



# **Developing Arctic resources safely and responsibly**

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Webchat Transcript

## Meet Your Panel

### **Robert Blaauw**

*Lead for Shell's Global Arctic Theme*

Since joining Shell in 1982, Robert has worked in roles in commercial and general management across the globe and in 2002 moved to Shell's headquarters. He now manages the operational, technical, social and environmental challenges specific to the Arctic Region and holds an MSc degree in Civil Engineering.



### **Ron Cochran**

*Vice President Gas Russia, Caspian and CIS, Shell*

Since joining Shell in 2001, Ron has occupied senior management positions in the UK, Netherlands and China. Prior to this he worked for Anglo American in England, South Africa and Australia. He has been in his current position, with responsibility across Russia and the CIS, since 2007.



### **Peter Slaiby**

*Vice President Alaska Exploration & Appraisal, Shell*

Starting as a field engineer in his native USA, Pete's career has spanned over 30 years and taken him to Syria, Brunei, Europe and Brazil where he met his wife Rejani. In his current role, he manages Shell's exploration and production activities in Alaska, developing relationships across all stakeholders.



### **Peter Velez**

*Global Emergency Response Manager, Shell*

As Incident Commander for Shell, Peter has responded to major incidents and threats from oil spills, hurricanes and security in countries across the Americas, Europe, Asia and Africa. He sits on many prestigious external committees, including the Board of Directors of the Marine Preservation Association.



### **Mitchell Winkler**

*Arctic Technology Lead, Shell*

Mitch has been with Shell for 30 years and his Arctic engineering experience goes back to the 1980s where he had in a variety of design, construction, and R&D roles during Shell's initial Alaska Beaufort and Chukchi exploration campaigns.



### **Joanna Cochran**

*Manager Sensitive Areas, Shell*

Joanna joined Shell in 2001 following 15 years in consultancy working internationally in environment, social sustainability and international development. She now helps steer Group biodiversity and conservation policy, and create a network that connects subject matter expertise and shares good practice.



### **Peter Scott**

*Communications Manager, Shell*

Peter is Anchorage based and joined the Alaskan Leadership team in 2010 as the Communications Manager, bringing 16 years of experience in the global energy industry. Prior to moving to this, Peter spent some years in Australia overseeing external affairs for Shell's downstream businesses in the country and developed Shell Australia's Greenhouse Gas Management team.



**Robert Blaauw**

Hello everyone. Welcome to today's webchat, 'Developing Arctic Resources Safely and Responsibly'. I'm Robert Blaauw. Joining me today is Ron Cochrane - Vice President Gas Russia, Caspian and CIS, Mitchell Winkler - Arctic Technology Lead, Joanna Cochrane - Manager Sensitive Areas, Peter Scott - CX Manager Alaska, Peter Slaiby - Vice President Alaska Exploration & Appraisal, and Peter Velez (Houston) - Global Emergency Response Manager. We look forward to your questions - please start sending them in and we'll answer as many as we can over the next hour.

**Mr. P**

Q. I have a question regarding the safety culture of working in the Arctic. In light of the often repeated industry accusations that Shells safety culture is inadequate and that systemic management failure is key to this (e.g. the '05 explosion in the Netherlands where two contractors died and management admitted to 'systematic faults', or the forced shutdown of the Brent Charlie platform after an employee tragically died June this year) I wonder how you can guarantee that this lack of real safety culture will not take place in your Arctic operations where errors caused by collective blindness can have serious effects to the surrounding environment. How do you plan to make sure you that the safety culture in She

**Robert Blaauw**

A. Thank you Mr. P. At Shell we have a strong safety culture. Our overriding principle is Goal Zero: no harm to people and the environment.

**Introductory Question**

Q. Do we know enough to progress safely in the Arctic?

**Joanna Cochrane**

A. Before we begin substantial work on major projects or existing facilities we conduct full environmental, social and health impact assessments alongside technical and commercial considerations, to help understand and manage all risks and enhance opportunities for local benefits. In new projects, in particularly sensitive environments such as Alaska and Greenland, we ensure that this process starts early, to make sure we collaborate with experts and indigenous peoples to fully understand the relationship between ecosystems and community livelihoods and with this knowledge we jointly develop biodiversity action plans to ensure both positive conservation outcomes and sustainable livelihoods. There has been decades of scientific research in the Arctic, particularly Alaska, we believe we know enough now to carry our limited exploration activities. Of course as we progress towards development more and more science and research will need to be carried out and we are fully committed to playing our part in this.

**Introductory Question**

Q. Why operate in this sensitive region?

**Robert Blaauw**

A. To keep pace, the world will need to invest heavily in all energy sources, from oil and natural gas to renewable and nuclear power. It will take a mixture of solutions to meet the energy demand and fossil fuels will continue to meet these energy needs for decades. Meeting that demand responsibly means developing resources from technically difficult reservoirs and

challenging locations, such as the Arctic. We have many years of experience in the region and we have proved we can operate responsibly, we believe the region can be safely developed with respect for the environment and the people that live there.

### **Introductory Question**

Q. How can Shell's development benefit local communities?

### **Ron Cochrane**

A. Companies such as Shell can only move forward by being inclusive and involving local communities. We have to gain trust and understanding with those people that will be affected by our Operations. Having a key stake in the game for local populations whether it's through training, development, jobs or infrastructure is vitally important. In areas where we work, we develop partnerships with local communities to ensure they benefit from our activities. Our intention is to be operating for decades in any one area, we would not be able to do that if we did not have the buy in and support of the local communities.

### **Elsa Nuunaviit**

Q. Where is the chat presented?

### **Joanna Cochrane**

A. The webchat comes to you from The Hague...

### **afg123**

Q. Your spill plan includes a worst case spill scenario that looks at a spill in August. But you plan to drill through October 31. Why don't you include a worst case spill in October – when ice, storms, darkness, and fog would complicate clean-up – in your plan?

### **Peter Velez**

A. Our world class oil spill response capability provides multiple response tools that can respond to spills during the exploratory drilling season that runs from mid-July to end of October and beyond since we have vessels which are ice classed and the response equipment can work in ice conditions beyond the end of October. The ice class vessels and oil spill response equipment are dedicated solely to Shell's Arctic operations and will respond to any spill within an hour of the spill.

