BEFORE THE

125th MEETING OF THE

NATIONAL PETROLEUM COUNCIL

TRANSCRIPT OF PROCEEDINGS

27 March 2015
Washington, D.C. USA

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I N D E X

BEFORE THE

125th MEETING OF THE

NATIONAL PETROLEUM COUNCIL

Meeting was held pursuant to Notice at Washington, D.C., USA, commencing on the 27th day of March, 2015.

Present: As noted in the Appearances Pages.

TRANSCRIPT OF PROCEEDINGS

09:07:19 THE CHAIR: This is great. Everyone is so prompt today.

Must be a Friday. But, anyway, good morning, Ladies and Gentlemen.

09:07:41 I'm Chuck Davidson, Chairman of the National Petroleum Council, and I'd like to call the one-hundred and twenty-fifth meeting of this Council to Order. So, welcome to all of you, members of the Council, honored guests, members of the press.

09:07:54 We really have a productive and informative meeting for ourselves today. Before I get started, just a quick safety announcement.

With this being, this room being on the

lobby level it's not going to be too complicated. There's no scheduled fire alarms today, so if the alarm sounds, we'll evacuate through the doors in the back, and you can go either of two directions: out to the courtyard, or out through the lobby.

09:08:21

And, then, our muster point is the Capitol Hilton Hotel just across the street, across K Street. So, again, just a reminder to keep ourselves safe.

09:09:09

And, now, if there's no objection, I will dispense with the calling of the role, and for members of the Council to check in inside the Chandelier Room there; will serve as our official attendance record for this meeting. Any members or

09:09:22

observer for a member who has not checked in, please do so before you leave so we'll have a (sic) accurate record of who was in attendance today.

We also have an extended audience with us today joining by webcast so that they'll be able

09:09:39

to follow along with the proceedings with us as well. At the end of the meeting the presentation slides, and, if approved, the Arctic Research Study Draft Final Report will be posted on the NPC's web

site.

Now I'd like to now introduce, for the Record, the participants at our head table. As many of you know, Secretary of Energy Moniz is
09:10:06 deeply involved in the Iranian talks.

He's unable to be with us this morning as he's with the U.S. delegation in Swisserland as the negotiations continue. On my right, on my right -- Having trouble pronouncing here. -- we're
09:10:24 joined by Assistant Secretary Elizabeth Sherwood-Randall, who is serving as the Council's Acting Government Cochair today.

She is also the Government Cochair of the NPC Arctic Research Committee.

09:10:39 Liz, we're really pleased that you're here with us today both as a, in really both your capacities. So, thank you so much.

Next is the Chair of the Arctic Research Committee, Rex Tillerson, who, in addition to that
09:10:54 role, serves as Vice Chair of the National Petroleum Council.

And, next to Rick, next to Rex is Chris Smith, Assistant Secretary for Fossil Energy.

And, next to Chris is Marshall Nichols, Executive Director of the Council.

So, our primary business this morning is to review the work of the NPC's Committee on Arctic Research, discuss their findings and recommendations, and vote on the adoption of their proposed Final Report as the Council's response to the Secretaries request.

09:11:16

Many members, many, many members of the Council have provided outstanding leadership and involvement and commitments of their own personal time and their organization's resources to help respond to the Secretary's request for advice on this very important issue.

09:11:31

09:11:47

Rex Tillerson, Chair of the Committee on Arctic Research, will kick off the presentation, the results of this comprehensive study.

So, I'll turn it over to you, Rex.

CONSIDERATION OF THE PROPOSED FINAL REPORT OF THE NPC COMMITTEE ON ARCTIC RESEARCH:

09:11:55

MR. TILLERSON: Well, thanks, Chuck.

And, it really is a -- welcome the opportunity to represent the work of this Study

Group, which has been broad in its scope, deep in its investigation, and I think you'll, you'll find is going to be very useful in terms of informing a number of interested parties on the subject.

09:12:21 If we can, though, go to the, the first slide. I don't know that I have control.

There. Here it is.

I do have control. We'll see if I can operate the control.

09:12:33 That didn't do anything. Let's try a different one.

Aah, there we go. Need remedial training in slide manipulation.

So, I think, as most of the members of

09:12:46 the Council are aware, Secretary Moniz, back in his letter of October, 2013, did request the Council to conduct a study, and we've included the, an excerpt quote from his letter, which I, I'm just going did read verbatim.

09:13:03 What research should the Department of Energy pursue and what technology constraints must be addressed to ensure prudent development of Arctic oil and gas resources while advancing U.S.

energy and economic security and ensuring environmental stewardship?

So, that was the fundamental question that was put before the Council. I think, and, as the Secretary noted in his letter, part of what prompted his request, and I think it was a very timely request, was the upcoming assumption by the United States of the chairmanship of the Arctic Council.

09:13:41 And, the Secretary also, I think, when he was here last meeting with the Council, also referred to the Energy Department's quadrennial energy review which was being undertaken. So, I think, obviously, he felt this was an appropriate

09:13:52 time to put these questions before the Council.

So, little bit of context I think for the study. And, and, there's much of this contained in the study, itself, but I think there is, today, an increasing awareness that conditions

09:14:07 in the Arctic are undergoing some level of change in terms of free ice conditions, how ice is changing, access to the Arctic, not just in the U.S., but globally.

And, so, there are growing interests in the Arctic from the standpoint of what economic opportunities that may begin to open, not just in natural resource development, but in trade development, as well, but a recognition, also, of concerns about the culture of Arctic peoples, and how that is being impacted by this changing environment as well.

09:14:30

Other countries clearly are moving forward in their own investigation and development of the Arctic. Arctic nations, themselves, but also nations who don't have direct Arctic territories are also moving forward with their interest in and investigation and technologies that allow access to the Arctic to be used either for economic trade or for military purposes.

09:14:42

09:14:58

The Arctic does contain, I think as many of you know, the largest remaining undiscovered potential or unconventional oil and natural gas on the globe. About 25 percent of the world's remaining undiscovered conventional oil the natural gas potential is in the Arctic.

09:15:16

And, a large provide portion of that is

in the U.S. waters of the Arctic, in particular when it comes to undiscovered oil potential. The industry does have a long history of activity and successful development in the Arctic, globally
09:16:05 dating back to the 1920s, but in particular, in the U.S. offshore Arctic dating back to the 1970s and 1980s.

So, technology does exist to safely explore for and develop this potential. And, that
09:16:38 technology has, in fact, been demonstrated with developments that have progressed in the Arctic while maintaining environmental stewardship.

Obviously, further development of the Arctic, I think, as recognized by most, would
09:16:51 enhance both the United States national security, our economic security by enhancing our energy security. They all are interrelated.

And, in recognition of this interest, though, there are a number of differing views over
09:17:06 how we should proceed, and a number of differing views over areas of concern as we further progress with development in the Arctic. And, so, it's really in this context that an integrated work plan

with a diverse and experienced study team was needed.

And, that really drove how we constructed the approach to this study. So, this

09:17:28 is a reminder of the scope.

I think I've shared this with you when we last met. And, we really broke the study into two principal components, what we call the print and development scope, which was to provide context

09:17:43 for then addressing this, the Secretary's specific questions around research and technology.

And, in the predevelopment scope, again, we developed this context around the history of the Arctic, what has already been demonstrated. We

09:17:57 provide both a global and a U.S. perspective, but clearly the study concentrates on the U.S.

And, we did make some observations on the onshore and the offshore, although, as you see in the study, we focused most of the attention on

09:18:15 the offshore because that's where most of the resource opportunity exists today.

In the proven-development part of the study there are four chapters, which are shown on

the right, which further develop these themes, including the last, which is policy and regulatory opportunities to promote crude development. And, I want to, I want to be clear on all of this.

09:18:56 As you all know, the Council is not an advocacy organization, and so when we dealt with these policy and regulatory questions we were really looking at: How does technology impact upon or enable regulatory consideration? And, make some

09:19:09 observations about how the current framework of Regulations around the Arctic, we believe, deserve a review and an updating, taking into consideration how technology has changed and advanced over the last several years, and that technology can be used

09:19:25 to inform a review and update of those Regulations.

