BEFORE THE HEARING EXAMINER
FOR THE CITY OF SEATTLE

In the Matter of the Appeal of: FOSS MARITIME COMPANY from an Interpretation by the Director, Department of Planning and Development.	Hearing Examiner File No. S-15-001 (DPD Project No. 3020324)
In the Matter of the Appeal of the: PORT OF SEATTLE, from Interpretation No. 15-001 of the Director of the Department of Planning and Development.	Hearing Examiner File No. S-15-002 (DPD Project No. 3020324) PUGET SOUNDKEEPER'S THIRD UPDATED EXHIBIT LIST AND WITNESS LIST

Puget Soundkeeper Alliance, Seattle Audubon Society, Sierra Club, and Washington Environmental Council (collectively "Soundkeeper") respectfully submit this third updated list of exhibits and witnesses. Soundkeeper will provide two hard copies of the exhibits to the Hearing Examiner for the Examiner and the Witness binders. Soundkeeper is submitting these exhibits to address objections and issues that have been raised in the direct testimony and cross-examination of some of the Port's witnesses.

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Additionally, Soundkeeper originally submitted excerpts of documents as PSA Exs. 13-15 and 17-18; Foss objected to the excerpted nature of the documents at hearing. Soundkeeper has provided the complete documents to counsel and has asked whether they would be willing to stipulate to submitting only the excerpts since the remainders of each of the documents have no relevance to this proceeding. However, we are prepared to file the complete documents should that become necessary; at this time, Soundkeeper is submitting re-scaled versions of the excerpts for PSA Exs. 14-15 and 17-18 because the original filings cut off the Bates stamps.

LIST OF EXHIBITS

1. Maps of Terminal 5 and the surrounding areas prepared by Soundkeeper's witnesses showing the impact of the Coast Guard exclusion zone on navigation.

2. Port of Seattle and Washington Department of Natural Resources, 1998 Port Management Agreement, Ex. A-1.

3. Port of Seattle, Harbor Development Strategy 21 (June 26, 2001).

4. Governor's Container Ports Initiative: Recommendations of the Container Ports and Land Use Work Group – Excerpts (Jan. 2009).

5. Port of Seattle Commission Meeting Minutes (May 13, 2014).

6. Jeffrey W. Monroe, Dictionary of Maritime and Transportation Terms (2005) (definitions of "cargo," "carrier," "good," "transfer" and "transport").

7. Black's Law Dictionary definitions of "cargo," "carrier," "good," "transfer," and "transport".

8. O.E.D. definitions of "cargo," "carrier," "good," "transfer," and "transport".

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9. Terminal 5 Opportunities Meeting Agenda (Oct. 27, 2014) (PRA Terminal 5-2105 to -2106).[1]

10. Email Re: T5 bollard installation (Jan. 5, 2015) (PRA Terminal 5 – 2862 to -2863).

11. Shell PowerPoint – Port of Seattle Terminal 5 Conference: Technical Details and Assurances (PRA Terminal 5 – 2864, 2872-2884).

12. Email Re: T-5 Interim Use Consistency Analysis (Jan. 12, 2015) (PRA Terminal 5-5040 to -5041).

13. Email: Draft Foss T-5 Lease Attributes (Jan. 29, 2015) (PRA Terminal 5- 4475-4476).

14. Email with Draft T-5 Term Lease Use of Premises (Jan. 31, 2015) (Terminal 5-3467, 3474).

14A. Re-scaled: Email with Draft T-5 Term Lease Use of Premises (Jan. 31, 2015) (Terminal 5-3467, 3474).

15. Email with Draft Lease (Feb. 2, 2015) (PRA Terminal 5-4826-4828, 4835).

15A. Re-scaled: 15.Email with Draft Lease (Feb. 2, 2015) (PRA Terminal 5-4826-4828, 4835).

16. Email Re: Terminal 5 Foss USE description (Feb. 3, 2015) (PRA Terminal 5-1980 to -1981).

17. Email with Foss T-5 Term Lease (Feb. 3, 2015) (PRA Terminal 5-3437, 3444).

17A. Re-scaled: Email with Foss T-5 Term Lease (Feb. 3, 2015) (PRA Terminal 5-3437, 3444).