### **Cholley**

Q. Hello and thank you for hosting this panel. Reports from Scotland this week are that you withheld information from the public for nearly three days about your oil spill in the North Sea, and that you believe the oil will naturally disperse through wave action. Why did you withhold this information? What conditions exist there that led you to leave the oil in the water and not even try to clean it up? Do you believe spilled oil only causes damage when it hits the coast? If not, why aren't you cleaning up that oil?

### **Robert Blaauw**

A. Thank you for your question. We regret the North Sea incident. Please have a look at our specific [website](#) for this issue. During the short time we have today I would like to concentrate on Arctic matters.

**Petercoville**

- Q. Hello - will you confirm that you are going to release the full details of your clean-up plans for any operations in the Arctic?

**Peter Velez**

- A. Yes, Shell's Oil Spill Contingency Plans for our Alaska exploratory wells are available from the Department of Interior's BOEMRE website.

**JBB123**

- Q. Why is Shell so secretive - for example, refusing to disclose the amount of oil spilt in the North Sea - and what compensation will Shell be paying for the effects of this gross damage to the environment.?

**Robert Blaauw**

- A. Dear JBB123, thank you for your question. May I just point you to the special [Shell website](#) that contains all relevant information on the Gannet incident. I look forward to further questions you may have on the Arctic.

**TomN**

- Q. What special technologies do you need in the Arctic for drilling and also to safeguard the local environment and safety?

**Mitchell Winkler**

- A. TomN, thanks for your question. A key technology that we rely upon is satellite borne synthetic aperture radar or SAR. This technology allows us to see through clouds and darkness and develop high quality and accurate ice charts.

**JBB123**

- Q. Before Deepwater Horizon, did Shell lobby the Canadian government to relax safety regulations that required relief wells to be drilled at the same time as the main well, so as to prevent an uncontrollable blowout?

**Peter Scott**

- A. Hi JBB,  
Thanks for your question. Drilling a relief well at the same time as the main well is not prudent practice from either an environmental or impact perspective. It is not normal practice for industry anywhere in the world. We do have a significant range of preventative measures in place for all wells we drill as well as appropriate oil spill response capabilities. In Alaska for instance, part of our spill response capability commitment is to have a relief well rig nearby, ready to assist in the unlikely event it is required.

*Due to pressure of time on the day we would like to add more at this time in respect for the question.*

First of all, there is no safety regulation that required relief wells to be drilled at the same time as a main well. After the BP incident, there was discussion among the Canadian government, ENGOs, industry and others as to whether this should be mandatory.

The NEB's policy on 'same season relief well capability' for drilling in the Beaufort Sea is different. This is the ability to drill a relief well in the same season in which the original well was drilled. In Feb 2010 the NEB said it would hold a hearing to review this policy. The hearing took place in June 2010 after the BP incident. The NEB broadened the scope of the June hearing into an application by Imperial, Imperial, backed by CAPP and other majors, had applied to the NEB to change relief well regulations for the Beaufort"

**TomN**

Q. What's the situation with your Alaska project and what do you plan to do in Greenland?

**Robert Blaauw**

B. TomN, let me address the Greenland part, my colleague Pete Slaiby will address the AK business. We are in the early exploration phases in Greenland in the North West Baffin.

**Bharat**

Q. What are some specific lessons that Shell has learned from the BP Macondo Deepwater Horizon disaster of April 2010, and how has Shell incorporated these lessons into drilling plans for the Beaufort and Chukchi Seas in 2012?

**Peter Slaiby**

A. Thanks for the question. Shell is learning company and of course we have learned from the Macondo incident by making an already robust response program stronger. We have incorporated a second set of shear rams in our BOP stack, weekly functional tests of the BOP's, and most importantly a capping and containment system located in Alaska.

**Michael Jaurena, CSP**

Q. From your recent event in the North Sea what went well that you can share with the industry others should be doing if a similar event occurs? Thank you.

**Ron Cochrane**

A. Thank you for your question.  
I would like to refer you to [our website dealing with this incident](#)

**ed reed**

Q. Hi, Shell's faced a number of legal difficulties over its plans to explore Alaska, in the Beaufort and Chukchi Seas. Are you still planning on pressing ahead with these plans or will you look elsewhere for easier business environments such as Canada or Greenland?

**Peter Slaiby**

A. Ed : Shell continues to believe that we will drill in the Alaskan offshore in the near future. We are working in both Greenland and Canada. We will be in a position to share learning's across these areas.

**TomN**

- Q. Environmental groups say an oil spill in the Arctic can't be cleaned up. What does Shell think about this?

**Peter Velez**

- A. Shell's exploratory drilling in Alaska will only take place during the open water season between mid-July and the end of October. Shell's approved oil spill contingency response plans and world class response tools have undergone intense scrutiny by regulatory agencies and stakeholders. Our plans and capabilities exceed Federal and State requirements. Our capabilities have tested and exercised. We also have been active participants in Joint Industry Projects such as the SINTEF Oil in Ice Project that tested technology and confirmed that oil can be removed from ice prone locations.

**Mr. P.**

- Q. Thanks for the first part of the answer Mr. Blaauw. It seems part of my question has "fallen off" though... Thus I will ask again: How do you plan to make sure you that the safety culture in Shells operations in the Arctic will be significantly better than in Shells other operations? Do you believe no incidents will take place? I would appreciate a genuine answer as I do worry about this.

**Robert Blaauw**

- A. Dear Mr. P. For our Arctic projects we have very robust processes in place that have been rigorously reviewed by the relevant regulators and government agencies.

**Rob**

- Q. I have a question about the definition of the Arctic. Do you mean everything above the Arctic circle? And do you mean sea and land areas?

**Mitchell Winkler**

- A. Rob, Good question. We take a broad view and characterise the Arctic by both physical challenge and environmental and social sensitivity.

**svs**

- Q. How long will the NEPA process take for this project?

**Peter Velez**

- A. BOEMRE has 30 days to complete its NEPA analysis on Shell's exploration plans. BOEMRE completed its NEPA analysis of our Revised Camden Bay Exploration Plan on August 4 and determined a Finding of No Significant Impact (FONSI).

**Elsa Nuunaviit**

- Q. Joanna say you are conducting environmental surveys in Greenland. Since when did Shell begin operating in Greenland?

**Joanna Cochrane**

- A. Elsa, Shell have recently commenced seismic surveys offshore Baffin Bay, but no exploratory drilling is planned for several years.