The second part of the study, the research and technology scope, then, again, the emphasis, as I indicated, was given to potential offshore because we see that as the largest prize,

09:19:41 the most likely economic development. And, most of the observations we would make in the offshore, you could easily translate those to the onshore as well.

So, we looked at the research and technology needs, what the current state of technology research is, recognition that throughout the many, many decades of activity in the Arctic, 09:20:02 research technology and development has been a (sic) ongoing quest of the, of the industry, and that has continued on a very continuous basis.

We make a lot of -- In that regard we make observations where we see potential 09:20:16 opportunities for further advancements and recommendations and priorities for the U.S. Government.

So, the Technology and Research part of the study is then divided into subparts, and you 09:20:28 can see there are six chapters. Four of the chapters deal with the, what I would call the engineering, technical, and, and operating departments.

And, then we have two chapters that deal 09:20:39 with the ecological environment and the human environment in terms of: Are there additional research opportunities around species, subspecies, and are there additional research opportunities or

gaps around how development impacts upon Native people's that, that reside in the Arctic environment, and how these interact with one another.

09:21:02 The study then was organized, as you see on this, this chart. I chair the Study Committee.

Carol Lloyd, Vice President of Exxon Mobil Upstream Research Company is Chair of the Coordinating Subcommittee. And, then you see the

09:21:36 three subgroups around the scope that I just described.

So, at this point I want to turn it over to Carol and let her pick it up and take you through a more detailed review of the contents of

09:21:51 the study.

Carol.

MS. LLOYD: Thank you. Thank you, Rex.

Good morning, everyone, and, and welcome. I'm going to begin by thanking the Team

09:22:05 that I'm standing up here representing, the Coordinating Subcommittee.

Firstly I would like to acknowledge my Government Cochair, Paula Gant, who's with me here

today; our assistants, Doug Foyt (phonetic) and Nancy Johnson; our Writing Team Leader, Tom Eisenberg (phonetic), and our secretary, John Guy (phonetic), from the National Petroleum Council.

09:22:45 As Rex outlined, we broke the study into three parts, and we had three different Chairs of those Work Groups. The Predevelopment Team was led by Chevron, Mr. Bill Scott, and assisted by Steven Laws (phonetic), from ExxonMobil.

09:23:27 The Engineering Research chapters were led by Jed Hamilton of ExxonMobil, assisted by many different companies, notably Shell and Chevron who led significant chapters. And, then, finally, the Ecology and Environment chapters were led by Dr.

09:23:46 Michael Macrander, from Shell, assisted by many companies and regulatory agencies, environmental organizations, and the industry.

Additionally, I would like to recognize the contributions from the many companies that

09:24:23 helped us out with significant contributions. You know who you are, Rochelle, Schlumberger, Fluor, Goldman Global Strategies, Stafford Oil, BP, CSIS.

And, a special thanks to the members of

your team from Alaska who traveled many miles to join us as we conducted our deliberations and dealt with the time change, many of them on the phone with numerous cups of coffee, specifically Richard
09:25:12 Glenn and Drew Pierce, who served on the Coordinating Subcommittee. And, they're here with us today.

So, Team, thank you very much. It's my pressure to stand up here and represent your work.
09:25:22 In the time that I have with you today I'm going to cover four topics. I'm going to briefly cover the process that we used to conduct the study.

Then I will go into the report key
09:25:31 findings, then the recommendations, and then I will move on to, to next steps. And, then I'll turn the floor back to Mr. Tillerson for some discussion, further discussion.

So, in the next slide -- All right. So,
09:25:47 let me use this slide to describe briefly the process and the diversity of the team.

The Coordinating Subcommittee had 26 team members from 20 different organizations, and

you can see that we were roughly evenly split between industry and nonindustry participants. Beginning in May of 2014, after we had a Work Plan which was agreed on by the Study Committee, we
09:26:12 began meeting every month.

And, we met every month from May until this month, and even over Thanksgiving and, and Christmas break. The Coordinating Subcommittee met to deliberate on the technical work products which
09:26:26 were being developed by the technology staff and to provide steerage as we worked along, and then later to synthesize these findings into the Executive Summary which we're presenting today.

The Prudent Development Team was led by
09:28:09 Chevron, nearly 50 team members from 120 different organizations. And, Mr. Tillerson described the scope that their deliberations covered.

The, the Engineering Team had the largest team by far from over 50 organizations
09:28:22 representing, not surprisingly, given the topics, academia, government, researchers, the national labs, et cetera.

And, finally, the Environmental Team had

22 team members from 13 different organizations, including NGO organizations.

The two Research Teams collaborated to host two technology workshops which I'll tell you a little bit more about on the next slide. So, the pie chart, the pie chart illustrates the diversity of the team.

09:28:46

We had 266 participants in total from 105 organizations. You can see that roughly 40 percent of the participants were from industry, both from the ENP companies and the supply companies.

09:29:01

Consultants, roughly six percent; government organizations, both federal and state, about 30 percent; Alaska Natives, about six percent; NGO think thanks, about four; and, then, finally, academia, about 12.

09:29:13

And, so, overall, very pleased with, as Mr. Tillerson outlined, the breadth and the depth of the team that we were able to assemble.

09:29:30

Talking a little bit more on the next slide about the, the external engagements, I mentioned the technology workshops. The purpose of

these workshops were to reach out to the many people that were doing Arctic research in order to be able to fully describe and catalog the significant amount of research that was going on in
09:29:54 the technical topics which we covered to fully, fully address the Secretary's question.

We held a federal workshop in September at Resources For the Future. We had 54 participants, including the majority from the
09:30:08 national labs.

And, key finding from that workshop is, was that there's a need for collaborative studies and ongoing, potentially, validation, especially where, in places where the industry views the
09:30:24 technology as proven, but all stakeholders have not yet been, are not yet accepting of that.

And, some examples I'd cite that came up in the workshop, which you will see in our subsequent recommendations, are capping and subsea
09:30:58 shutoff technology as a replacement for same-season relief well; oil-spill response methods in ice beyond mechanical recovery; detection of oil in ice through remote sensing; the interaction of key

species with ice and with oil and gas activities; remote ice thickness measurements using detection; and, then, finally, operations during the shoulder seasons when ice is present.

09:31:44 Following the federal workshop we had an Alaska workshop at the University of Alaska-Fairbanks; 57 participants, the majority of those from Alaska-based organizations. The technology findings, not surprisingly, were

09:31:59 identical to the ones that were brought up during the Washington-based workshop, but additional, and probably most importantly, coming out of this workshop, the team members that ultimately framed the report and the recommendations were provided

09:32:12 with a deep local perspective of what mattered to the Alaska people.

In addition to these two workshops we conducted 21 sessions during the course of the study's development to reach out to other

09:32:24 interested parties that had an intersection with the scope of our report.

Turning my attention now to my second topic, I'll walk through the, the Key Findings in

the report. This page highlights them all on one page so they're, they're easy for, for you to see and, and digest.

And, then, in the subsequent pages I'll
09:32:49 give you a little more commentary on each of these in turn. So, one of the findings has been the subject of some debate, and, as this is a technical report first and foremost, we put it in logical technical order beginning firstly with the resource
09:33:06 potential, and then moving in Finding 2 to the Arctic physical, ecological, and human environment, which we found was well-understood after decades of research from multiple organizations across industry, academia, and, and government
09:33:25 organizations.

In Finding 3 we cover the significant experience of the industry in the Arctic and Arctic life conditions, nearly a decade of experience, and the role of technology in enabling that.

09:33:38 And, then, finally, or and then in Finding 4, arguably the most important key conclusion of the study, most of the U.S. Arctic offshore is developed today with existing

technology.

However, technology alone is not enough, and we must also, in order to move forward, have a development that's economically viable, as we described in Finding 5. And, we must also have public confidence to move forward, as described in Finding 6.