[1] Documents produced by the Port under the Public Records Act are denoted "PRA" followed by the bates-stamped identifier on the documents as released.

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18. Email with Foss T-5 Term Lease (Feb. 12, 2015) (PRA Terminal 5-4543-4544, 4554).

18A. Re-scaled: Email with Foss T-5 Term Lease (Feb. 12, 2015) (PRA Terminal 5-4543-4544, 4554).

19. SEPA Exemption for Lease at Terminal 5 (Feb. 5, 2015) (W-312).[2]

20. Terminal 5 Interim Use Consistency Analysis (Jan. 14, 2015) (CW-151 to -165).

21. Interim Use Analysis (Jan. 6, 2015) (CW-166 to -170).

22. Shell PowerPoint Presentation at Meeting with Port (Aug. 27, 2014) (CW-211 to -233).

23. Container Terminal Development Plan Excerpts (Oct. 1991) (CW-245 to -268).

24. Notice of Availability of Final EIS, Southwest Harbor Cleanup and Redevelopment Project (Nov. 25, 1994) (CW-279 to -280).

25. Joint Federal-State Final EIS, Southwest Harbor Cleanup and Redevelopment Project Table of Contents and Excerpts of Summary (Nov. 1994) (CW-281 to -312).

26. Final EIS, Southwest Harbor Cleanup and Redevelopment Project, Technical Appendix F-2 Shoreline and Land Use Analysis (Nov. 1994) (CW-313 to -317, CW-333 to -335).

27. Email Re: Interim Revenue from Terminal 5 (Feb. 9, 2015) (CW-339 to -340)

[2] Documents that were included in the completed record in *Puget Soundkeeper Alliance v. Port of Seattle*, No. 15-2-05143-1 SEA, in King County Superior Court are identified as W-___ or CW-____, where the initials stand for "writ" and "completed writ" respectively.

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28. Email Re: Vessel Maintenance and Report at Terminal 5 (Jan. 26, 2015) (CW-341).

29. Email Re: T-5 Use (Dec. 4, 2014) (CW-355).

30. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (April 20, 2015).

31. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (May 19, 2015).

32. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (May 19, 2015).

33. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (May 21, 2015).

34. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (May 21, 2015).

35. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (June 3, 2015).

36. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (June 3, 2015).

37. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (June 3, 2015).

38. Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss (June 3, 2015).

39. Foss Maritime Company's Objections and Responses to Department of Planning and Development's First Set of Interrogatories (Aug. 10, 2015).

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40. Foss Maritime Company's Objections and Responses to Department of Planning and Development's First Set of Requests for Production of Documents (Aug. 10, 2015).

41. Department of Planning and Development's First Set of Interrogatories and Requests for Production of Documents to Port of Seattle and Response Thereto (Aug. 10, 2015).

42. Port of Seattle, Commission Special Meeting Agenda (Jan. 13, 2015), *publicly available at the Port of Seattle's website at* http://www.portseattle.org/About/Commission/Meetings/2015/2015_01_13_SM_Agenda_Linked.pdf (last visited Aug. 19, 2015) (CW-117).

43. Letter from Patti Goldman et. al to Port of Seattle Commissioners, re: Request for Reconsideration Regarding Terminal 5 Interim Lease (Jan. 28, 2015) (CW-180 to -185).

44. Pilot's Report of Incident, Board of Pilotage Commissioners (Mar. 9, 2015) (filed in the related litigation).

45. U.S. Coast Guard Foreign and Offshore Compliance Division, Monthly List of IMO Reportable Detentions Webpage and Apr. 2015 Report, *publicly available at U.S. Coast Guard's website at* http://www.uscg.mil/hq/cgcvc/cvc2/safety/detentions.asp (last visited Aug. 19, 2015).

46. Excerpts from: Shell Gulf of Mexico Inc., Revised Outer Continental Shelf Lease Exploration Plan: Chukchi Sea, Alaska (Revision 2: March 2015), *publicly available at Bureau of Ocean Energy Management's website at* http://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Leasing_and_Plans/Plans/2015-03-31-EP-Revision-2.pdf (last visited Aug. 19, 2015).