**Evgeny**

Q. what are the priority regions for your company in the Arctic?

**Robert Blaauw**

A. All key Arctic and sub-Arctic basins are of interest to us. We are preparing to drill in Alaska in 2012, we have started exploration activities in Greenland and of course our participation in the Sakhalin Energy Venture flagship sub-Arctic project is high on our list. We are interested to review any new opportunities that may come up.

**nickargus**

Q. A second question: What do you say to those who argue that the Arctic is simply too difficult an environment to contemplate oil drilling -- for example, how are you going to deal with a spill when there is no daylight for part of the year, and what about the much longer time that freezing environments take to recover from accidents?

**Ron Cochrane**

A. Shell will be drilling in the summer months when the seas are largely ice free with 24 hour daylight and weather conditions that are generally benign. Furthermore we have undertaken extensive research, development and testing of technology to deal with an oil spill in ice and believe we do have the capability to manage such a situation. The effectiveness of options in the spill response toolkit under Arctic conditions has been tested, including three field trials conducted by the Joint Industry Program (JIP) on Oil Spill Contingency for Arctic and Ice Covered Waters. In addition, Shell will have equipment on site for capturing, containing, and dealing with oil in the unlikely event of a spill. Shell's offshore and near shore spill response plans include dedicated personnel and equipment in a constant state of readiness, drawn from Alaska Clean Seas (ACS), ASRC Energy Services Response Operations, contractors, and Shell personnel, supported by its ice-capable marine fleet. Additionally, we currently operate drilling in West Siberia and offshore Sakhalin in Russia

**cleutwiler**

Q. Your spill plan includes a worst case spill scenario that looks at a spill in August. But you plan to drill through October 31. Why don't you include a worst case spill in October – when ice, storms, darkness, and fog would complicate clean-up – in your plan?

**Peter Velez**

A. Please see the response to this same question asked previously by another participant.

**Mark Burnett**

Q. What does Shell see as the biggest technical challenges to offshore Arctic oil exploration and what are the technology solutions you are looking at to meet them?

**Mitchell Winkler**

A. Mark, The challenge of the Arctic is finding solutions are cost effective solutions while allowing us to operate safely and protect the environment.

**BenAyliffe**

- Q. Is it really fair to describe your response capability as "world class" when your own spill plan admits that "as ice conditions persist, recovery operations will continue...until the conditions threaten the safe and effective use of vessels. At this point, all physical removal tactics will cease...Any oil that avoids containment, recovery, and/or combustion during freeze-up conditions will be quickly locked up beneath and on the ice, and eventually incorporated within ice and snow"? This seems to me an admission that if the conditions are too icy, certainly not unlikely in the Arctic, that Shell will be forced to give up attempts to cap and clean up a leaking well until the spring thaw.

**Peter Slaiby**

- A. Ben: There are two issues you are discussing. One on recovery of oil and the second on well intervention. There may well be limitations on oil that might become trapped beneath ice. I would emphasize however that we are working in open water conditions. In the unlikely scenario that we left oil under ice we would buoy and clean up in the spring. We see no issue that would prevent us from past October 31 with respect to capping and containment, our equipment and ice management equipment are designed to operate in ice (ice management vessels are classed as Polar Class 10). Also our conventional oil spill response equipment is ice-classed and would be used past this date.

**Anders79**

- Q. The arctic is one of the few unexplored places in the world. Should we not just let it be as it is? And now we have all the 5 arctic nations fighting to be able to claim the North Pole. This could be another cold war? 2ndly when you can't drill in the North Sea without an spill, what makes you think you can drill in the fragile arctic without an spill? Thirdly should you not be cleaning up all of your oil spills especially in the Niger delta before you start exploring and destroying another pristine area?

**Robert Blaauw**

- A. Dear Anders,  
As I answered before energy from the Arctic is needed to meet the rapidly growing global energy demand. The key is to operate responsibly and sustainably. I leave the political angle of your question unanswered, but personally I am not so worried about your statements.

**Green Tree**

- Q. Does Shell feel responsible to have a program, that the local communities benefits from this exploration? And what would that program be?

**Peter Scott**

- A. Hi Green Tree,  
A great question. Shell is committed to being a good neighbor wherever we operate. Using Alaska as an example, many jobs have already been created and will be created as part of our pre exploration and exploration programme; these include subsistence advisors, marine mammal observers and communication centre operators. There are also many Alaskan Native businesses that are contracted in our programmes, providing jobs and dividends for the local community. We have much more information on our website if you'd like to visit [www.shell.us/alaska](http://www.shell.us/alaska).

**HT**

Q. How will you be using the feedback from these webchats?

**Robert Blaauw**

A. Good question HT. We will publish everything on the public website and review the learnings for our business. Thanks

**David**

Q. Shell is currently actively pursuing permission to operate in the US arctic - in Alaska. Will Shell also pursue opportunities in other zones of the arctic, in Canada, Greenland, Norway, and Russia?

**Ron Cochrane**

A. Russia's Arctic offshore equals in size several times the North Sea. Shell welcomes the opportunity to partner Russian Companies in developing offshore projects

**Bharat**

Q. How would Shell drill a relief well in the event the first one goes out of control, particularly in the ice conditions that may be encountered late in the drilling season when the drilling system's capabilities may be less than the prevailing ice conditions?

**Peter Slaiby**

A. Bharat: We have ice classed equipment that can work in the conditions you have described. We will however cease all work on 31 October. One of our drilling rigs, the Kulluk, has worked well into December.

**Bo**

Q. would like to see SHELL make more use of AUVs. Have you considered using an AUV to document marine life using a fish sonar f.ex. An AUV can also be used to map an oil spill (may it never happen) using a chemical sniffer. Or what about mapping the ice from beneath to document hazards to your assets ??

**Peter Velez**

A. Shell utilizes AUV technology for many of its operations including scientific studies. We also utilize all available technology for oil spill monitoring and tracking.

**Aditya**

Q. What type of research is shell doing for disaster management in the arctic? Is shell working with any of the universities in the cold regions, that specialize in arctic engineering, to study effects disasters in these environments?

**Mitchell Winkler**

A. Aditya, we employ a systematic and disciplined approach to risk management including identification of hazards and mitigating controls: to allow us to operate safely and protect the environment. Safety is an area where we do not compete, but strive to lead; and work collaboratively with industry partners and leading academic / science institutes to advance practice.

**SBallal**

- Q. As you develop the Arctic and explore other oil and gas resources, will Shell also continue to explore alternative energy as intently?