09:34:00

And, then, finally, there have been substantial recent technology and regulatory advancements in the area of oil-spill prevention and oil-spill response in ice. And, these technologies are not yet accepted for use in the U.S. Arctic, opening up the door for our recommendations on collaborative work to enable that.

09:34:13

09:34:45

So, turning our attention to the first finding on the resource potential, as Mr. Tillerson mentioned, the global Arctic resource contains a significant portion, about 25 percent of the global, of the world's conventional undiscovered resources.

09:35:00

We used the U.S. Geological Survey's assessment. And, in the Executive Summary we used

the mean estimates, although anyone schooled in, in this topic will know that there's significant uncertainty.

The total resource endowment in the
09:35:20 conventional global Arctic, onshore and offshore, is shown in the figure on the bottom left. In total we have 923 billion barrels of oil equivalent represented.

Beginning at the 12:00 o'clock position
09:35:33 you can see that about one-third is either produced or current reserves with development plans in place to be able to access. The majority of those are in exclusively, almost exclusively in the U.S. and Russia.

09:35:49 And, then moving around the pie we see the discovered but not yet developed resource potential, about 100 billion barrels. And, then, the produced, or, the undiscovered portion at 426 billion barrels.

09:36:03 The total discovered but not yet developed and undiscovered we called the resource potential, 525 billion barrels in the global Arctic. We split that by country in the figure on

bottom right, and you can see by inference, the largest portion that is attested to be present in Russia.

But, considering just oil, the U.S. and
09:36:27 Russia have roughly equivalent amounts. And, the U.S. global, or, the U.S. oil potential is similar to Russia and bigger than Canada, Greenland, or Norway.

When we consider the global potential
09:36:44 and the U.S. potential, about 75 percent is in the offshore, which illustrates why we focused our technology assessment in offshore technologies.

If I direct your attention to the second black bullet in this finding in the report, we
09:37:13 address the question of why to pursue the Arctic now, when it's remote, costly, and current, with current oil prices and current Lower 48 production.

And, the answer to that, in summary, is the long lead times needed to pursue this
09:37:27 opportunity. An Alaska offshore development would take more than 20 years, 20 to 40 years to progress.

And, if you intersect that timeline with

the forecast of decline of the Lower 48, you can see that, in order to continue to maintain U.S. production at current levels, we're going to need the Arctic to do that.

09:37:46 And, then, finally, as Rex outlined, pursuing this opportunity has national security benefits, energy security benefits, and economic benefits. And, in the report we identify this the significant benefits of oil-and-gas actively today,

09:38:04 identifying that the oil-and-gas industry is roughly one-third of Alaska's economic activity, and supports one-third of Alaska's jobs.

And, then we cite the potential impact of an offshore development on Alaska, the local

09:38:18 economies, and the Nation.

Turning our attention to Finding 2 on the Arctic Environment, in the wording of the Finding, and the first bullet, we speak about how much is known about the Arctic environment after

09:38:33 decades of research.

In Finding 2 we identify that the characteristic that distinguishes the Arctic from other oil-and-gas operating areas is the presence

of ice. And, there's significant variability in ice and Arctic conditions around the world.

The most important characteristics of this ice are the type of ice, the water depth, and
09:38:56 the open-water season. And, I'll say more about this in a couple of slides.

That variability is illustrated in the pictures on the bottom of the slide. On the left you see a picture of first-year ice taken offshore
09:39:12 off an Arctic island.

First-year ice reaches a thickness of about 1.5 to 2.8 meters each year it freezes. And, then, in the middle you see and example of multi-year ice.

09:39:26 This is an ice ridge taken in the Canadian Beaufort Sea. Ice ridges are formed when first-year ice is compressed into sheets by wind and it refreezes.

These form the dominant features that
09:39:50 affect ice-breaking activities, et cetera, in the winter months.

And, then, finally, on the right we see a picture off of eastern Canada in Arctic-like

conditions with an iceberg, a significantly sized iceberg. Icebergs are very rare in the U.S., but, like this picture illustrates the open water that's available in so much of the Arctic regions.

09:40:28 And, with the open-water environment, obviously, deep-water technologies could be brought to bear, even though there's ice present.

In, in the black Bullet Number 3 we identify that experiences from other remote an

09:40:45 challenging oil-and-gas areas are applicable, and in the report we highlight deep-water technologies, for example, in terms of design practices and safety systems having direct applicability.

And, we also identify some of the

09:41:35 logistics challenges associated with recent development associated with West Africa and Papua New Guinea, just to give you a couple of examples.

And, then, finally, we acknowledge, with regard to the environment, that the climate is

09:41:49 changing, and that there are additional monitoring opportunities associated with that changing climate, with the focus on the interaction of key species with ice and oil-and-gas activities. And,

we'll say more about that when we get to the Recommendations.

Turning our attention to Finding Number 4, Finding Number 3, we identify the long history that the industry has had enabled by technology advances. And, this particular chart focuses on the offshore, and starts in the '60s.

09:42:16

But, as Mr. Tillerson mentioned, the oil-and-gas industry's activities began onshore in Norman Wells, Canada, in the 1920s. This particular graphic illustrates the significant technology advances that have enabled the operations, beginning in the 1960s through the late '70s, with the focus on near-shore exploration in varying, in varying ice conditions, and focusing on exploration, and, then, in the late '70s through to the late '90s, stepping into deeper water further away from shore, still less than 100 meters, with buried ice, again focusing on exploration.

09:42:31

09:42:49

And, you can see highlighted the significant stepouts in terms in terms of the exploration technology and drilling shifts that was advanced. And, then, finally, beginning in the

09:43:09

late 1990s through to the present day, stepping out into deeper water and moving from development to exploration.

So, throughout the, the technology

09:44:36 stair-step figure you can see the significant enabling technologies that opened up more and more challenging environments. And, we would expect this to continue.

Turning our attention to Finding Number

09:44:51 4, this slide describes why we assert that the U.S. potential is developable today. And, this slide represents five tiers of physical environment found in the global Arctic.

And, each role on the slide represents a

09:45:10 different technology challenge for exploration and development. The first two columns describe the physical environment and give examples.

And, by "physical environment," I mean ice type, length of open-water season, and water

09:45:24 depth, as we described two slides previously. You, you can think of it as the first row as the easiest tier, and the fifth row as the hardest tier to develop.

In the third column we describe the technology implications for typical practices in that ice environment. And, then you'll notice immediately that there are photos in, in Tier 1, 2, and 3, and there are no photos yet in Tier 4 and 5.

09:45:45

That's because Tier 1, 2, and 3 have been proven globally, and Tier 4 and 5 have not yet been proven. Finally, you'll notice that the red text in the center highlights the U.S. Arctic contained entirely in Tier 2 and Tier 3 which has been proven by other operations around the world.

09:46:03

Before I leave this page I thought it would be helpful to just bring home the technology implications of the environment by walking through the, the photos that you see. In Tier 1 examples of ice-free conditions in the South Barents in eastern Canada.

09:46:18

The first photo is a photo of snow subsea development in Norway. It was the first Arctic subsea development.

09:46:56

It's 140 kilometers from shore in roughly 300 meters of water depth. It was discovered in 1984 and was started in 2007,

representing a significant technology advancement in the Arctic.

The Hibernia Field was discovered in 1979 in 80 meters of water. It's developed by GBS.

09:47:18 In this, in Tier 2 we see examples of near-shore spray-ice islands. And, the photo was taken in the mid 1970s, three kilometers offshore in three meters of water.

And, the Northstar Development, which is

09:47:34 an active development in the offshore Alaskan seas, it's six kilometers northwest of Prudhoe Bay in 14 meters of water. It was discovered in 1984, and brought, the oil is brought back to shore by a six-mile subsea pipeline that's buried to reduce

09:48:39 the risk of damaging the pipeline due to ice scour.

And, then, finally, in Tier 3 we see a photo of the Canmar 2 drill ship which was used to explore in the Canadian Beaufort in the 1980s. And, traditional exploration drilling in the summer

09:49:20 season and into the shoulder season was proven in the '70s and '80s.