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47. Excerpts from: Shell, Chukchi Sea Regional Exploration Program Oil Spill Response Plan (May 2015), *publicly available at Bureau of Safety and Environmental Enforcement's website at* http://www.bsee.gov/uploadedFiles/BSEE/BSEE_Newsroom/Publications_Library/OSRPs/Arctic/2015_05_15_Revision%203_Redacted_Shell%20Chukchi%20Sea%20OSRP%20with%20Cover%20Letters.pdf (last visited Aug. 19, 2015).

48. Exhibits from the depositions of Andy McKim and Ben Perkowski.

49. Additional exhibits in rebuttal to testimony or evidence submitted by appellants.

LIST OF WITNESSES

Sue Joerger, Puget Soundkeeper Alliance. Ms. Joerger may present fact testimony on Puget Soundkeeper Alliance's land-based monitoring of Shell, Shell contractor, and Foss activities at Terminal 5 and will contrast that activity, and the effects of that activity on Puget Soundkeeper Alliance's activities under the prior Terminal 5 use. Soundkeeper anticipates Ms. Joerger's testimony will take less than 45 minutes.

DATED this 20th day of August, 2015.

PATTI A. GOLDMAN, WSBA No. 24426
MATTHEW R. BACA, WSBA No. 45676
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705 Second Avenue, Suite 203
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pgoldman@earthjustice.org
mbaca@earthjustice.org
Attorneys for Intervenors Puget Soundkeeper Alliance, Seattle Audubon Society, Sierra Club and Washington Environmental Council

Puget Soundkeeper Alliance ("PSA") Exhibits – Terminal 5

Ex. #	Date	Description	Identifier
1		Maps of Terminal 5 and the surrounding areas prepared by Soundkeeper's witnesses showing the impact of the Coast Guard exclusion zone on navigation.	
2		Port of Seattle and Washington Department of Natural Resources, 1998 Port Management Agreement, Ex. A-1.	PRA Terminal 5 – 56-60
3	06/26/2001	Port of Seattle, Harbor Development Strategy 21.	PRA
4	01/2009	Governor's Container Ports Initiative: Recommendations of the Container Ports and Land Use Work Group—Excerpts.	
5	05/13/2014	Port of Seattle Commission Meeting Minutes.	Port Commission's Meeting Website
6	2005	Jeffrey W. Monroe, Dictionary of Maritime and Transportation Terms (definitions of "cargo," "carrier," "good," "transfer" and "transport").	
7		Black's Law Dictionary definitions of "cargo," "carrier," "good," "transfer," and "transport."	
8		O.E.D. definitions of "cargo," "carrier," "good," "transfer," and "transport."	
9	10/27/2014	Terminal 5 Opportunities Meeting Agenda.	PRA Terminal 5 – 2105-2106
10	01/05/2015	Email Re: T5 bollard installation.	PRA Terminal 5 – 2862-2863

Ex. #	Date	Description	Identifier
11		Shell PowerPoint–Port of Seattle Terminal 5 Conference: Technical Details and Assurances.	PRA Terminal 5 – 2864, 2872-2884
12	01/12/2015	Email Re: T-5 Interim Use Consistency Analysis.	PRA Terminal 5 – 5040-5041
13	01/29/2015	Email: Draft Foss T-5 Lease Attributes.	PRA Terminal 5 – 4475-4476
14	01/31/2015	Email with Draft T-5 Term Lease Use of Premises.	PRATerminal 5 – 3467, 3474
14A	01/31/2015	Re-scaled: Email with Draft T-5 Term Lease Use of Premises.	PRATerminal 5 – 3467, 3474
15	02/02/2015	Email with Draft Lease.	PRA Terminal 5 – 4826-4828, 4835
15A	02/02/2015	Re-scaled: Email with Draft Lease.	PRA Terminal 5 – 4826-4828, 4835
16	02/03/2015	Email Re: Terminal 5 Foss USE description.	PRA Terminal 5 – 1980-1981
17	02/03/2015	Email with Foss T-5 Term Lease.	PRA Terminal 5 – 3437, 3444
17A	02/03/2015	Re-scaled: Email with Foss T-5 Term Lease.	PRA Terminal 5 – 3437, 3444
18	02/12/2015	Email with Foss T-5 Term Lease.	PRA Terminal 5 – 4543-4544, 4554
18A	02/12/2015	Re-scaled: Email with Foss T-5 Term Lease.	PRA Terminal 5 – 4543-4544, 4554
19	02/05/2015	SEPA Exemption for Lease at Terminal 5.	W-312
20	01/14/2015	Terminal 5 Interim Use Consistency Analysis.	CW-151 to -165
21	01/06/2015	Interim Use Analysis.	CW-166 to -170

