, whether it's your
 12 sinuses, your ears, the mass, the suit itself
 13 has air in it, so you go down, that suit gets
 14 what we refer to as suit squeeze; your lungs,
 15 the same thing will happen, except I'm
 16 breathing air. So every time I'm taking in a
 17 breath, it's delivered at ambient pressure, so
 18 the pressure of surrounding water. So my lungs
 19 are at equilibrium with my environment around
 20 me. I take a full breath at depth and I come
 21 up, that air expands, and as I said, I can
 22 experience a lung overexpansion injury. Lung
 23 overexpansion injuries are normally caused by
 24 two reasons. One is holding your breath, so
 25 you voluntarily hold your breath, bolt to the
 26 surface, boom, ruptured lung, you're in

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1 trouble, or there could be an underlying
 2 medical concern, there's a blockage, there's
 3 scar tissue, there's something there that's
 4 going to allow air pass, but not allow it to
 5 escape. So as you come up, that air gets
 6 trapped and expands and causes a lung
 7 overexpansion injury. As I've already stated,
 8 your textbook says that it takes as little as
 9 a metre of water for that to occur.
 10 MS. FAGAN:
 11 Q. Mr. Harvey, we had heard during, I believe it
 12 was CAPP's evidence, that when they were
 13 considering the training and they were
 14 considering using the -- whether they were
 15 going to do the training in the HUET or not,
 16 one of the considerations was would they have
 17 to change the medical, and the thing that was
 18 going to be added to the medical was a chest
 19 x-ray. Is the potential requirement for a
 20 chest x-ray related to these conditions, such
 21 as a chest cold, asthma, emphysema,
 22 bronchitis, I mean, is that what that chest x-
 23 ray was designed to do?
 24 MR. HARVEY:
 25 A. That would be part of the additional medical
 26 screening to screen out people that might have

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1 an underlying medical concern that could lead
 2 to the barotrauma or the lung expansion injury
 3 in the HUET, absolutely, yes.
 4 MS. FAGAN:
 5 Q. Okay, and then that was one of the reasons it
 6 ended up being decided that we would train
 7 with -- in less than a metre to minimize these
 8 potential problems?
 9 MR. HARVEY:
 10 A. Yes. I don't think it would be any small task
 11 to get everybody coming in through that
 12 screening process. Then, I guess, the
 13 question has to be asked, what do you do with
 14 the people who didn't pass the medical. So
 15 there's considerable issues there that had to
 16 be addressed, absolutely.
 17 MS. FAGAN:
 18 Q. Now you're going to explain how lung expansion
 19 can injure us and how it works.
 20 MR. HARVEY:
 21 A. Yes. So when we talk about lung expansion
 22 injuries, we're not talking about, you know,
 23 your chest exploding or anything, it's nothing
 24 near that dramatic. As we breathe in the air,
 25 it goes down through our windpipe, our
 26 trachea, into the lungs and through the

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1 different passages, your bronchial passages,
 2 until the air ends up in what we call the
 3 alveoli. You have literally hundreds and
 4 hundreds of millions of alveoli sacs in your
 5 lungs. This is how the oxygen gets into our
 6 body through the alveoli, this is how the
 7 byproduct of metabolism, CO2, gets flushed out
 8 of our body through these alveoli. They're
 9 only one to two cell thick, so they're very
 10 thin. This is what we actually refer -- this
 11 is what actually ruptures in a lung
 12 overexpansion injury. So that's why that one
 13 metre can actually rupture your lung. It's
 14 those alveoli that are rupturing. The alveoli
 15 are covered with capillaries and, of course,
 16 that's how the air gets in, the oxygen gets
 17 in, and the carbon dioxide gets flushed out,
 18 and you can see that in the overhead I got
 19 there. Now depending on if the -- sorry, when
 20 the alveoli ruptures, depending on where the
 21 air ends up will determine the type of injury
 22 you incur. So, for example, if the alveoli
 23 ruptures and the air escapes into the pleural
 24 lining around your lungs, then you could
 25 experience a collapsed lung or a pneumothorax.
 26 If the alveoli ruptures and that air gets