**Joanna Cochrane**

- A. Thank you for your question. As energy demand increases and population grows, the world will need to invest heavily in all energy sources. Renewable energy sources will grow, but it will take a long time before they will get a significant portion of global energy demand. Shell takes a range of approaches to producing energy in a way that will ensure supplies for the future. In the renewable sector, our current focus is on biofuels as the best way to bring about reduction in CO2 emissions from transport.

**GBeckmann**

- Q. Are we really ready for the Arctic? Macondo, Gannett...

**Robert Blaauw**

- A. GBeckmann, yes, we are ready for the Arctic. The world needs the energy. There is a lot of it located in the Arctic. We have very robust plans for responsible operations in the Arctic.

**BenAyliffe**

- Q. Shell has claimed it has a fully functioning, state-of-the-art oil spill response system in place for Alaska. Can the company confirm that these plans have been tested successfully, on a large scale, during the Arctic autumn and winter months?

**Peter Velez**

- A. Shell has secured oil spill response equipment that is capable of responding to spills during our exploratory drilling season which is mid-July to end of October. This equipment can also operate beyond October as it is positioned on ice classed vessels and we have ice management vessels as part of our fleet.

**rossjo**

- Q. Hi. Interested to see and hear more about the new BOP you have developed since the BP disaster in the Gulf. I've looked through most of the information on your site, but would really like to see this BOP in action/ a bit more detail. Can you point me in the right direction?

**Peter Slaiby**

- A. Rossjo,  
Need to be clear in that Shell has not developed a new BOP stack. We will however comply with all of the new BOE regulations on BOP testing (NTL06/10) that are very specific on not only functional BOP testing, but material construction and modification history of these devices. Beyond what is mandated with the BOE, we will weekly functional test our BOP's as well as supply two sets of shear rams in the device.

### **Evgeny**

- Q. what are the key technical challenges your company is addressing at the moment with regards to operating in the Arctic waters?

### **Mitchell Winkler**

- A. Evgeny, our three key focuses for Arctic Technology are: 1) advancing capability to respond to oil spills in ice; 2) technology to reduce operating footprint; and 3) technology to allow us to operate safely and reliably in more severe ice conditions.

### **Kenan R.**

- Q. You mention Alaska Arctic a lot but I have question to Mr. Cochrane. Is there any plans to develop Russian Arctic too. A lot of companies are getting involved in Russian Arctic recently. I am originally from Azerbaijan and that is why this question is particular in interest for me

### **Ron Cochrane**

- A. Russia has significant resources, and we remain very interested in contributing to their future development. Partnership with national oil companies is part of our business model. As of today there are only two Russian companies operating in the Arctic offshore: Gazprom and Rosneft and we would welcome the opportunity to partner them to jointly develop these resources. Today we have two very successful joint venture operations with Gazprom in West Siberia and on Sakhalin Island

### **evedarwood**

- Q. Shell has received a lot of criticism for its lack of openness in dealing with the recent North Sea spill. Why should people believe anything it says about being prepared to deal with an accident in the Arctic?

### **Robert Blaauw**

- A. Thank you for your question evedarwood. Shell has been active in the Arctic since 1918 and we have a very good track record and gained valuable experience in our projects. Did you know that we have drilled for oil and gas in Cook Inlet in Alaska in the sixties and that these assets are still producing satisfactorily?

### **Mark Burnett**

- Q. What are the most significant regulatory barriers that need to be addressed to facilitate development of Arctic energy located offshore?

### **Peter Velez**

- A. There are numerous federal authorizations required to begin exploratory drilling in the Arctic OCS. These include air permits from the Environmental Protection Agency (EPA), approved Exploration Plans and Applications for Permit to Drill from the Department of Interior BOEMRE as well as authorizations under the Marine Mammal Protection Act issued by the National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS).

### **Burdie**

- Q. Why did the US Bureau of Ocean Management not ask you for a full environmental impact assessment? Did you lobby them the same way you lobbied the Canadian Government to relax safety regulations?

**Peter Slaiby**

- A. Burdie,  
With regard to a full environmental assessment we have indeed been asked and have completed an environmental assessment for all of our arctic Plans of Exploration by the BOE. This was true even before Macondo.

**martymlink**

- Q. Will this transcript be available to download after the webcast? I'd appreciate a copy for my research.

**Robert Blaauw**

- A. Yes martymlink, the transcript will be saved in the public website, accessible for all to review. We look forward to your feedback.

**JP Isham**

- Q. A lot of Corporate Social Responsibility "Greenwashing" still occurs with many global companies particularly highlighting their stewardship of the environment and in your case community engagement. Beyond the measure of jobs, what community engagement activities will Shell create to better the communities they are engaged with for health, education and environmental stewardship? What level of involvement will community leaders/activist have to participate in assessment, planning and fulfillment of your commitment to environmental stewardship and community engagement.

**Joanna Cochrane**

- A. Dear JP Isham, we do understand your concerns about Greenwashing, and we work hard to deliver sustainable outcomes on the ground to support our public statements. On the subject of community benefits beyond jobs and capacity building, we aim to be sensitive to the dependence of local communities on their ecosystems, and invite them as well as local and international NGOs and academics to be actively involved in our science and research programmes. In this way we can also bring traditional environmental knowledge to our assessments and to the co-creation of solutions that balance conservation with development.

**Gerard**

- Q. Could you give a status update of the regulatory hurdles for the startup in the ChukchiSea?

**Peter Velez**

- A. Please see the response from previous question. Additionally, Shell has submitted for approval our Revised Chukchi Sea Exploration Plan to the Department of Interior (DOI) BOEMRE where it is currently in review. Shell has submitted authorization requests needed for operation in the Chukchi and Beaufort Seas.

**Sander**

Q. hi! Thanks for this webchat session. About the oil retrieving project in the arctic. Do you intend to work solely for and within Shell (and of course together with local governments) or still need operational help from partner companies and or looking for joint ventures with other oil companies retrieving the oil together with them? Can we have an additional contact about this?

**Peter Slaiby**

A. Sandar,  
We have under contract a number of OSRO's and they are of course part of our plans. The difference in AK is that because of our remote location Shell has employed a group of Shell-owned response assets that would be deployed within 60 minutes of an incident.

**SPH1987**

Q. It's my understanding that your company conducts limited controlled spills in foreign waters to better understand the properties of spilled oil in the environment. Can you share with us how these activities have improved oil spill response capabilities?