Ex. #	Date	Description	Identifier
22	08/27/2014	Shell PowerPoint Presentation at Meeting with Port.	CW-211 to -233
23	10/1991	Container Terminal Development Plan Excerpts.	CW-245 to -268
24	11/25/1994	Notice of Availability of Final EIS, Southwest Harbor Cleanup and Redevelopment Project.	CW-279 to -280
25	11/1994	Joint Federal-State Final EIS, Southwest Harbor Cleanup and Redevelopment Project Table of Contents and Excerpts of Summary.	CW-281 to -312
26	11/1994	Final EIS, Southwest Harbor Cleanup and Redevelopment Project, Technical Appendix F-2 Shoreline and Land Use Analysis.	CW-313 to -317, CW-333 to -335
27	02/09/2015	Email Re: Interim Revenue from Terminal 5.	CW-339 to -340
28	01/26/2015	Email Re: Vessel Maintenance and Report at Terminal 5.	CW-341
29	12/04/2014	Email Re: T-5 Use.	CW-355
30	04/20/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
31	05/19/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
32	05/19/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
33	05/21/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
34	05/21/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
35	06/03/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	

Ex. #	Date	Description	Identifier
36	06/03/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
37	06/03/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
38	06/03/2015	Photograph taken by Soundkeeper's witnesses of Terminal 5's use by Foss.	
39	08/10/15	Foss Maritime Company's Objections and Responses to Department of Planning and Development's First Set of Interrogatories.	
40	08/10/15	Foss Maritime Company's Objections and Responses to Department of Planning and Development's First Set of Requests for Production of Documents.	
41	08/10/15	Department of Planning and Development's First Set of Interrogatories and Requests for Production of Documents to Port of Seattle and Response Thereto.	
42	1/13/15	Port of Seattle, Commission Special Meeting Agenda.[1]	CW-117
43	1/28/15	Letter from Patti Goldman et. al to Port of Seattle Commissioners, re: Request for Reconsideration Regarding Terminal 5 Interim Lease.	CW-180 to CW-185
44	3/9/15	Pilot's Report of Incident, Board of Pilotage Commissioners.	

[1] Publicly available at the Port of Seattle's website at http://www.portseattle.org/About/Commission/Meetings/2015/2015_01_13_SM_Agenda_Linked.pdf (last visited Aug. 19, 2015).

Ex. #	Date	Description	Identifier
45	4/15	U.S. Coast Guard Foreign and Offshore Compliance Division, Monthly List of IMO Reportable Detentions Webpage and Apr. 2015 Report.[2]	
46	3/15	Excerpts from: Shell Gulf of Mexico Inc., Revised Outer Continental Shelf Lease Exploration Plan: Chukchi Sea, Alaska (Revision 2: March 2015).[3]	
47	5/15	Excerpts from: Shell, Chukchi Sea Regional Exploration Program Oil Spill Response Plan.[4]	

[2] Publicly available at U.S. Coast Guard's website at http://www.uscg.mil/hq/cgcvc/cvc2/safety/detentions.asp (last visited Aug. 19, 2015).

[3] Publicly available at Bureau of Ocean Energy Management's website at http://www.boem.gov/uploadedFiles/BOEM/About_BOEM/BOEM_Regions/Alaska_Region/Leasing_and_Plans/Plans/2015-03-31-EP-Revision-2.pdf (last visited Aug. 19, 2015).