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<p>1 trapped in around your heart, your major blood 2 vessels, or it could travel up into your neck, 3 your throat area, then that's referred to as a 4 mediastinal emphysema. If the air ends up 5 under the skin, it's usually in your shoulder 6 area, it's referred to as subcutaneous 7 emphysema. They're all serious medical 8 issues, but the show stopper probably when it 9 comes to doing the training in the HUET is 10 arterial gas embolism, if your alveoli 11 ruptures and the air actually gets into your 12 circulatory system. So now you've got 13 bubbles going around your circulatory system 14 and they'll keep going until they can't travel 15 any further. That could be in your heart or 16 in your brain. So now if you got blood shut 17 off to part of your heart, or part of your 18 brain, this becomes a very serious medical 19 concern, and, I guess, at the end of the day, 20 that's probably the show stopper when it comes 21 to putting people in the HUET. Obviously, 22 millions and millions of people scuba dive, 23 and it's not something you hear on the news, 24 if at all, you know, people dying from lung 25 overexpansion injuries. We can train people, 26 you know, not to hold their breath. With</p>	<p>1 pre-checks, and I already mentioned it's only 2 a quick visual check, is the unit on, so you 3 don't see any red; is it full, 3000 psi in 4 there. You're good to go. We'll then take 5 two students at a time into what we refer to 6 as our pre-breather station. For all intents 7 and purposes, unlimited air supply. So this 8 is where the students can practice breathing 9 under water, and all we're expecting from them 10 is to establish a regular breathing routine. 11 This can be very challenging for a lot of 12 students. Some students are at this station 13 for five or ten minutes. I've had students 14 there for an hour. But the objective is to 15 get them comfortable breathing under water, 16 establishing a regular breathing routine. 17 This is where we'll get them practising 18 clearing the water out of the second stage. 19 So they'll put their face in the water. 20 They'll put the second stage in. They'll 21 clear it using the blast method. They'll 22 clear it using the purge button. They've done 23 everything now and they're comfortable or 24 reasonably comfortable with the operation of 25 the system and now we'll move them - 26 MS. FAGAN:</p>
<p>Page 210</p> <p>1 medical screening, we can screen out those who 2 are prone or have an underlying medical 3 condition for that. Unfortunately, I think, 4 in the time frame of the training that we have 5 for the HUEBA and the complexity and the 6 issues surrounding getting everybody in and 7 medically screened, that's not possible. So 8 we've limited the training to the shallow end 9 of our pool. I think that leads me into the 10 last part of my presentation, which is only a 11 couple of slides here. I'll quickly take you 12 through the training we actually do with the 13 students in the pool. This comes right out of 14 our course objectives here for the HUEBA 15 course. We expect students to demonstrate a 16 correct donning of flight suit with the HUEBA 17 equipment on it. We expect them to go through 18 a pre-flight check for that particular piece 19 of equipment, deploy and operate the HUEBA 20 equipment, and we're going to observe them 21 breathing under water, as well as clearing the 22 regulator under water. So everything they 23 might need to do, should they actually have to 24 use the unit, and it looks something like 25 this. We'll put the HUEBA unit on the suits 26 for the students. We expect them to do the</p>	<p>Page 212</p> <p>1 Q. Now, one minute. You had mentioned an 2 unlimited air supply. So how do you go about 3 giving them an unlimited air supply for this 4 section, which is sort of the practice - 5 MR. HARVEY: 6 A. Yeah. 7 MS. FAGAN: 8 Q. - before--and you've said that the cylinders 9 only have 300 psi. So how do you get the 10 unlimited air supply? I mean, somebody's here 11 for an hour, what are they using for the hour? 12 MR. HARVEY: 13 A. For the people in the room, they can probably 14 see it. I've gone back in the corner. Both 15 sides of the picture there, you can see an 80- 16 cubic foot SCUBA cylinder and that provides-- 17 you know, it's not obviously an unlimited 18 supply, but certainly for the exercises we're 19 doing and for the timeframe we're involved in, 20 it is, for all intents and purposes, an 21 unlimited air supply. The student can stay 22 there as long as he wants and practice getting 23 comfortable breathing under water. 24 MS. FAGAN: 25 Q. Okay, and then when they get comfortable, you 26 move them to actually giving them the device?</p>

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1 Is that correct?
 2 MR. HARVEY:
 3 A. We'll move them to the next station. We just
 4 call it the middle station, and this is where
 5 they'll do the same three exercises they did
 6 at the pre-breather station, which is put the
 7 regulator in their mouth, face in the water,
 8 breathe. We'll get them to put their face in
 9 the water, put the second stage in and clear
 10 it under water and we'll get them to do that
 11 using both the purge and the blast method.
 12 The only thing different in this station is
 13 they're actually using the unit itself, the
 14 HUEBA unit, and they actually have to deploy
 15 it. So pull it out of the dust cap and put it
 16 in their mouth before they could use it. So
 17 we're doing things in little small steps, give
 18 them a chance to adjust at each stage and get
 19 comfortable with the operation of the system.
 20 So at this point here, and we'll go
 21 through a little exercise here. We'll yell
 22 out the words "ditching, ditching" and go
 23 through a little exercise of getting
 24 themselves watertight. We'll yell out the
 25 words "brace, brace" so they'll get
 26 comfortable getting in the brace position with