**Mitchell Winkler**

A. SPH1987, Shell works collaboratively with Industry partners, regulatory agencies, and academic / scientific institutes to advance oil spill response capability. Details from the recently completed SINTEF oil in ice JIP can be found at <http://www.sintef.no/projectweb/JIP-Oil-In-Ice/>  
The reports found at this website document several experimental spills conducted offshore Svalbard.

**Mark Burnett**

Q. What are Shell's views on exploration opportunities and potential in the Barents Sea?

**Robert Blaauw**

A. Thank you for your question Mark. Especially since the agreement between Russia and Norway on their marine border in the Barents Sea we will keenly follow licensing activities in that part of the world.

**jessica.chute**

Q. Your Beaufort Sea spill plan says you will recover 95% of spilled oil. That's an unprecedented recovery rate. Skimmers and booms recovered 3% of spilled oil after the Gulf of Mexico disaster and 8% after the Exxon spill. How do you justify your 95% recovery rate? What has been the recovery rate of other spills for which Shell has worked clean-up? How much are you recovering in the North Sea right now?

**Peter Velez**

A. The recovery rate is dependent on the response tool technique. We have demonstrated that for in situ burning, that the oil collected by the fire boom can be ignited and burned with efficiencies as high as 95%.

**Stromsnas**

Q. When you say that you have response equipment that can work in ice conditions, what kind of equipment is that?

**Mitchell Winkler**

A. Stromsnas, Examples of equipment include skimmers and booms. These skimmers, for example, have specifically developed and optimized for working in cold environments through lab and field testing.

**karensund**

Q. If the Arctic is more gas prone - how do you plan to capitalise on this in the best way?

**Ron Cochrane**

A. The Arctic is a long term growth area for the industry. To date Arctic operations have produced 40 billion barrels of oil and 1,100 trillion cubic feet of gas. The 2008 US Geological survey estimates that there are around 400 billion barrels of oil equivalents yet to find. These hydrocarbon resources could make a substantial contribution to secure affordable energy supplies as the time of "easy oil" comes to an end.

**Mr. P.**

Q. Does Shell think smaller (~1000 barrels) spills from the Arctic projects are an acceptable risk? According to your website apparently there is a significant risk (one in five / one in four) that these type spills will occur due to Shells operations in the Arctic.

**Peter Slaiby**

A. Mr P, no oil spill is acceptable. We have put together an extensive oil spill response plan that not only addresses this type of spill but spills that are significantly larger than this. We do this by dedicating assets to our program, called a C-Plan (contingency plan).

**Green Tree**

Q. In this plan, does Shell also include, to bring back the ecological environment after exploration? Does Shell think about this way of working (or bring back the environment)?

**Joanna Cochrane**

A. Dear Green Tree, if exploration is successful, we will then enter an operational phase for many years. We believe that we can do this without causing damage to the environment, and that we can bring some positive outcomes by investing in conservation initiatives and working with communities to protect their ecosystem. Having said that, at the end of the project lifetime, when we come to decommissioning the plant, we will fully reinstate our sites to the condition required by the regulator, and in the interests of local communities.

**Rob**

Q. Do the relevant regulators and government agencies in Greenland have experience with drilling and exploration? If not how can they control your business?

**Robert Blaauw**

A. Thank you Rob, in our view regulators and authorities are fully knowledgeable of all Arctic issues related to oil and gas exploration. For instance they have adopted the NORSOK

standards for operating in the Arctic. We have frequent and positive dialogue with Greenland authorities and we are impressed how serious they take the business.

**Andrei**

- Q. Is there a minimum and/or maximum length for Shell Employees and Contractors to stay at Arctic conditions?

**Mitchell Winkler**

- A. Andrei, Personnel health and safety are issues that we take very seriously and we rely on industry guidelines and our own operating experience to establish safe exposure conditions and criteria.

**anchoragebb**

- Q. Have you actually done a spill response drill in October ice and weather conditions in the Beaufort or Chukchi Sea?

**Peter Velez**

- A. We have performed drills with our dedicated equipment during these months in similar conditions. As we have not performed any exploratory drilling to date, we have done these drills under similar conditions in Alaska.

**SP**

- Q. Why should the American public be assured that Shell can drill safely in the Arctic or that Shell can respond adequately if there is a spill in the, when the company has failed to do both in the North Sea which by all accounts is a less challenging environment (ie you are not having to address the type ice and hurricane force gales in the North Sea that you would face in the Arctic).

**Peter Slaiby**

- A. SP,  
I have worked in both the North Sea and the Arctic. In general the conditions that are more severe in the North Sea (both wind and wave) than we will see in the Beaufort and Chukchi, This should not minimize the met-ocean issue in either and we will only employ equipment capable of working in these conditions.

**nickargus**

- Q. Shell clearly has some negative perceptions to overcome about drilling in the Arctic -- what is your strategy for tackling this problem and overcoming negative perceptions?

**Peter Scott**

- A. Hi Nick, thanks for your question. A fundamental part of our strategy is to communicate about all the work we are doing to ensure we can explore and develop responsibly. For instance communicating about our preventative measures and unprecedented oil spill response capacity for exploration in Alaska or about the huge amount of scientific research that has been done on the Beaufort and Chukchi Seas. Another part of our strategy is to have open dialogues (such as this webchat) to explore the issues and concerns that people may have. We also remind people that Arctic operations are not new. The world has already

produced some 40 billion barrels of oil and 1,100 trillion cubic feet of gas. Even in the Alaskan Arctic, more than 30 wells have already been safely drilled.

**Petercville**

- Q. The oil reserves in the Arctic will only feed world demand for 3 years. Given that the scientific consensus says that we need to act NOW in order to stop dangerous climate change, wouldn't it just be better to leave the black stuff in the ground?

**Robert Blaauw**

- A. Petercville. The total yet to be found hydrocarbon resources in the Arctic amount to some 400 billion boe according to the USGS; so that is some 10 years. Then also consider the already resources which are good for another couple of years. Let's responsibly explore and assess the real potential of the Arctic.

**cleutwiler**

- Q. If you plan to respond within an hour to any spill, where will these responders be stationed? Where will those responders live? Go to the bathroom? Isn't the nearest Coast Guard station 1000 miles away?

**Peter Velez**

- A. Shell's dedicated oil spill response equipment is located within an hour of the drilling location and is fully staffed to respond to any spill in less than one hour. The responders will be on board the oil spill response vessels on a 24/7 basis. Shell is responsible by regulation to provide all oil spill response equipment. The USCG is responsible for the oversight of the oil spill response operations for which they are fully capable, not for providing equipment.