And, then, finally, we see a photo of the Sakhalin-2 GBS, which is a shallow-water

craft-based structure that was constructed in southern climates, floated in during the open-water season, and sunk down on the see floor. And, that forms the basis for year-round operations, which is
09:50:13 a typical development technology which could be used in the U.S. Arctic.

Turning our attention to Finding 5, we describe the economic viability of an Alaskan development which is challenged by operating
09:50:48 conditions, and the need for Regulations that reflect those operating conditions. In the first four bullets we talk about the challenges in, in the operating conditions.

Specifically, Arctic exploration and
09:51:00 development is more costly than other areas due to the remoteness, the challenging climate, the short operating seasons, and the infrastructure. Stakeholder alignment and regulatory efficiency also will influence economic viability.

09:51:14 And, although that may not be clear how, when you think about trying to operate in a relatively short operating season in the summertime. If you receive a Permit Condition in

the middle of the summer, then you have to wait for a subsequent year in order to be able to address that Permit Condition, which affects schedules.

In order to make an economically viable development offset these increased costs, you need a discovery of sufficient size and quality in order to advance it. And, as we discussed in Finding 5, the majority of the potential is not yet discovered.

09:51:36

09:51:49

So, pursuing exploration in the U.S. Arctic is important. We found that two areas were currently limiting exploration, and those are illustrated on the bottom of the slide.

On the left is drilling season length. Currently the practice is to limit the drilling season to only the summer months when no ice is present. And, in this particular example we have 110 ice-free days.

09:52:03

However, the back end of the season is reserved from drilling due to the requirement to drill the same-season relief well, which shortens the time available to drilling to about 80 days, as illustrated. This is an important factor because

09:52:17

drilling an exploration well to target takes about 80 to 90 days.

So, this current practice requires multiple lease extensions to drill a single exploration well. The bottom half of that particular picture shows what could be possible with validating some of the recently developed technologies.

09:52:43

Firstly, accepting capping stack and other technologies as a way to make safe the well, and then potentially go back in a subsequent seasons to drill a relief well would add 38 days to a drilling season.

09:52:54

And, then, secondly, allowing the use of ice management techniques such as has been used in other jurisdictions would extend the drilling season still further. So, in the example, you can see that we could, with additional technologies, extend the seasons roughly double to what it is today, which would enable a single exploration well in a single season; roughly take the cost of exploration drilling in about half.

09:53:48

09:54:31

On the right-hand side we illustrate the

challenge associated with lease, lease lengths in the U.S. And, we've compared the current U.S. lease practices with other jurisdictions.

You can see in the second column that
09:54:52 the U.S. is unique in adopting what we called a development-based system. And, what is meant by that will is that in the U.S., in the primary lease term, which is ten years, you've got to do seismic, drill an exploration well, have a discovery, and
09:55:08 then do significant suf-, sufficient, and this is textbook, sufficient appraisal drilling and engineering studies in order to be able to take your development to final, or final funding and secure a secured funding in order to request a
09:55:21 Lease extension.

And, that construct works very well in Lower 48 examples where you have significant infrastructure. And, and the, and, the goal is to encourage people not to sit on leases that could be
09:56:23 developed by others.

In the case of the Arctic, where you can only work three months of the year, it's particularly challenging, given the number of wells

that would be required. Other countries have recognized this challenge, especially in an underexplored area with lack of infrastructure.

And, their solution is to split the
09:56:46 Lease into an exploration phrase, and if you have a significant discovery you're allowed to hold the lease and then enter into a second negotiation for a production Lease such as the case in Canada. And, you'll see when we get to our Recommendations,
09:56:56 we recommend that the Department of Energy and the Department of the Interior assess this lease term relative to the physical constraints of doing our work in the Arctic.

And, then, finally, yes, that's it.
09:57:07 Those are the key findings in the economic area.

In Finding 6 we talk about the need to secure and maintain public confidence. And, we identify in the opening remarks in this section that the industry and Government have a shared
09:57:24 responsibility to secure and maintain this public trust.

Both of the industry and the Governments have a responsibility and a requirement to engage

with the local Community to understand their perspectives, and how industry is working in the region.

And, then, each of the industry and the
09:57:42 Government have unique roles in, in preparing and, and securing and maintaining this public confidence. Industry must operate responsibly, and continuously improve.

And, in this section we talk about risk
09:57:55 management systems, integrated risk management systems that have been developed; the recent ties across the industry such as the operations integrity management system of ExxonMobil.

We also talk about the ob-, the
09:58:09 obligation of industry to continually learn and respond to incidents. And, in this chapter we identify some significant incidents that, that occurred in Arctic conditions or deep-water conditions that significantly shaped this
09:58:23 industry's risk management culture and our practices: McCondo, Piper Alpha, and Valdez, and the Kulluk.

And, we identify that the industry and

Government learned from these incidents and moved on. And, it's made the industry even safer today.

On the government side we acknowledge and, and recognize the role to ensuring public safety and environmental protection, and also support development. That's the definition of prudent development.

09:58:46

And, in this industry, in this section we talk about the long history of Arctic Policy and Regulations. And, we identify the significant number of agencies that are involved in oil-and-gas Policy and Regulations, as you see listed on this slide, illustrating the need for coordination and role clarity in order to be able to move forward.

09:58:58

In Finding 7 we discuss, finally, the significant recent technology and regulatory advancements in the area of oil-spill prevention and oil-spill response. And, the figure on the slide is called, for obvious reasons, the bowtie.

09:59:13

At the center of the bow is a loss-of-containment event, and on the left-hand side are prevention measures, and on the right-hand side are response and recovery technologies. And,

09:59:29

in the report we go into quite some detail about all of the different technologies that have been developed and applied in order to prevent a blowout from occurring in the first place.

09:59:53 And, immediately on the right of the bowtie I'll direct your attention to the photo of the capping stack and seabed shut-in devices, which are knew technologies which have been developed and advanced since the McCondo tragedy.

10:00:09 And, these, these devices have been used in, in other regions, and they offer significantly improved environment protection versus the current practice of the same-season relief well because they have the capability of stopping the flow of

10:00:22 oil in a matter of minutes or hours, versus days or weeks or months, as is required.

And, so, pursuing these technologies, getting these technologies accepted offer significant advantages.

10:00:36 Turning our attention to the Recommendations, I've got a summary page, and then I will walk through the most important Recommendations that we have in the report.

In the first bullet, although the technology exists to explore and develop the resources safely today, additional research is recommended to either validate some of these
10:00:58 recently developed technologies for use in the U.S., or to pursue technology extensions which could lead to improvement.

And, as Rex outlined, although this is not a Policy study, we do highlight some Policy and
10:01:14 regulatory recommendations where we have a technology link; in other words, where we've identified barriers in the U.S. that are different than other countries that, if addressed, could help prudent development of the U.S. Arctic move
10:01:28 forward.

We have a total of 32 Recommendations in the Executive Summary, and, additionally, 60 research Recommendations in the report. And, these Recommendations are grouped into themes:
10:01:38 Environmental stewardship, Economic Viability, and Government Leadership and Policy Coordination.

And, I'll step through each of these now. Regarding the environmental stewardship

theme, the first recommendation is that industry regulators and, and other stakeholders should work together to perform the analysis, investigations, and any necessary demonstrations to validate the
10:02:07 technologies for improved well control.

The most important of those technologies are pictured on the bottom of the slide, a subsea isolation device, and a capping stack device.

Secondly, government agencies should
10:02:23 participate in the ongoing and any future industry collaborative research programs for oil-spill response in ice such as the current Arctic Response Technology JIP, which has been underway since 2012.

In particular, we are interested in the
10:03:01 Department of Interior's organization joining this collaborative research, as they've spent quite a lot of money and time investigating oil-spill response in ice.

They've got some dato to bring to the
10:03:14 table, and, in addition, they, they fulfill an independent role, versus the industry. So, we would be pleased to have the Department of Interior join this effort.

And, then, finally, in the area of the environmental stewardship, on, on this page, regulators should continue their evaluation of oil-spill response technologies in Arctic conditions, and consider all different response options, and potentially do the research necessary to pre-approve those options.