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1 the HUEBA there. We expect to see them
 2 landmark the HUEBA to second stage so they
 3 know where it's to, and then when we yell out
 4 "impact" they'll deploy it, put it in, breathe
 5 on the surface. We'll repeat the whole
 6 exercise, except the second time, they'll
 7 deploy it under water. So they'll lay down in
 8 the water, once they're face down, deploy it
 9 in and put it in.
 10 At the end of that, we'll leave them and
 11 we'll give them an opportunity to actually
 12 breathe down the HUEBA unit itself. So they
 13 can get appreciation of how much time they
 14 would get out of it, with the emphasis here
 15 being in ideal perfect conditions. Obviously
 16 this would be the best case scenario for them.
 17 So now they've done everything. They've
 18 actually used the unit. They've deployed it.
 19 They've cleared it. I'll back up. They've
 20 almost done everything, except actually use it
 21 upside down under water. So this is where the
 22 EBSIC chair comes in. We designed the chair
 23 so that we're in control of the students.
 24 Even though we're above a metre and we've--you
 25 know, we hope we've eliminated or we're
 26 confident we've eliminated that risk or

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1 barotrauma injury, we want to be controlling
 2 the situation so that if a student does get
 3 panicky or something, we can bring them up at
 4 a nice controlled rate. And what we'll get
 5 the students to do here is, right from the
 6 top, we'll get them suited down and we'll yell
 7 out "ditching, ditching." They'll get
 8 watertight. Again, they'll brace for impact.
 9 On impact, first exercise, they'll clear it,
 10 put it in on the surface and we'll roll them
 11 upside down, and the only thing we're watching
 12 for is a regular breathing routine, and by
 13 this time, the students are quite comfortable
 14 with the system. So we'll let them take four
 15 or five breaths, maybe six breaths under water
 16 and we'll bring them back up.
 17 The second exercise and the last
 18 exercise, we'll get--do the same thing, except
 19 they'll actually deploy it upside down under
 20 water, clear it any way they want to. I got a
 21 little video clip here, just to show you how
 22 it works. Just before I play it though, I'll
 23 point out that this video was taken when we
 24 were still commissioning the system and
 25 playing with it and seeing how we were going
 26 to do it. So it goes a little quicker than we

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1 would with a student, but there you have it.
 2 (VIDEO PLAYING) So they're upside down
 3 and he's got to deploy the HUEBA, put it in,
 4 clear it. In that case, the individual used a
 5 purge button. We'll just observe them take a
 6 couple of breaths so that they're comfortable
 7 and relaxed and then we can roll them up,
 8 ensuring that they're exhaling as they're
 9 coming up, so they're not at any risk at all
 10 of a lung over expansion injury. And then we
 11 have some students have so much fun with it,
 12 they ask to do it again and if they got air,
 13 off they go. (VIDEO STOPPED)
 14 The last, this is the last slide here. I
 15 quoted a number of studies throughout my
 16 presentation, so I put the references here for
 17 anyone that wanted to go back and see where I
 18 got that information from. In some cases,
 19 there's a web link there for you to follow.
 20 MS. FAGAN:
 21 Q. Well, thank you, Mr. Harvey. That was very
 22 informative, and I think it gives a sense as
 23 to how much is involved in using this
 24 particular device, and what we're going to do
 25 now is Mr. Rutherford is going to come back
 26 up. He has a few closing slides and then

1 we'll have the panel take their seats and
 2 we'll go through--I have some general
 3 questions and then we'll open it up to the
 4 group. I don't know if we'll get that far in
 5 the next half hour, but Mr. Harvey, if you
 6 could relax and step down, and Mr. Rutherford,
 7 you're back in the chair.
 8 MR. ROBERT RUTHERFORD, RESUMES STAND, EXAMINATION BY MS.
 9 ANNE FAGAN (CONT'D)
 10 MS. FAGAN:
 11 Q. It's much more comfortable than that upside
 12 down thing.
 13 MR. RUTHERFORD:
 14 A. Oh, I think so. Thank you very much there,
 15 Greg. I guess you probably realize why Greg
 16 is an instructor and I push paper.
 17 MS. FAGAN:
 18 Q. Mr. Rutherford, you do have quite a volume of
 19 information to go through, so -
 20 MR. RUTHERFORD:
 21 A. I do indeed.
 22 MS. FAGAN:
 23 Q. And there's an awful lot to it. So I believe
 24 we should be at about slide 16.
 25 MR. RUTHERFORD:
 26 A. Yeah. I guess in concluding our presentation

1 industry. Again, we will participate in these
 2 religiously because we think it's extremely
 3 important that, you know, we keep current with
 4 what is going on.
 5 The next one here is a more interesting
 6 one, I think, in as much as the OSSC was a
 7 founder member of what's called the
 8 International Association for Safety and
 9 Survival Training, and we were one of--our
 10 training centre was one of six founding
 11 members and this was early, very early on in
 12 the '80s when, at the time, there was really
 13 widely varying standards worldwide and there
 14 still is, to an extent, but at the time, there
 15 was widely varying standards relating to
 16 safety survival training, what was being
 17 delivered in different jurisdictions. So this
 18 was six organizations. RGIT, we mentioned
 19 before, was one of those organizations. We
 20 had an organization from Norway, Denmark, from
 21 the Netherlands. It was basically European
 22 organizations, except for us in Canada, and--
 23 although there was one in the United States.
 24 Basically got together and the idea of this
 25 association was really it's an international
 26 networking association where we get together