**James**

- Q. What is Shell doing to ensure there will be a stream of staff available over the coming years who are competent in Arctic engineering, environmental and safety?

**Mitchell Winkler**

- A. James, this is a great question. You might see the earlier response on this similar topic. Internally, we rely upon our staff development processes to develop and grow experienced Arctic practitioners. Externally, we support programs, such as with the Norwegian technical university at Trondheim (NTNU), where specialized courses of study are offered.

**vickytizer**

- Q. The UK government has said that an oil spill in the Arctic can't be cleaned up. Can you confirm that you disagree with this assessment?

**Peter Slaiby**

- A. Vicky, I don't have a handle on what UK report you are quoting. The US government does believe we can clean up a spill in the Arctic. Shell's arctic spill response plan (called the C-Plan) has been approved by the BOE/MMS on a number of occasions. It has been challenged in court and found sufficient on a number of occasions as well. Our plan has also been reviewed by the US Coast Guard on three occasions.

**BenAyliffe**

- Q. Robert, re Shell's history in Alaska, I think for the sake of openness, as your Alaska website says (<http://www-static.shell.com/static/usa/downloads/2010/alaska/timeline3.pdf>) that in 1918 "Shell geologists first look at Alaska's oil possibilities. It was only in "1963 Shell drills the first offshore oil field in Alaska: Middle Ground Shoal No. 1 discovery well in Cook Inlet."

**Robert Blaauw**

- A. BenAyliffe, thanks for your good and factual observations. Also during the early exploration phases we learnt about the environment and the Arctic inhabitants and their unique lifestyle.

**Peter Velez**

- A. Shell has submitted requests for authorizations under the Marine Mammal Protection Act for our activities. These authorizations take into account potential impacts to both marine resources and subsistence of these resources. The National Marine Fisheries Service and the US Fish and Wildlife Service are responsible for protecting these species and their availability for subsistence use.

**emweeks**

- Q. Hi Robert & all,  
Many Beaufort & Chukchi Sea Alaskans are concerned about the impact that drilling would have on local threatened and endangered wildlife populations (bowhead whale/polar bears/elk) and how that could impact subsistence values. Do you all anticipate the approval of proposed exploratory wells will be slowed by the acquisition of permits regarding this issue?

**Peter Velez**

- A. This question has already been answered.

**emweeks**

- Q. Dear Robert & all,  
Thanks for hosting the chat. Even if the US Geological Survey's estimates are correct and the Arctic does hold 90 billion barrels of oil, this would only provide three year's worth of global supply. Is risking the Arctic for a three-year extension acceptable?

**Peter Scott**

- A. Hi Emweeks, The 2008 US Geological Survey actually estimated that the Arctic contains 13% of the world's Yet to Find oil, 30% of the world's Yet to Find gas, and 20% of the Yet to Find natural gas liquids resources on the planet, totalling around 400 billion barrels of oil equivalents, not 90 billion you suggest. These hydrocarbon resources could make a substantial contribution to secure and affordable energy supplies as the time of "easy oil" comes to an end. These Arctic hydrocarbon volumes are equivalent to some 10 years of global demand at current consumption rates. It has to be remembered that extensive oil and gas activity has occurred in the Arctic, with much oil and gas produced and much remaining to be produced. To date Arctic operations have produced some 40 billion barrels of oil and 1,100 trillion cubic feet of gas. Currently, the Arctic produces about 10% of the world's oil and 25% of its gas, altogether some 8 million barrel of oil equivalent per day, of which the

majority is produced in the Russian Arctic onshore. The Arctic, like any unique area has to be developed responsibly and we recognise that our license to operate depends on our commitment to to operating safely and with a respect for communities and the environment.

**Burdie**

- Q. Assuming you find oil without causing a spill at the drilling stage, can I ask you about your plans for production installations? They will of necessity have a much longer lifetime/presence. How to you intend to export the oil from the production facility? Are you going to store over the winter months or export using pipelines?

**Mitchell Winkler**

- A. Burdie, our approach is to look at a multitude of options at the exploration stage, to cater to a variety of outcomes and to allow us to see the range of tradeoffs. At this juncture it's too soon to comment on specific solutions.

**cwildman**

- Q. How does Shell plan to attract and maintain qualified and experienced talent to uphold your visions of safety in the Arctic? As this is a fairly untapped geographical region and experience may be limited, in an ever-decreasing pool of supply, how does Shell anticipate this will be dealt with?

**Ron Cochrane**

- A. A key component of Shell's value proposition is the development and training of local talent. We have ongoing cooperation agreements with a number of universities, with objective to create interest and develop talent to work in the industry and hopefully for Shell. We have successfully developed HSE professionals in our joint venture in Sakhalin Island. Sakhalin Energy has an excellent safety record.

**Deanna Conners**

- Q. Marine Protected Areas (MPAs) are valuable conservation tools for sustainably managing ecosystems and fisheries. Has Shell ever supported the development of an MPA or would Shell consider supporting the development of an MPA in critical marine habitats adjacent to ocean drilling sites as part of a spill mitigation plan? Such designated MPAs would help to prioritize resources in the event of an oil spill and could aid in the recovery of ecosystems after an oil spill.

**Joanna Cochrane**

- A. Deanna, thanks for this question. Shell has not to my knowledge been involved in the development of a Marine Protected Area, but I see no reason why we would not be willing to do so in the future in areas where we operate. In fact, we believe that oil and gas development can play a positive role in Protected Areas, by controlling access, conducting monitoring and research programmes, and helping to develop and implement management plans.

*Due to pressure of time on the day we would like to add more at this time in respect for the question.*

MPA as a system for planning of multiple human activities in harmony with the needs of local inhabitants and the environment now and in the future is in principle a sound system. The success of it entirely depends on the execution in an inclusive, integrated, transparent, adaptive manner with clear objectives for economic development and environmental issues

**LaurensKuiper**

Q. What are the expected oil reserves in the Arctic region?

**Peter Scott**

A. Hi Lauren, The 2008 US Geological Survey estimated that the Arctic contains 13% of the world's Yet to Find oil, 30% of the world's Yet to Find gas, and 20% of the Yet to Find natural gas liquids resources on the planet, totalling around 400 billion barrels of oil equivalents, not 90 billion as stated.