Currently in the Regulation there is a device for mechanical recovery, and in the event of, in the event of an event, one needs to move quickly, potentially considering other options that may have better environmental performance, given a particular situation such as disbursements and in situ.

So, we recommend that research be done now, and pre-approval be considered in order to, to be swift when we need to.

On the next page we continue in the environmental stewardship theme, and we turn our attention to ecology. The, the ecological environment in the Arctic is very well-understood.

We understand the key species that are there. And, some of the population, specifically

the marine mammals, are among the most well-studied in the world.

However, there are, there is a need for additional research on long-term population
10:04:59 estimates, and the understanding of the impact of oil-and-gas activities and the changing climate on key species, notably Arctic cod, ice seals, walruses, and polar bears.

The specific -- Right now the
10:05:14 environment is protected by a Conflict Avoidance Agreement, for example, that the industry engages in to limit activities when marine mammals are present, or when subsistence hunting activities are, are underway.

10:05:31 But, the thought is that we could be, provide better environmental protection and more flexibility for operations with better data.

In the area of collaboration and coordination of ecological and human environment we
10:05:46 noted in our findings the significant amount of research being done in this area by a number of different organizations. And, the biggest opportunity is to provide a vehicle for each

research organization to know what the others are doing.

And, in the area, in the area of ecological research, we note the significant 10:06:05 efforts of North Slope Science Initiative. And, we also note that the North Slope Science Initiative, as part of their mandate, has a responsibility to coordinate human environment research.

However, this organization has currently 10:06:20 only about one to one and a-half people working on it, and they don't have social-science capability. So, we recommend that that be addressed in order to enable the NSSI to continue their good work in collaboration and to the social sciences.

10:07:09 And, then, finally in the area of social, socioeconomic impact assessments, in the U.S., this the part of the environmental impact assessment. And, the structure around the socioeconomic impact assessment is quite, there's 10:07:22 not a lot of structure to it.

And, we felt like updating it in order to provide more structure would enable more efficiency and collaboration, particularly in the

area of sharing baseline data. And, we make some recommendations in that regard.

Considering economic viability, the first two bullets address the issues that I

10:07:46 outlined in the economic viability finding. In the first bullet we recommend industry, Government, and Regulators work together to validate technologies and capable, capabilities necessary to extend the drilling seasons.

10:08:02 And, I illustrated in my discussion of the findings of how important this Recommendation is in promoting exploration.

In the second bullet, we speak, we recommend that the Department of Energy and the

10:08:14 Department of the Interior work together to assess typical timelines required for antarctic development compared with the current lease terms and lease terms and conditions in other jurisdictions.

10:09:09 And, then, with the results of this good research, that could inform policy decisions and regulatory decisions as warranted.

And, then, finally, we recommend that

Policy, Regulations, and implementation encourage innovation and enable the use of technology advances.

And, the Department of Interior has some capability in, in this regard, but, for an individual Regulator, there's significant risk in exercising this flexibility. And, we make recommendations in the report for Arctic training to enable the use of this flexibility that already exists.

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10:10:05

And, then, in the third theme, the third and final theme, government leadership and policy coordination, we consider domestic leadership, and then recommendations for the Arctic Council.

10:10:19

So, Slide 19, regarding -- We note the Arctic Executive Steering Committee just recently formed by Executive Order. We think that's a significant step, suggesting coordination of 22 federal agencies at the Deputy Secretary level, which we think will be a sea change in coordination.

10:10:38

And, we make recommendations for that initial body as it gets formed the commit, reaffirm

a commitment to prudent Arctic oil and gas development, assess alignment across federal agencies with regard to that objective, and then clarify the process with which it will engage with
10:11:00 Alaskans.

We, we also note the Arctic Executive Steering Committee has, as part of its requirement, a gap analysis that's due in May, and we, we make some recommendations that the Executive Steering
10:11:15 Committee should consider as part of that gap analysis, those being a comprehensive and integrated list of regulatory requirements, and then an assessment.

The Interagency Working Group is doing a
10:11:27 great job of coordinating Permit Requirements in the Arctic, and we thought that that Group, in particular, could have some insight into the difficulties of setting up a coordinating body in some of the areas for improvement.

10:11:56 And, we recommended that the Arctic Executive Steering Committee talk to that Group for some of their insights as part of that gap analysis.

And, then, finally, regarding the Department of Energy's participation in the, in that group, we make some recommendations that we thought would better facilitate the Department of Energy's participation.

10:12:14

Considering the Arctic Council prior to the U.S. chairmanship the Arctic Council has entered symbol into international Agreements on the important topics of search and rescue in 2011, and oil pollution preparedness and response in 2013. These are very important topics, and if there's an incident in the Russian Arctic, the U.S. Arctic, or Canadian Arctic, they enable cross-bord-, cross-border collaboration.

10:12:48

So we're moving now into response exercises. And, upcoming, the Arctic Council plans a desktop exercise first, and then a field exercise.

10:13:18

And, the industry has a lot of experience in response, safety and response, and so we would like to engage and participate in that.

10:13:29

And, then, finally, the Arctic Economic Council is a relatively new body that's just been

formed, and we recommend that the Arctic Council strengthen the interaction with the Arctic Economic Council as a vehicle to provide business perspective, as well as environmental perspective,
10:14:20 to the Council.

Turning our attention to my fourth agenda topic, which is where we go from here, subject to the Council's comments and, and approval, we are ready to turn the digital
10:14:41 communications live this afternoon. You can see a, a photo of the report cover on the right-hand side.

There will be a digital copy of the Executive Summary, and there will also be other related materials available. The Council webcast
10:15:00 will be available.

There will be a schedule of forward events, and I'll say more about that in a second. And, then, finally, at the suggestion of the Study Committee, we worked with the National Petroleum
10:15:11 Council to think about how we could update our communications to make them more social-media friendly.

And, so, you can see right at the bottom

of the slide, the NPC now has a Twitter account. So, for those of you that are active in, in Twitter, you can, you can follow and, and hear some great insights from, from Marshall Nickolson (phonetic), and his team.

10:15:33

We are making great progress in making our printed version available. I'm, I'm very pleased with the, with the initial typeset version of the Executive Summary.

10:15:47

We are, indeed, in a great spot, and our printers have told us that the printed volume of the Executive Summary will be available in mid-April, and the full report will be available by the end of May.

10:16:06

And, then, finally, on the, on the last slide, just a little bit about communications. Yesterday, prior to, to the meeting, Mr. Hillardson (phonetic) and, and Ms. Sherwood-Randall held five briefings with Senate, White House, and House

10:16:17

leaders in order to provide a, a perspective on the report so they would be ready to receive it.

We also provided some pre-briefing with the staff to tell them about the report in the

interest of, of getting the word out that, that this was coming. And, then, subsequent to, hopefully, the, the approval here today, we have plans to travel to Alaska to meet with some of the, 10:16:38 the State leaders and the community leaders in the first week of April.

The CFC lead team will be making that trip. CSIS has volunteered to host a panel discussion in Washington on April seventeenth, and 10:16:54 we look forward to that public event.

Other Washington and Alaskan communications are going to be conducted during April. And, we've also made a commitment to participate in the Energy Council meeting in Santa 10:17:10 Fe in June with potentially a panel discussion.

And, I, I believe there's also an event host ed at RFI Resources for the future on April first, coming up. So, we will continue to receive questions for communications, and then they will 10:17:26 continue to be noted and, and followed up on by staff.

After we get through the initial rollout, there's a protocol for ongoing

communications which I've highlighted. Any individual can use the NPC Arctic Research Report and express their own views, provided they'd cite the report.

10:17:48 And, if the request does not originate through the NPC, please let John Guy at NPC, of NPC know of the request, provide the name of the presenter and a copy of the presentation or the report, and, please be mindful of the purpose of

10:18:23 the Council and the prohibition against lobbying.

Post the, post the meeting we will have available these slides and some shorter versions of the presentation for your potential use as you move forward and make your own presentations in that

10:18:59 regard.