1 here today -- figure out where we're at --
 2 there's a few things I just want to cover of a
 3 more general nature and issues where we're
 4 looking at some aspects really going forward,
 5 some aspects of how we, as an Institute, try
 6 to maintain our currency with what's going on
 7 both locally, nationally and internationally.
 8 So one of the ways we do this is to maintain
 9 associations with a number of industry and
 10 other types of association. Basically, three
 11 of these have particular relevance, I think,
 12 to offshore petroleum safety and to this
 13 Inquiry. One of them we've talked about a
 14 number of times, it's the Canadian Association
 15 of Petroleum Producers, Training and
 16 Qualifications Committee. We are there by
 17 invitation, but we religiously will sit at
 18 that committee. We think it's extremely
 19 important that training providers are
 20 represented at that committee.
 21 We also participate--Transport Canada has
 22 similar types of committee, which are called
 23 the Canadian Marine Advisory Council and they
 24 have regional and national meetings. Again,
 25 these relate to updating of marine training
 26 standards and other aspects of the marine

1 and basically share information and best
 2 practices that are going on worldwide.
 3 Ourselves are members of this and Survival
 4 Systems in Nova Scotia are also members of
 5 this association. But the objective of this
 6 association is to facilitate exchange of
 7 information on matters relating to safety in
 8 marine environment and to promote continuous
 9 improvement in safety and survival training
 10 internationally. I am the--actually an
 11 officer and secretary of the association since
 12 2004. I've noted information on this
 13 association can be found at www.iasst.com.
 14 One thing I want to mention here, I
 15 think, that the association does have meetings
 16 twice a year, a seminar twice a year
 17 associated with those meetings where we share
 18 training information, but we also have--every
 19 three years, we have a major international
 20 safety conference and the next conference is
 21 going to be here in St. John's in 2012 and
 22 we're going to be focusing on safety training
 23 associated with cold environments and Arctic
 24 environments. So if anybody is interested in
 25 that conference, the information on it, where
 26 we look as we've moving out into the Orphan

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1 Basin and possibly moving up north, we're
 2 going to be focusing on aspects of training at
 3 that conference. So I think it might be of
 4 interest to this Inquiry.
 5 MS. FAGAN:
 6 Q. I believe you have a slide there on
 7 opportunities for improvement and some of the
 8 plans that are being considered.
 9 MR. RUTHERFORD:
 10 A. I do indeed. One of the--I guess this Inquiry
 11 is basically focused on information gathering.
 12 Opportunities for improvement are going to be
 13 identified at a later stage, but I think what
 14 we really wanted to do here is just indicate
 15 to the Inquiry some of the things that are
 16 ongoing already which we might want to take
 17 account of during the course of the
 18 deliberations.
 19 One of them relates to capacity and
 20 facility development. I think as we
 21 previously noted, the OSSC has sustained some,
 22 you know, continued growth in its capacity and
 23 I think given the continued and anticipated
 24 growth in the offshore petroleum industry, we
 25 need to consider where we're going to go to
 26 ensure that we do have capacity to respond to

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1 all training needs. It's no good coming up
 2 with ideas from the Inquiry if the capacity is
 3 not there to respond to these needs. So we
 4 did develop a concept document in 2008 which
 5 is currently being discussed with possible
 6 funding agents. This particular capacity here
 7 would not only increase our volume that we can
 8 deliver, but we're looking at a number of
 9 enhancements to facilities such as our
 10 survival training tank, providing additional
 11 environmental capability within the tank,
 12 looking at some possible enhancements to the
 13 helicopter underwater escape trainer, looking
 14 at enhancements to research and development
 15 capability within the unit. So I think the
 16 timing--as I say here, the timing of the
 17 Inquiry is fortuitous, I think, in some
 18 respects because if we are going to be looking
 19 at expanding and putting new facilities in
 20 place, then we will be in a good position to
 21 be able to take note of the findings of the
 22 Inquiry and incorporate such things into our
 23 facility.
 24 MS. FAGAN:
 25 Q. Did you have any capacity issues with respect
 26 to the implementation of the HUEBA, the

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1 breathing device that Mr. Harvey just
 2 demonstrated?
 3 MR. RUTHERFORD:
 4 A. Yeah, I mean, I think basically ever since the
 5 offshore petroleum industry has been in place
 6 off Newfoundland, we've had continued fighting
 7 of capacity issues. I note in the earlier
 8 slide, I mentioned that we--in 2003, we split
 9 off some training into the west coast. We
 10 created new facilities on the Southside. That
 11 really was as a result of Terra Nova coming on
 12 in 2002. We're always looking at issues of
 13 capacity. When the HUEBA came in, again I
 14 showed you the schedule. When it was
 15 introduced, we already had a full slate. One
 16 of the issues we have challenges with is that
 17 our pool is critical. It's our critical part
 18 and our pool is basically utilized 120-130
 19 percent of the time. It's continually in
 20 action. So that causes us a little bit of
 21 problem in relation to when something like a
 22 HUEBA came in. You notice on the schedule
 23 that basically we had to schedule training
 24 outside of our normal work hours, which, you
 25 know, was not only stressful on our
 26 instructors, they were working very hard at