**vickytizer**

Q. If there was a spill in the Arctic, how many barrels a day could Shell cope with, bearing in mind that Deep water Horizon averaged 55,000 barrels a day?

**Peter Slaiby**

A. Vicky, good question, you are an apt pupil. We have complied (and it won't only be Shell but all of the industry) with the BOE (the old MMS) regulations on the calculation of worst case discharge. And this means we will have assets in place to collect oil by mechanical means, not even counting things like in-situ burning.

**Kim - Greenpeace**

Q. The maximum estimates say that the Arctic holds 90 billion barrels of oil, this would only provide three year's worth of global supply. Is risking destroying the very special ecosystem of the Arctic forever acceptable when it means the world can use oil 3 years longer?

**Peter Scott**

A. Hi Kim, if you look a few minutes earlier on the responses, I answered this question for someone else. Thanks for the question.

**rossjo**

Q. We hear and see 'working with communities to protect their ecosystem' a lot. If Shell destroys the ecosystem these communities depend on, what compensation have you planned for them in this scenario? And, in terms of wildlife and the destruction of an ecosystem, how long will shell be committed to its restoration and how much money will be dedicated to it?

**Robert Blaauw**

A. rossjo, thank you for your question. Our plans are based on making a valuable contribution to local communities and the environment they depend on. We have full respect for traditional lifestyles, traditional ecological knowledge and at the same time provide development opportunities for the communities.

**hugocologic**

- Q. Hi my name is Hugo de Armas I am very concerned about BP needed 6,500 ships and 50,000 people to plug the Deepwater Horizon well in the Gulf of Mexico, and it cost them over £20bn. Given that dealing with an Arctic spill would be even more challenging, can Shell confirm it will have similar resources on stand-by in Alaska should it drill in the Arctic?  
Thanks.

**Peter Velez**

- A. The amount of resources needed to respond to a spill will not be the same as the Deepwater Horizon spill. Shell will have spill response assets on site to respond to the worst case spill for the locations we plan to drill.

**hugocologic**

- Q. Hi my name is Hugo de Armas. I am very concerned that if BP needed 6,500 ships and 50,000 people to plug the Deepwater Horizon well in the Gulf of Mexico, and it cost them over £20bn. Given that dealing with an Arctic spill would be even more challenging, can Shell confirm it will have similar resources on stand-by in Alaska should it drill in the Arctic?  
Thanks

**Peter Velez**

- A. This question was already answered.

**Cholley**

- Q. In regard to Burdie's question, it may be helpful if you differentiate between an Environmental Impact Statement and Environmental Assessment (a less rigorous review than an EIS). Shell has not completed an EIS for exploration.

**Joanna Cochrane**

- A. Cholley and Burdie, yes terminology can cause confusion. To Shell, an Environmental, Social and Health Impact Assessment (ESHIA) is a formal process that leads to the production of an ESHA report for regulatory, financing and stakeholder consultation purposes. This report is sometimes called an Environmental Impact Statement (EIS). Environmental Assessment is as you say a general term for reviewing impacts and can be done at any stage and for any purpose.

**hugocologic**

- Q. What do you think about the US government claimed that there is a one-in-five chance of a spill of more than 1,000 barrels over the lifetime of just one drilling block in the Beaufort Sea. Does Shell think this is an acceptable risk, given the pristine nature of the Alaskan environment? thanks

**Peter Scott**

- A. Hi Hugo, thanks for the question. While the figure you quote is based on the estimated resource and a time period for development, it is not based on the history of safe operations in the Arctic. In total, more than 500 exploratory, production, and disposal wells have been drilled in the Arctic waters of Alaska, Canada, Norway, and Russia. More than 150 wells have been drilled offshore in Arctic waters of the US and Canada and more than 50 wells have

been drilled in the US Beaufort and Chukchi Seas. Shell has drilled 33 wells in Alaska, 32 of which were offshore. During these 40 years of offshore operations, there has never been an oil spill caused by a well blowout in state or federal waters in the Alaskan and Canadian Arctic. However, we are not complacent and we have used our extensive global wells and offshore experience to create one of the most comprehensive spill prevention and control plans ever developed for an exploration program. It starts with state of the art methods and then is tailored specifically for Arctic conditions based on a thorough investigation of what works and what doesn't.

#### **John Kelly**

- Q. Given the current events in the North Sea and genuine concern by communities and NGO's would it not be prudent for Shell to invest in the Arctic equivalent of the Gulf of Mexico response consortium? It's all well and good having plans and talking the talk but external stakeholders want proof - How can Shell offer this to bring on side arctic communities who stand to lose everything in a Macondo style disaster?

#### **Peter Slaiby**

- A. John, we indeed have both a number of Shell owned assets as well as membership in a group of OSRO's. Please check out our C-Plan, it is very complete. Village corps are part of this plan, AES and UIC as examples. We will welcome other oil companies when they wish to participate.

#### **Oceana\_nfournier**

- Q. How does Shell address the impacts of seismic tests on marine life? Evidences are growing about the negative effects on marine mammals for instance and I know that the Arctic region hosts lots of these species (migration route, breeding and reproduction area etc). Thanks.

#### **Mitchell Winkler**

- A. Oceana\_nfournier, we conduct sound source tests before commencing seismic surveys. Then, we use Marine Mammal Observers (MMOs) to keep watch for the presence of marine mammals in the survey area. These requirements as well as those for curtailing operations, e.g., in the case of single mammals or mother and juveniles, are typically regulatory stipulations.

#### **Aeonian**

- Q. Hello, I'm David from Germany. I follow the debate about oil drilling very worried - because of the climate change. Even the today known oil fields must not be used completely for being aware of climate collapse. I don't think new drilling at all is responsible to protect our world. Why is Shell doing this? Only for the fast money?

#### **Robert Blaauw**

- A. Hi David, thank you for your question, the world needs a diverse supply of energy to meet global demand. Shell's business includes oil and gas, chemicals, biofuels and wind. Renewables will become more and more important but it will take quite some time to increase their market share.

**Burdie**

- Q. Firstly, can you tell me whether you have the resources to manage a major oil spill in the Arctic, considering that BP needed 50,000 people and over 6,000 ships to clear up (and it is still not fully cleared up) the spill from the Deepwater Horizon last year? Remembering that this is a much harsher and untested environment that you plan to work in.

**Peter Scott**

- A. Hi Burdie, I think this question has been answered.