Once again, thank you very much to my team, and thank you to the Council for your support for this opportunity, and for your time and attention this morning.

10:19:08 Mr. Tiller son?

(Whereupon, applause was had.)

MR. TILLERSON: Do we have this microphone on? Thanks.

So, in keeping with suggestions at the last Study Committee meeting that we, we kind of live a little more up-to-date with our modes of communication, it was also suggested that we
10:19:41 investigate producing a, a rollout YouTube video, which we have done.

And, if we have it loaded, we thought we would play that for you so you can see what's out there, or will be out there as of today.

10:19:55 (Whereupon, a YouTube video was played:)

National Petroleum Council was established in 19346. The Council is a privately funded advisory committee to the Secretary of Energy.

10:20:14 We operate under the Federal Advisory Committee Act. From the beginning to this day, the sole purpose of the Council has been to provide the advice of the members, upon the request of the Secretary, to the Federal Government on any matters
10:20:27 relating to oil and gas or the oil-and-gas industries.

We receive no government funds, and when studies are established, we will pay for those

costs from funds provided by the members. The Council is not an advocacy group.

It is not involved in any of the usual trade-association activities, and it does not lobby. The Arctic Research Study is being undertaken by the National Petroleum Council to address questions regarding what research and technologies would help provide support for prudent development of our Arctic oil and natural-gas resources.

10:20:47

10:21:03

The Arctic region is the world's largest potential for undiscovered potential oil and natural gas. It's been a very collaborative effort across federal agencies, and people in the State Office, labs, and the industry, to bring together all of the expertise and experience we have in operating oil-and-gas development in that region.

10:21:15

What excites me about this report is the collaboration. It really brought together a wide spectrum of experience, not only from the energy companies, but from the think-tank community, environmentalists, experts, academics.

10:21:31

It brought us all together to try to

figure out the question: How can we safely and responsibly and prudently develop the American Arctic? What are the obstacles?

What are the opportunities? How does
10:21:55 that impact indigenous communities to realize the promise presented by our domestic oil-and-gas?

Research of the Arctic will require that we continue to develop and demonstrate technologies and practices that allow the public to have
10:22:39 confidence that the resources can be developed in a prudent manner, and many of those important steps are pointed out in this study.

The industry has a very long history of development in the Arctic, and the Arctic is an
10:22:47 important source of supplying natural gas and oil to the world's energy needs today.

Essentially we've seen continued actively from the 1820s to almost the 2020s. So, we've considered safety, human health,
10:23:02 environmental stewardship, sustainability in balance with economic growth.

This document is going to go to the Secretary of Energy. There's a lot of balancing

interests.

There's the balance between conservation and resource development. There's the balance between traditional knowledge and what we call Western science and engineering.

10:23:34

Traditional knowledge is an important aspect of operating successfully and responsibly in the Arctic. First of all, you have to recognize that the people of the Arctic have been there for thousands of years, with a, a very close relationship with the environment that they, they live in.

10:24:09

Recognition that they have this knowledge, and gaining the ability to, to access that knowledge and utilize it to improve our understanding is an important aspect of, of being successful.

10:24:23

And, we did a lot of work to try to listen to those points of view and concerns. And, when you look ultimately at the report, I think most people will see there's an enormous amount of information that is responsive to those ideas, those suggestions, and even some of their

10:24:34

recommendations.

There are three findings which I'd highlight as most significant. Firstly, there's substantial resource potential in the Arctic, both globally and in the United States.

10:24:55

Secondly, this U.S. potential can be explored for and developed safely while maintaining environmental stewardship using existing field-proven technology.

10:25:38

Finally, there have been substantial recent technology improvements in the area of oil-spill prevention and oil-spill response in the ice.

The Arctic is our home. We're not going anywhere.

10:25:51

And, so, if development comes to our area, we want to benefit from it while it's there, and we want to make sure that we mitigate any negative impacts that might happen. Do we get passionate about it? You bet we do.

10:26:03

(Whereupon, the YouTube presentation ended. The following occurred in open proceedings:)

MOTION TO ACCEPT REPORT

MR. TILLERSON: Okay. So, Mr. Chairman, at this point I would move adoption of the Council's Arctic Research Study, and would welcome 10:26:24 any discussion from the Council members, comments or questions that Council members may want to raise during this portion of the consideration.

THE CHAIR: Thanks, Carol. What a great job.

10:26:43 You and the Study Groups have assembled a very comprehensive report, and I'm, I am pleased that we've, that you've taken on the, the challenge of, of finding a different way to communicate the results. I think that video, which, by the way, 10:26:57 was done very quickly.

It was in the last Committee meeting that it was suggested. So, true to Council's form, we can move quickly.

And, it's a, really, a, a nice 10:27:08 additional way to communicate the results of this study.

I do have a Motion that the National Petroleum Council approve the report, subject, of

course, to final editing and approve the transmittal letters to Secretary Moniz, and make available to the public through the NPC web site.

Before we have a discussion could I have

10:27:29 a second on this Motion?

A MEMBER: Second.

THE CHAIR: Thank you.

So, at this point are there any comments or questions from the Council members on the

10:27:36 proposed final report? We've got some microphones available if you'd like to have questions.

I think we're seeing -- Aah, right. Marvin. Yes.

Yes, right here in front.

10:27:58 MR. ODUM: So, just a comment to, to also, you know, on behalf of, I know, a number of people, is a thank-you and congregations on what I think is a terrific study. I think there was an enormous need for a comprehensive look at this

10:28:14 topic, and this provides a great source for the many stakeholders that are in this, in this area.

And, so, it's, it's just a voice of support.

THE CHAIR: Thank you. Thank you.

Any other comments? Yes, sir?

(Whereupon, no response was had.)

THE CHAIR: Okay, we have a Motion and a Second to adopt the Proposed Final Report on the NPC Committee on Arctic Research. All those in favor, say, "Aye."

(Whereupon, a response was had."

THE CHAIR: Are there any opposed?

(Whereupon, no response was had.)

THE CHAIR: The report is adopted without objection. And, once again, thank you, Rex.

Thank you, Carol, who's smiling widely right here. And, members of the Committee, Chairs of the Subcommittee and Subgroups, multitude of volunteers that have helped complete this work.

This, this report does provide a very significant amount of information to policy-makers as they deal with near-term issues at hand, as well as many of the long-term issues that need to be addressed now as we go forward.

It's going to be an important resource,

to those who are students of the Arctic and those who will be dealing with Arctic development issues around the pan-Arctic region.

And, I would just, as a side note,
10:29:34 comment that this now concludes two requests of the Secretary had before the National Petroleum Council, the first which we approved last December with -- Marvin Odum led the group on emergency preparedness, and now this one on Arctic research.

10:29:52 And, I think what strikes me, in stepping back and looking at both of these reports, is they really demonstrate the value added the National Petroleum Council provides to not only the Secretary of Energy, but, really, to this Country,
10:30:07 because this is a very unique organization.

When you think about the report that we just approved that involved 250 members, over 90 organizations, it's hard for me to really find an equivalent organization that can pull together such
10:30:24 a comprehensive report on a diverse set of topics such as emergency preparedness or the Arctic, do those virtually in parallel, and produce very comprehensive, incredible results that reflect the

opinions and inputs of a diverse cross-section of our industry.

So, I think it's, we should all be proud of our involvement in National Petroleum Council, and to really see here today demonstrated what we can do to help energy development, and to make informed advice to the Secretary of Energy regarding energy issues.

10:30:51

So, Madam Deputy Secretary, it's with great pleasure that the National Petroleum Council submits this report to you in response to the Secretary's request. The effort went into it, I won't repeat all the, the specifics, but, obviously, many, many organizations.

10:31:06

So, it's with great pleasure to present this to you, which brings us to an opportunity to hear from you.

10:31:21

So, it's with great pleasure that I introduce Honorable Elizabeth Sherwood-Randall.

Hon. DEPUTY SECRETARY SHERWOOD-RANDALL: Good morning.