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1 this training, but it wasn't always convenient
 2 to our clients too, because our clients, they
 3 have people who go to work and don't
 4 necessarily want to be doing HUEBA training at
 5 10:00 or 11:00 at night. They've got families
 6 too. So it did cause some concerns there. I
 7 think one of the--because of that issue, our
 8 friends in Nova Scotia came into Newfoundland
 9 and because it was so important, this training
 10 was delivered, they filled in a gap and we
 11 were able to meet the needs in the time
 12 available. So yes, we do have capacity issues
 13 and we do our best to respond.
 14 MS. FAGAN:
 15 Q. But the 2008 proposal is looking at trying to
 16 address some of those capacity issues, but I
 17 think what you're saying is if there's going
 18 to be recommendations come forward,
 19 consideration would have to be with respect to
 20 capacity as well?
 21 MR. RUTHERFORD:
 22 A. Yeah. I mean, the capacity issues, I think
 23 they're a given. You know, we're going to be
 24 looking at increasing capacity to deliver, but
 25 I think we're also, at the same time, you
 26 know, if we're going to do a major--a

<p style="text-align: right;">Page 225</p> <p>1 significant upgrade, then we will also be 2 looking at any enhancements we can make to our 3 facilities and equipment to better equip them 4 to serve the community.</p> <p>5 MS. FAGAN: 6 Q. There was information brought forward by Mr. 7 Barnes of CAPP and they introduced an exhibit 8 which basically was a review of the two 9 training facilities and we need not go to that 10 exhibit, just for the reference for the group, 11 the exhibit is number 55, and it's Section 12 3.3, and in that exhibit at page 490, there is 13 the review of the Survival Centre and in the 14 same exhibit at page 505 is the review of the 15 Survival Systems in Nova Scotia, and Mr. 16 Barnes indicated during his evidence that he 17 had asked the Centre for a response. He wrote 18 in October 29th, 2009 and he asked for a 19 response by November 13th, 2009, and I 20 understand that the Centre did respond. Mr. 21 Barnes actually undertook to provide that 22 response, but his undertaking is now 23 unnecessary because Exhibit 93, I understand, 24 as provided by the Centre, is the response to 25 CAPP. Is that correct? 26 MR. RUTHERFORD:</p>	<p style="text-align: right;">Page 227</p> <p>1 basically something we discussed there 2 earlier, the fact that CAPP courses, we have 3 guidelines--or within the training document, 4 there are guidelines or top level guidelines 5 that identify training providers, but they 6 don't actually look at ensuring that 7 everything--that there's no third party 8 accreditation of the courses that takes place. 9 They're relying on the internal processes of 10 the training providers. So what they want to 11 do is those courses that don't have any 12 external accreditation processes in place, to 13 create their own external accreditation. This 14 was the first step in that process. 15 There's a consulting company called 16 Strategic Directions was engaged to lead this 17 up and associated with that was--because 18 they're not content experts, they're just 19 experts in processes and management, they're 20 management consultants, they had alongside of 21 that, would have a content expert and I think 22 we had Mr. Clint Carey, who's sitting over 23 there, was our content expert that came into 24 our Centre. 25 MS. FAGAN: 26 Q. So what I understand you to say is that it's</p>
<p style="text-align: right;">Page 226</p> <p>1 A. That is the response to CAPP's request for an 2 immediate response and the letter, yes, that 3 is the same response. I should note that I 4 did note in the response that I think because 5 this was basically an audit of two training 6 centres taking place by a small team, raised 7 some very interesting, valuable comments, but 8 I think the next step really would be 9 discussion with the training qualifications 10 committee and the training institutions to 11 basically work out between them what is the 12 appropriate best practice. It provided the-- 13 it's a catalyst for us to go forward, but 14 that's fundamentally--that was the response to 15 that letter, yes. 16 MS. FAGAN: 17 Q. And can you describe the nature of that 18 review? How many people were involved as the 19 reviewers? Who were the reviewers and any 20 other information about that review? When did 21 it take place? 22 MR. RUTHERFORD: 23 A. The review took place in 2008, during June of 24 2008. It was--this is part of a series of 25 reviews that CAPP, the training committee has 26 decided to undertake. What they looked at is</p>	<p style="text-align: right;">Page 228</p> <p>1 not a third party accredited type course, CAPP 2 has approved the two training facilities or 3 the two training providers - 4 MR. RUTHERFORD: 5 A. Yes. 6 MS. FAGAN: 7 Q. So are there any differences between the two 8 training facilities or any aspects of that 9 review that you'd care to comment on, because 10 they're focusing on the trainers, not the 11 course content itself. 12 MR. RUTHERFORD: 13 A. Well I think out of that review, I think both 14 training providers were assessed to be meeting 15 the training requirements as laid down in the 16 training guidelines. There were a number of 17 suggestions for improvements that were made 18 for both of our organizations. Some of the 19 suggestions of improvement for our 20 organization was to look at the fidelity of 21 our helicopter underwater escape trainer, 22 which is, you know, is 1980s version, so that 23 was one issue we'll certainly be looking at. 24 MS. FAGAN: 25 Q. And I'd just like you to explain, what do you 26 mean by fidelity?</p>