**Julie**

- Q. What provision has Shell made for dealing with on or offshore leaks which may occur outside the ice-free drilling season. I'm thinking of the recent leaks in Siberia which may have gone undetected for some time during the winter.

**Peter Velez**

- A. Shell will only be drilling exploratory wells during the open water season in Alaska during 2012-13. After the well is drilled and evaluated with logging tools, it will be permanently capped per regulatory requirements. There will not be any facilities or flowpaths for a leak to occur.

**Nichatton**

- Q. At 16:32 Ron Cochrane posted that "Shell will be drilling in the summer months when the seas are largely ice free with 24 hour daylight and weather conditions that are generally benign." As per Fukushima and other parts in the world, exceptional natural circumstances and 'freak' weather conditions (La Nina, El Niño) have been happening more and more often. Will you consider freak weather condition in your risk assessment, instead of assuming that weather conditions are "generally benign". In other words, your operations could be exposed to weather condition you are not planning and your drilling plans could be inadequate, should the weather conditions change in the next 10 years.

**Ron Cochrane**

- A. As part of our commitment to HSSE and ensuring robust solutions we take into consideration extreme weather conditions.

**Elsa Nuunaviit**

- Q. Why do you not take seriously the Superstring technology solution for developing the Deepwater Arctic? I believe that it creates no harmful gas emissions, and where one does not need either a pipeline or a platform. Wouldn't this be worth considering?

**Mitchell Winkler**

- A. Elsa Nuunaviit, We are very open to novel solutions and are familiar with the "Superstring " concept.

**BenAyliffe**

- Q. Thank you Peter. A quick follow up question to your explanation: can you confirm then that Shell has successfully capped a leaking well in the Arctic during winter ice conditions?

**Peter Velez**

- A. Shell has drilled wells in the Arctic and we have not had any leaks due to our robust well design, procedures, and practices.

**Pawel**

- Q. You have just said that “All key Arctic and sub-Arctic basins are of interest to us” - but should you really talk about “Arctic resources” creating the impression that perhaps also the North Pole is include (= never ending territorial disputes also mentioned above) or rather stick in your communication to “country specific” locations to keep things simple and clear?

**Robert Blaauw**

- A. Pawel, that is a good observation. We talk Arctic as Arctic locales have common challenges. Maybe you can check with the USGS but I don't think the North Pole in itself is very prospective for oil and gas.

**martymlink**

- Q. A question for Joanna - what measures are Shell taking to minimise their environmental footprint in the arctic? Do you share experience and innovation across operators e.g. BP and their ice construction expertise, in order to reduce your environmental impact?

**Joanna Cochrane**

- A. Anders, thanks for your question. Shell as well as BP and other major operators, are involved in a number of Joint Industry Programmes in relation to Spill Reponse in ice, Sound and Marine Life, Arctic Communities etc. When more than one operator is present in a specific location we explore opportunities for sharing research, facilities etc

**lizvandenzen**

- Q. Your Beaufort Sea spill plan says you will recover 95% of spilled oil. That's an unprecedented recovery rate. Skimmers and booms recovered 3% of spilled oil after the Gulf of Mexico disaster and 8% after the Exxon spill. How do you justify your 95% recovery rate? What has been the recovery rate of other spills for which Shell has worked clean-up? How much are you recovering in the North Sea right now?

**Peter Velez**

- A. This question was previously answered.

**jessica.chute**

- Q. That's an unprecedented recovery rate. Skimmers and booms recovered 3% of spilled oil after the Gulf of Mexico disaster and 8% after the Exxon spill. How do you justify your 95% recovery rate? What has been the recovery rate of other spills for which Shell has worked clean-up? How much are you recovering in the North Sea right now?

**Peter Velez**

- A. This question was previously answered.

**hugocologic**

- Q. Also what is your opinion about the oil industry spill plans for the Arctic have been described as "thoroughly inadequate" and based on "imagineering not engineering", while the US Coastguard has admitted that "we have extremely limited Arctic response capabilities". Given this, what proof is there that Shell has "a proven record of meeting the challenges of drilling under extreme Arctic conditions"?

**Peter Scott**

- A. Hugo, The State and Federal Regulators do not consider Shells spill plans as "thoroughly inadequate". The oil spill contingency plans have been subject to thorough reviews by Municipal, State and Federal Regulators and local and regional stakeholders. The US Coast Guard does not recover oil. But, it does form a centralized command following a major marine incident. This is eminently doable in Alaska. Shell purpose-built an on-site oil spill response fleet, including a subsea containment system, knowing the Coast Guard would not be available to physically respond to an incident in the Arctic. Shell has built up extensive operating and development experience in the Arctic and sub-Arctic regions. Drilling exploration wells in the offshore Alaskan Arctic is not new for Shell. Shell drilled multiple wells in the Chukchi and Beaufort Seas in the 1980s and 1990s. In fact, Shell has decades of experience drilling in challenging conditions throughout Alaska, including in the Bering Sea, St. George Basin, Gulf of Alaska and Cook Inlet, where Shell installed Alaska's first platforms all without incident. More recently we have developed – and are developing – a number of major joint venture projects with our partners in Norway, Russia and Kazakhstan – in conditions of high environmental sensitivity and seasonal ice cover.

**Kenan R.**

- Q. Thank you for organizer this web chat and inviting me along. I appreciate this opportunity. Do not you think that the development of the Arctic will lead to further melting of Arctic ice. This may sound simple but I am a geologist and spend considerable amount time on offshore platforms and I can see how much this will affect the temperature around the platforms. Is there any technologies which can eliminate or isolate heat of the platform (engines, equipments etc) to affect temperatures? Is there any particular technologies Shell is trying to develop to solve this problem. Sincerely Kenan R. Aliyev.

**Mitchell Winkler**

- A. Kenan R., Global warming and protection of the environment are issues that Shell takes very seriously. We see the "melting ice" in the Arctic as caused by the larger warming of the Earth; and while we would strive to minimize impacts from our operations, the heat that our operations would generate will have little impact on the changes being seen in the Arctic.

**Robert Blaauw**

Thank you so much for joining us today. We hope you enjoyed the webchat and that we've provided answers to some of your questions. The team really enjoyed reading your thought-provoking contributions. We'd love to hear your feedback on the session - please fill in our [survey here](#). If you'd like to continue the conversation please go the [Shell Dialogues Forum](#).

Robert, Phil, Joanna, Pete, Peter, Peter, Ron, Mitch