10:31:42

And, thank you, Chuck.

Thank you, Rex.

And, Carol.

And, Marshall

And, the entire NPC.

I would love to have everybody who was
10:31:52 involved in writing this report stand up and receive a round of applause if you're in this audience. Please.

Tremendous work. Thank you.

(Whereupon, applause was had).

10:32:09 Hon. DEPUTY SECRETARY SHERWOOD-RANDALL: I also want to thank our District Team at DOE, led so ably by Paula Gant and Nancy Johnson. Nancy, I see you there, too. Thank you so much.

As you know, Secretary Moniz did plan to
10:32:23 be here today. We worked very hard to protect this date on his calendar, but two things converged and we didn't think about it when we were working to set the dates in the, the Iran negotiations process that we would be in the end game.

10:32:40 One of the deadlines is this weekend, and the President and the Secretary of State asked the Secretary of Energy to join the negotiations. As you know, his expertise is as a nuclear

physicist, and it absolutely serves all our interests that he should be in Swisserland today, and that I should be holding the flag for him here.

He and I both deeply appreciate the truly excellent work that has been done in response to his October, 2013, request to the NPC. And, as Rex noted, in the context of the president's then newly released national strategy for the Arctic region, Secretary Moniz asked that you provide advice on what research the Department of Energy should pursue, and what technology challenges need to be address to ensure prudent development of Arctic oil and gas resources while advancing U.S. energy and economic security, and ensuring environmental stewardship.

The study's recommendations align with the Department of Energy's mission. The priorities identified in the President's 2013 strategy, and the president's all-of-the-above approach to developing new domestic energy supplies, and the recommendations will inform the Department's research agenda going forward, in particular, as we set priorities for our national laboratories that

do cutting-edge research in spill repression, operational risk assessment, and climate and ocean modeling.

So, on the Secretary's behalf, I am very pleased to accept this extremely timely report. And, I want to thank the Committee, again, for the herculean efforts and extraordinary perspectives that everyone has contributed to its completion.

10:34:36

So, to begin, I want to underscore the importance of the work that we've done together on the Arctic, and illustrate the broader context of U.S. and international activities there, something I've had the opportunity to talk about at some length with Rex as we've met over the course of the development of this report.

10:34:54

10:35:33

For many reasons, the Arctic will be a growing geostrategic importance over the years to come. With our warming climate that makes the region increasingly accessible, this report highlights the need for U.S. decision-makers in the public and private sectors to think and act strategically about the Arctic region.

10:35:50

This report will help provide the

substantive basis for action. United States is an Arctic nation with broad and fundamental interests in the region where we seek to meet our national security needs, develop our economic opportunities, protect our environment, responsibly manage our resources, support scientific research, and strengthen international cooperation on a wide range of issues.

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10:36:34

10:36:50

10:37:08

The actions we take now will greatly affect our energy security, our economic security, and our national security far into the future. We need to recognize both the risks and the opportunities presented by a changing Arctic, especially as we are poised to take a new leadership role in the region on April twenty-fifth as Chair of the Arctic Council.

As you know, warming in the Arctic has dramatically changed the environment, driving a decades-long retreat of sea ice. The National Snow and Ice Data Center identified February twenty-fifth, 2015, as the annual maximum extent of sea ice for this winter, which occurred 15 days earlier than usual.

The 5.61 million square miles of sea ice is 4,010, 425,000 square miles below average, and the lowest in the satellite records dating back to 1979. I'm going to show you a short video from
10:37:55 NASA to illustrate how the ice pack has retreated and thinned in recent years.

(Whereupon, a silent video was played, after which the following occurred:)

Hon. DEPUTY SECRETARY SHERWOOD-RANDALL:
10:38:26 The result of this warming is a new frontal tier, with increasingly accessible resources. U.S. Geological Survey estimates the Arctic holds 25 percent of the world's undiscovered oil and natural gas resources, as Rex noted. Rare-earth mineral,
10:39:00 iron, and copper resources are also abundant.

Arctic shipping lanes, such as the northern sea route along the Russian coast, can dramatically shorten the distance between China and Europe. We've already seen shipping on the North
10:39:37 Sea route rise from just five cargo ships in 2009, to 71 ships in 2013.

Increased access to these resources invites both opportunity and risk: Opportunity to

develop new resources, and faster routes to bring them to market; and risks that competition for resources could create new international tensions; or, that development could result in environmental degradation in one of the last truly pristine places on earth.

10:40:05

As it has become easier to get to the Arctic, and as global understanding of the resources there has grown, many nations have accelerated their engagement in the region. This increased activity places a spotlight on the growing importance of the region to Arctic nations like ours, and to the world more broadly.

10:40:20

We've also witnessed increasing global business interests in the Arctic, whether for energy exploration, mining, fishing, or tourism. Earlier this month Finland hosted an Arctic business forum examining global opportunities in the Arctic which drew in participants from many non-Arctic countries, like Japan and Germany, who also see growing possibilities for collaboration and investment in partnership with Arctic nations.

10:40:35

10:41:06

Russia's significant efforts to advance

oil exploration in the Arctic include the development of the Prirazlomnoye Field, which is the first project involving oil extractions on the Arctic Shelf using a fixed platform.

10:41:32 Production from this field started in 2013. China is also making new investments in the Arctic both for scientific research and for business interests.

And, in 2013, Russia's Rosneft and the 10:41:48 China National Petroleum Corporation signed a Partnership for Energy Exploration in the Pechora and Barents Seas. Many countries are upgrading their ability to operate in extreme Arctic conditions, with Canada starting production of new 10:43:11 Arctic offshore patrol ships operations and investing in other military training and equipment.

Both China and Russia are increasing their icebreaker fleets, and Russia has also made headlines recently with the opening of its new 10:43:28 Strategic Military Command in the Russian Arctic, and, the extent of exercise by the Russian Navy's North Fleet earlier this month.

The investments made by Arctic nations,

universities, and companies like those in the room, whether independently or with international partners, is critical to improve our ability to both understand, protect, and operate safely in
10:44:15 Arctic conditions, and to adapt as those conditions change.

The NPC study identifies opportunities for even more public/private collaboration. The United States has, of course, become active, as
10:44:31 well, over the course of the Obama Administration.

In 2012, I traveled with Secretary of State Clinton to Trondheim, Norway, to meet with regional leaders and discuss Arctic research, climate change, and strategic issues. We heard
10:44:48 from our colleagues in the region about the leadership role the United States needs to play in the Arctic alongside our Arctic Council partners.

The next year, in 2013, the President issued the National Strategy For the Arctic Region,
10:45:03 and followed up with an Implementation Plan in 2014, in January of 2014.

And, as I mentioned earlier, beginning next month, the United States will chair the Arctic

Council for two years. This provides us with a unique opportunity to advance our broader strategy.

In addition, on January twenty-first, 2015, the President signed a new Executive Order on 10:45:31 enhancing coordination of national efforts in the Arctic. As Carol noted, this Order sets up an Executive Steering Committee led by the White House and composed of Deputy Secretaries across the Administration.

10:45:46 This Committee will advance the implementation of our new Arctic strategy, provide guidance on our priorities, and address areas where agency responsibilities overlap or have gaps. This Steering Committee met for the first time on 10:46:21 February twentieth.

It will provide a high-level mechanism for Arctic Policy development across the government, including on energy, on the environment, on the economy, and on national 10:46:31 security. And, it will enable us to better engage with international partners as the United States takes the chair of the Arctic Council.

So, as you can see, this is a pivotal

moment for American and international policy in the Arctic. I expect that the report that the NPC is presenting to us today will prove very useful as we chart our strategy for prudent development and
10:46:55 international cooperation in the Arctic in the years ahead.

I want to express again our deep appreciation for the very hard work that went into preparing this report, and emphasize our intent to
10:47:23 study the recommendations very carefully. The study's recommendations point to the important role of the Department of Energy can play in a number of ways, the most important of which is to bring to bear the science that will enable the public to
10:47:36 have confidence that Arctic oil and gas resources can be prudently developed.