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<p>1 MR. RUTHERFORD: 2 A. When it comes to dealing with training issues, 3 I think we, fidelity, we can be looking at 4 three different things. Number one is the 5 physical fidelity of our equipment, does the 6 piece of equipment we're using in training, 7 does it exactly replicate the particular, the 8 helicopter in this case that we're using in 9 service, are there differences in the physical 10 fidelity. This is--the other issue of 11 fidelity can be related to the environmental 12 fidelity. For instance, we can look at the 13 issue of water temperature is, you know, 16 14 and 17 degrees, the helicopter could go down 15 in 2 degrees. We have lights on; it could do 16 down in darkness or rain, so, there's an 17 environmental fidelity. We also look at the 18 fidelity associated with the pedagogical sort 19 of side of it, are we true to the learning 20 objectives of the course, are we doing what is 21 required in terms of training, actually 22 representing what somebody is actually going 23 to be expected to do in a real emergency 24 situation. So there's three areas of 25 fidelity. I think the issue of, the third one 26 I don't think there's any issue with, with our</p>	<p>1 fidelity if at all possible. I think 2 particularly in this instance now, we're 3 looking at the differences between our 4 particular helicopter simulator and Sikorsky, 5 and one particular area, I think has been 6 raised earlier today is the issue of the 7 concern of the windows and the seats are much 8 higher, it's quite a difference in terms of 9 what we're training people to do and what we 10 should be, I think, perhaps looking at, so 11 those are three areas of fidelity, but I think 12 they're all important that we try and find 13 balances and try and find the right approach. 14 MS. FAGAN: 15 Q. Thank you. Your next slide has to do with a 16 strategic plan and a vision. I believe you 17 have a couple of slides now on some future 18 prospects. 19 MR. RUTHERFORD: 20 A. I just wanted to, I guess, touch base, we are 21 part of the Fisheries and Marine Institute. 22 The Marine Institute has put in place an 23 overall strategic plan which envisages the 24 institute become a world oceans institute, 25 having--it is already the largest training 26 provider of a number of training and other</p>
<p>Page 230</p> <p>1 training centre, we have very, very trite 2 academic processes in terms of ensuring that 3 we do meet the course requirements that are 4 laid down. Relating to the second one, 5 relating to the fidelity of, the environmental 6 fidelity, this is one that we have to balance 7 very carefully with the risks that we're 8 exposing trainees to. I think the situation 9 is that yes, we could put the pool at 2 10 degrees, we could, you know, we could make it 11 dark or foggy, but I think in situation with 12 people coming through already sufficient 13 stressed in the training we do, we wouldn't be 14 able to manage our risk if we did that, we 15 wouldn't be able to ensure, so whilst we can 16 certainly look at it, if they had the right 17 tools in place to ensure us we could do that, 18 but that's something we have to balance, it's 19 a risk issue. The first one relates to how 20 important this actual fidelity of the 21 equipment to the training outcomes. The jury 22 is a little bit open on this one, I think 23 there have been studies that indicate that the 24 physical fidelity is not as important as the 25 actual costs that we're teaching, however, I 26 think one should strive to attain full</p>	<p>Page 232</p> <p>1 services to the marine industry, but really 2 creating something a little bit bigger and a 3 little bit more international in scope, but 4 one of the things that we're looking at in the 5 plan is basically we're looking at--we provide 6 training and various other services to various 7 sectors and as you can see on the top there, 8 we have a marine, recreation, science 9 fisheries, aquaculture, energy--which is the 10 offshore petroleum industry, defence and 11 marine transportation, but what we're looking 12 at doing is doing a number of undercutting or 13 things that cut across all those sectors where 14 we have training requirements which address 15 all of the sectors. They just opened up a 16 school of Oceans Technology last year, this 17 cuts across every sector. We're looking at 18 the moment at the safety security and 19 emergency response and creating, I think, if 20 you look at the next proposal, it's been 21 initiated to develop a school of ocean safety. 22 That might not be a big deal for changing from 23 OSSC centre, as a centre to a school, if you 24 will, to say, you know, big deal, what does 25 that mean, but in terms of our organizational 26 structure, it makes a very big deal in terms</p>