[4] publicly available at Bureau of Safety and Environmental Enforcement's website at http://www.bsee.gov/uploadedFiles/BSEE/BSEE_Newsroom/Publications_Library/OSRPs/Arctic/2015_05_15_Revision%203_Redacted_Shell%20Chukchi%20Sea%20OSRP%20with%20Cover%20Letters.pdf (last visited Aug. 19, 2015).

BEFORE THE HEARING EXAMINER
FOR THE CITY OF SEATTLE

In the Matter of the Appeal of: FOSS MARITIME COMPANY from an Interpretation by the Director, Department of Planning and Development.	Hearing Examiner File No. S-15-001 (DPD Project No. 3020324)
In the Matter of the Appeal of the: PORT OF SEATTLE, from Interpretation No. 15-001 of the Director of the Department of Planning and Development.	Hearing Examiner File No. S-15-002 (DPD Project No. 3020324) DECLARATION OF SERVICE

I am a citizen of the United States and a resident of the state of Washington. I am over 18 years of age and not a party to this action. My business address is 705 Second Avenue, Suite 203; Seattle, Washington 98104-1711.

I declare that on August 20, 2015, I served a copy of PUGET SOUNDKEEPER'S THIRD UPDATED EXHIBIT LIST AND WITNESS LIST, PUGET SOUNDKEEPER ALLIANCE ("PSA") EXHIBITS – TERMINAL 5 and this DECLARATION OF SERVICE via the Hearing Examiner's electronic filing system and/or via e-mail on the following parties:

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MCCULLOUGH HILL LEARY, PS
701 – 5th Avenue, Suite 6600
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jack@mhseattle.com
Attorney for Appellant Foss Maritime Company

☐ via legal messenger
☐ via overnight mail
☐ via first-class U.S. mail
☐ via hand delivery
☒ via Hearing Examiner E-File System
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☒ via Hearing Examiner E-File System
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☐ via legal messenger
☐ via overnight mail
☐ via first-class U.S. mail
☐ via hand delivery
☒ via Hearing Examiner E-File System
☒ via e-mail

I, Eudora Powell, declare under penalty of perjury under the laws of the state of Washington that the foregoing is true and correct.

Executed this 20th day of August, 2015, at Seattle, Washington.

Eudora Powell

EUDORA POWELL, Litigation Assistant

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(206) 343-7340

EXHIBIT 14a

From:	Pattison, Scott </O=FIRST ORGANIZATION/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=SHP>
Sent:	Saturday, January 31, 2015 4:30 PM
To:	Styrk, Linda <Styrk.L@portseattle.org>; McLaughlin.M@portseattle.org; Tanaka, Tom <Tanaka.T@portseattle.org>; Campagnaro, Mike <Campagnaro.M@portseattle.org>; Jones Stebbins, Stephanie <JonesStebbins.S@portseattle.org>; michael burke (burke.m@portseattle.org); Goodwin, Traci <Goodwin.T@portseattle.org>
Cc:	scott pattison (pattison.s@portseattle.org)
Subject:	DRAFT - Foss T-5 Term Lease.docx
Attach:	Foss T-5 Term Lease.docx

All –

Attached please find a DRAFT term lease for Foss at Terminal 5.
Please review.
I will schedule a meeting for Monday morning for those who are available to review/revise together.

Best,
Scott Pattison

that such late charge represents a fair and reasonable estimate of the costs the Port will incur by reason of late payment by Lessee. Acceptance of such late charge by the Port shall in no event constitute a waiver of Lessee's default with respect to such overdue amount, nor prevent the Port from exercising any of the other rights and remedies granted hereunder.

4.3.2.4.4.2. In the event that a late charge is payable in this Lease or otherwise, whether or not collected, for three (3) installments of Rent and/or other remuneration in any 12-month period, then Rent and/or other remuneration shall automatically become due and payable quarterly in advance, rather than monthly, notwithstanding Section 4.13.1 or any other provision of this Lease to the contrary.