In order for the public to have confidence in the results of research, it must be conducted in a transparent manner in the public
10:47:49 interest, and that's what we do at the Department of Energy across our 17 national laboratories.

Through that unique network of capability, through private/public partnerships,

and in collaboration with leading academic institutions, DOE's research capabilities draw on deep knowledge and expertise in ways that can give regulators confidence that they can rely upon the
10:48:32 findings to inform policymaking.

In doing so, all of us in the room can contribute to realizes the potential economic, energy, national security, and environmental stewardship benefit, benefits that can prove to
10:48:49 Alaska, the people's of the North, and the Nation. In so doing, we'll contribute to the U.S. leadership in the region for decades to come.

Let me describe the four areas in which we will provide a response to the recommendations
10:49:10 in the report. First, we will provide science and technology research.

We already have research underway in spill prevention and source control to advance our understanding of how best to manage and reduce
10:49:36 risks s. Our national labs, such as the National Energy Technology Lab and the Los Alamos National Lab, offer expertise that can be deployed to address Arctic challenges.

For example, DOE has expertise that can help reduce geologic uncertainty with a detailed knowledge of geologic formations. Knowing their rock properties, a well operator can reduce the
10:50:11 risk of encountering unexpected geologic hazards, thereby increasing the safety of offshore drilling activity.

The DOE Fossil Energy Research and Development Portfolio addresses this issue to
10:50:25 improve geologic data, data acquisition methods, and lock in advanced modeling capabilities to improve data interpretation.

One previous project we completed was designed to improve existing models using seismic
10:51:00 technology. DOE conduct, conducted acoustic modeling of the Gulf of Mexico, and produced a model to compare other data interpretation methods against the findings, and in so doing, improved predrill planning and safety.

10:51:10 This is the kind of research that we will build upon going forward as we look at opportunities in the Arctic region.

Second, DOE conducts integrated

analysis. As you know, the Quadrennial Energy Review is in progress, looking at infrastructure needs of our nation as they relate to energy.

Growth and infrastructure are

10:52:30 intertwined, both supporting and depending on one another. DOE's expertise can contribute to technical analysis needed for prudent development of Arctic oil and gas resources.

In addition, there is work underway on

10:52:55 issues like drilling and completion where we're examining how construction materials, technologies, and best practices can be optimized to improve safety while drilling, and to increase the long-term reliability of a well.

10:53:12 NETL and Los Alamos risk assessment research can help determine key parameters and conditions that can lead to loss of well control after a hit, meaning that this research can help better predict kicks and prevent oil spills.

10:53:47 Third, DOE contributes, as it's been noted, to U.S. Government-wide Policy development. The newly established -- The newly established Arctic Executive Steering Committee on which I

serve will be the principal vehicle for developing Arctic Policy on the -- Sorry. -- for developing policy on the Arctic Region.

We'll bring to bear the results of research and analysis provided by DOE as we wrestle with policy issues that require our decision, including those that will inform U.S. leadership of the Arctic Council over the next two years.

Our work is was often used as a basis for informing decisions by federal regulators. One example of this support that we provide is our August, 2013, Memorandum of Collaboration between DOE's Office of Fossil Energy and the Department of Interior's Bureau of Safety and Environmental Enforcement, better known to you as BSEE.

As many of you know, BSEE has regulatory authority over drilling on offshore federal leases, and it looks to us as their Office of Science. Program work under this Memo has been directed toward drilling in ultradeep waters in the Gulf of Mexico.

While we know Arctic waters are considerably shallower, this and similar work has

helped to inform offshore drilling practices in the Arctic.

And, fourth, DOE has a strong commitment, commitment to continuing collaboration
10:56:09 with the State of Alaska. And, that's not just because Secretary Moniz likes to fly-fish there.

Yesterday Rex and I had the opportunity, as you heard, to give a preview of the study to Senator Murkowski, and we'll be discussing its
10:56:24 findings in the future with Governor Walker, as well. DOE has had a long and productive working relationship with Alaska institutions that can support the planning and conduct of DOE Arctic-related activity.

10:56:45 For example, our Office of Fossil Energy and the State of Alaska have a Memo of Understanding to conduct joint field research assessing the potential for methane hydrates. These types of collaborative engagements help us to
10:57:00 understand the nature of our Nation's remarkable resources, and to prudently develop them.

So, in closing, I again want to thank the NPC and all of its members for your cooperation

and investments in developing this impressive report. Your sustained commitment to research and prudent development of our natural resources has helped make the United States the world's leader in
10:57:42 oil and natural-gas production.

And, this has created dynamic new opportunities to grow our economy and position us to continue to lead the world in the Twenty-First Century. Your leadership and cooperation will
10:57:58 position us to lead in the Arctic, as well.

Thank you.

(Whereupon, applause was had.)

THE CHAIR: Thank you very much for your remarks today, as well as we appreciate your
10:58:19 leadership in these important times. And, we look forward to continuing to work with you as we go forward.

I would say, just in follow-up, one item, and that is: Since our December meeting, I
10:58:39 wanted to talk a little bit about emergency preparedness, and talk about some of the plans for implementing this.

I know that that I -- First of all I

want to thank the Secretary for his recent letter that updated us on the Department of Energy's plans for implementing the recommendations, and I would just say that there has, since December, been some
10:59:04 actions in our industries, as well, in moving forward with this report.

In particular, the Oil and Natural-Gas Sector Coordinating Committee voted unanimously to adopt the recommendation to expand the role during
10:59:22 supply chain disruptions. And, similarly, the report will be reviewed at the upcoming Joint Energy Government Coordinating Council meeting next month.

Industry and Department of Energy
10:59:30 continue to progress the liaison contact list recommendation as a part of the study. And, of course, industry is updating the Oil and Natural Gas Industry Emergency Preparedness Handbook.

You know, it was, it was pointed out
10:59:47 when this was approved by the Council that emergency preparedness is, has got a different focus, for instance, than the report that we just approved today, and that is that it's something

that we need to take action on and, and continue to implement, to practice, to test, because emergencies can come at any time, and the only way that we can best respond to it is if we have tested our plans and have our plans in place.

11:00:14

So, again, again, a different focus, but a very important effort. I just wanted to update you on some of the things that we were doing for enforcement. Yes?

11:00:30

Hon. DEPUTY SECRETARY STEWART-RANDALL: Thank you. I just wanted to say thank you for this work.

I'm, I'm practicing it closely, and I'm responsible for all of our work that we're doing in response at the Department. And, we're very appreciative of the steps that have been taken.

11:00:54

And, we're working to develop, as you know, an exercise series that will bring together the oil-and-gas sector with the electricity sector so that we can test and train ourselves for response in advance of either a natural or a manmade disaster. Thank you

11:01:08

THE CHAIR: Thank you very much. So, I,

I just, finally, I, I want to reiterate on behalf of all the Council members our continuing commitment to work with Department of Energy in implementing the, the recommendations of that
11:01:50 report, as well as the communication of the report that we just approved today.

At this point of the, the, the meeting we're going to move into some administrative matters, and I've got one announcement. First,
11:02:05 our, our web cast will conclude at this point.

So, for those who have been participating on, on the Internet, we thank you for watching these proceedings of this, and encourage you to download and read the Arctic Research Report
11:02:19 that will be posted shortly.

So, we have the transmission ended now.

(Whereupon, the National Petroleum Council moved into nonpublic session.)

I certify the foregoing to be a true transcript from a video.

E-signature: D. I. Bunn

CSR CP RPR

CERTIFICATION

I, D. I. Bunn, a Registered Professional Reporter, Certified Conference Reporter, and Notary Public, do hereby certify that the foregoing proceeding was duly taken and reduced to writing before me via videotaped submission. I further certify that I am neither related to any of the parties by blood or marriage, nor do I have any interest in the outcome of the above matter.

In witness whereof, I have hereunto set my hand and affixed my official seal, at Lusk, Wyoming, USA, this 13th day of September, 2017.

E-signature: D. I. Bunn

Notary Public

My Commission expires January 5, 2020.