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<p>1 of at the present time we're just constrained 2 within a school of maritime studies. Our main 3 focus is providing training to the marine 4 technology students is what we're in place 5 primarily to do, but it's to open it up and 6 say have a school that really does focus at 7 various levels on the whole area of ocean 8 safety and being a school, you can sort of 9 start to raise the level of training available 10 to providing certificates and post graduate 11 courses, et cetera. So I think it's something 12 that I think is important for the general 13 development of the whole area of safety for 14 our oceans. So it's just something that--it 15 is in place and it's going through at the 16 moment, I'm not really looking at for the 17 moment, so it may be something to consider. 18 This one, the (unintelligible) and Hollins 19 capacity, will contain research centre and 20 we'll get into advanced education degrees. 21 Okay, just getting through the tools there 22 now, one of the areas I guess of improvement, 23 we're looking at safety related research and 24 development and our centre has been supporting 25 applied research and development by others for 26 many years, but in 2003, we did establish our</p>	<p>1 trigger off lots of good research ideas 2 because we see what is actually happening to 3 people in close to emergency situations or in 4 situations where they're put in stressful 5 situations. So we can create the ideas, so 6 we're looking at continuing to develop that 7 research capability. Our current projects 8 ongoing, we have, for many years now we've 9 been doing work with PetroCanada and now 10 Suncor and we're doing--and with Husky Energy, 11 we actually work onboard, they give us access 12 to their standby support vessels whereby we 13 undertake drills utilizing their fast rescue 14 craft, but in the course of doing those 15 drills, we also at the same time try to look 16 at various aspects of the activities to find 17 out better ways to look at the recovery and 18 how standby vessels can better support the 19 offshore industry, so we do six drills a year 20 for Husky Energy and six for PetroCanada, so 21 it gives us a good access to boats and to 22 people. And at the same time, we provide 23 ongoing training to these people and what 24 they're doing. We're also working as a local 25 technology company, BMT I think was a big 26 opportunity for simulators to be used in some</p>
Page 234	Page 236
<p>1 own research which is tied directly to the 2 centre. And the focus of the unit is really 3 the expansion and knowledge base related to 4 emergence response, evacuation, surviving and 5 rescue. As related to cold water, hostile 6 environments, as well as development, 7 underpinning, knowledge and techniques. We've 8 conducted a number of research projects alone, 9 but most of the projects we have undertaken 10 with others. We work very closely with 11 National Research Council, we work with 12 Memorial University, Department of Human 13 Kinetics. We also work with private 14 researchers, BMT Fleet Technology, is one and 15 we have international research projects 16 ongoing. We currently have a researcher 17 across in the UK at the moment working at the 18 Maritime University in Greenwich on an 19 international project. I think this is 20 important to grow this capability and the role 21 that we play is, you know, we're not prime 22 researchers as in the university or NRC, but 23 we have an interface I think with industry and 24 with the fact that we're dealing with people 25 day in and day out, I think we're in a very 26 good position to see what is actually--we can</p>	<p>1 of the training that we're doing. Where the 2 Marine Institute is quite familiar with 3 simulators, in terms of bridge simulators, 4 engine simulators, but companies working on 5 developing simulators, lifeboat operations, 6 fast rescue boat operations, on such things 7 which are all, I mean, we can possibly look 8 at, you know, there may be some opportunity to 9 look at additional types of simulators for 10 helicopter passenger operations, so it's 11 something that we do work closely with them. 12 They lead it up and we assist them in doing 13 the training associated with it. Getting 14 close to the end now. Just for information, 15 I've got two major proposals which have some 16 relevance to this inquiry which are currently 17 submitted. I'm not sure where they will 18 necessarily go, but I'll raise them just 19 because it identifies, I guess, some areas 20 that we think there's room for improvement or 21 movement and also areas where we think we have 22 the capability to respond and assist in that 23 improvement. There may be as many areas that 24 can be looked at, but we have certain 25 capabilities. One was looking at Smarter, 26 this was a proposal which we put in place with BMT</p>

<p style="text-align: right;">Page 237</p> <p>1 Fleet Technology, National Research Council 2 and we're working with--we're supported by 3 Suncor and Husky Energy. But it's looking 4 really at the standby support, vessel 5 capability and rescue capability offshore and 6 this relates to helicopter passenger 7 transportation in as, you know, part of the 8 landing and taking off of helicopters 9 offshore, if there's an incident out there, 10 the first response is likely to be related to 11 the standby vessels and the fast rescue boats, 12 so this is software, looking at ensuring that 13 capability is in the right place at the right 14 time to do the right thing, it looks at 15 various types of capability. So that is 16 currently--we're looking for a little bit more 17 funding out of the Federal government, I don't 18 know if it will work or not, so we'll see. 19 CARRC, is an interesting proposal that we put 20 in PRAC. Off Aberdeen, BP spent a 21 considerable amount of time and effort looking 22 at ways they can better support their offshore 23 petroleum activities up in remote areas off of 24 the Hebrides. There were a number of units 25 which are quite well dispersed and what 26 they're originally looking was a system that</p>	<p style="text-align: right;">Page 239</p> <p>1 can and does make to the offshore petroleum 2 industry and to the safety of workers in other 3 industries. Our instructors and staff 4 dedicate their lives to safety and the goal, 5 everybody who goes to work should get home 6 safely and I think this instance, such as the 7 lost of 17 lives on March 12 has touched us 8 all very deeply, so we are very happy to work 9 with this inquiry to see if we can make 10 training, make the offshore a safer place, 11 regarded by--the Marine Institute has a motto 12 "strive for excellence" and we have our own-- 13 we saw in the video, "think safe, act safe, be 14 safe", so with that, I would say thank you 15 very much for your attention. 16 COMMISSIONER: 17 Q. Okay, thank you, Mr. Rutherford. It's too 18 late to begin questions now, it's twenty-five 19 past, so - 20 MS. FAGAN: 21 Q. Excuse me, Commissioner, I have some questions 22 for Mr. Rutherford and for the panel. 23 COMMISSIONER: 24 Q. Oh yes. 25 MS. FAGAN: 26 Q. So when we come back tomorrow, I think we'll</p>
<p style="text-align: right;">Page 238</p> <p>1 utilized, you know, made sure we have 2 helicopters there would respond to any 3 incidences offshore, but in the end, they came 4 up with a combination of helicopters and a 5 very, very highly capable support vessel and 6 what they had to do here, this particular 7 vessel is designed to be able to recover 8 people from the water, to be able to provide 9 medical response, it's a medical response and 10 it's well accepted by the health safety 11 executive in the UK as being once they're 12 onboard this boat, then they are in a place of 13 safety. So we think there's an opportunity 14 within the Canadian sector to something--for 15 something similar, it wouldn't be exactly the 16 same type of vessel, but I think it's worth 17 exploring that we have to close some of the 18 rescue, our rescue gaps as well and I think 19 this is one proposal that we have been 20 discussing with PRAC. There's a note there 21 full details on past and ongoing safety 22 related research can be provided on request. 23 So this is a penultimate slide. I hope that 24 this presentation has provided you with some 25 information. I understand that the 26 contribution, the OSSC and Marine Institute</p>	<p style="text-align: right;">Page 240</p> <p>1 start with the panel and then we'll do the 2 questions then. 3 COMMISSIONER: 4 Q. So we'll adjourn now then to 9:30 tomorrow 5 morning and then we'll carry on with the 6 process. 7 (Adjourned)</p>

1 CERTIFICATE

2 We, the undersigned, do hereby certify that
3 the foregoing is a true and correct transcript of a
4 hearing heard on the 23rd day of November, 2009 at
5 Tara Place, 31 Peet Street, Suite 213, St. John's
6 Newfoundland and Labrador and was transcribed by us
7 to the best of our ability by means of a sound
8 apparatus.

9 Dated at St. John's, NL this
10 23rd day of November, 2009

11 Cindy Sooley
12 Discoveries Unlimited Inc.
13 Judy Moss
14 Discoveries Unlimited Inc.

<p>-\$-</p> <p>\$140,000 [1] 161:16 \$167,000 [1] 161:23 \$176,000 [1] 161:22 \$200,000 [1] 157:9 \$350,000 [2] 126:20 129:17 \$41,000 [1] 163:6 \$50,000 [1] 161:17 \$62,000 [1] 163:5</p> <hr/> <p>-&-</p> <p>& [3] 5:18 15:9 88:8</p> <hr/> <p>-'-</p> <p>'00 [1] 20:13 '00/01 [1] 20:22 '06/07 [1] 21:2 '07 [2] 95:5 135:10 '07/08 [1] 21:3 '80s [1] 219:12 '95-96 [1] 20:13 '95/96 [1] 20:22 '99 [1] 21:18</p> <hr/> <p>-.-</p> <p>.445 [1] 202:22 .6 [1] 170:18</p> <hr/> <p>-0-</p> <p>0 [1] 202:25 00 [1] 202:26</p> <hr/> <p>-1-</p> <p>1 [6] 179:9 181:25 202:19 202:21 203:9,10 1.5 [2] 191:13,16 1.8 [1] 170:17 10 [9] 202:20,23,26,26 203:2,11,25 204:7,16 100 [1] 162:9 100,000 [2] 170:17,19 10:00 [1] 224:5 11 [4] 10:6 12:11 114:16 115:4 110 [2] 170:23,26 11:00 [1] 224:5 11th [2] 150:6 156:7 12 [4] 5:13 55:3 56:22 239:7 120 [1] 153:7 120-130 [1] 223:18 120/140 [1] 68:17 12th [6] 123:26 153:22 154:9,19 155:3,26 13 [2] 56:22 57:17 135 [2] 192:8,8</p>	<p>1350 [1] 156:11 13th [1] 225:19 14 [2] 70:18 138:20 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