4.3.3.4.4.3. In addition to the late charges provided for in this Section, interest shall accrue on any unpaid Rent and/or other remuneration, or any other sums due hereunder, at the rate of 18% per annum or the maximum rate provided by law, whichever is less, ("the Default Rate") from the date due until paid.

4.4.4.5.Use of Term Rent. The Port and Lessee agree that the term "Rent" shall mean and refer collectively to sums denominated as either Base Rent, Percentage Rent (if any), Additional Rent (if any) or any such other sums or charges otherwise payable by Lessee under the terms of this Lease. Failure by Lessee to pay any sum denominated as Rent shall entitle the Port to pursue any or all remedies specified in this Lease as well as remedies specified in RCW Chapter 59.12 or otherwise allowed by law.

SECTION 5: SECURITY

5.1. Security. Lessee shall, upon execution of this Lease, obtain and deliver to the Port a good and sufficient corporate surety company bond, irrevocable stand-by letter of credit, cash deposit or other security in an amount equal to six (6) months' Base Rent (hereinafter referred to as "Security"), and shall be adjusted annually on January 1st for CPI adjustments and expansions of Premises, if any, to secure Lessee's full performance of this Lease, including the payment of all fees and other amounts now or hereafter payable to the Port hereunder. The amount, form, provisions and nature of the Security, and the identity of the surety or other obligor thereunder, shall at all times be subject to the Port's approval. The Security shall remain in place at all times throughout the full term of this Lease and throughout any holdover period. If the Security is in a form that periodically requires renewal, Lessee must renew the Security not less than 45 days before the Security is scheduled to expire. No interest shall be paid on the Security and the Port shall not be required to keep the Security separate from its other accounts. No trust relationship is created with respect to the Security.

5.2. Return of Security. The Security is a part of the consideration for execution of this Lease. If Lessee shall have fully performed all terms and conditions of this Lease, any cash deposit security shall be paid to Lessee within thirty (30) days following the termination (or expiration) date without interest; otherwise the Port shall, in addition to any and all other rights and remedies available under this Lease or at law or equity, retain title thereto.

5.3. Application of Security. The Port may apply all or part of the Security to unpaid Rent or any other unpaid sum due hereunder, or to cure other defaults of Lessee. If the Port uses any part of the Security, Lessee shall restore the Security to its then-currently required amount within fifteen (15) days after the receipt of the Port's written request to do so. The retention or application of such Security by the Port pursuant to this Section does not constitute a limitation on or waiver of the Port's right to seek further remedy under law or equity.

SECTION 6: USE OF PREMISES

6.1. Use of Premises. Lessee shall use the Premises for a vessel supply base and storage depot related to vessel supply activities and shall not use them for any other purpose without the written consent of the Port.

6.2. General Standards Regarding Use.

6.2.1. Lessee shall occupy and use the entire Premises for the purpose set forth in Section 6.15.1 in a first-class manner continuously during the entire term of this Lease, with the exception of temporary closures for such periods as may reasonably be necessary for

EXHIBIT 15a

From:	Meyer, Paul </O=FIRST ORGANIZATION/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=PEM729>
Sent:	Monday, February 2, 2015 9:56 AM
To:	Jones Stebbins, Stephanie <JonesStebbins.S@portseattle.org>
Subject:	RE: DRAFT - Foss T-5 Term Lease.docx
Attach:	Foss Lease 2014-02-01 THT SJS pem .docx

Included my comments. Thought you should act as go between us and lease drafters. [redacted]

Paul Meyer
Manager, Environmental Permitting and Compliance
Port of Seattle
P.O. Box 1209
Seattle, WA 98111
206-787-3127
206-351-0114 (cell)
meyer.p@portseattle.org

From: Jones Stebbins, Stephanie
Sent: Monday, February 02, 2015 7:34 AM
To: Burke, Michael
Cc: Tanaka, Tom; Styrk, Linda; Pattison, Scott; McLaughlin, Michael; Campagnaro, Mike; Goodwin, Traci; Meyer, Paul; Ridgley, Susan
Subject: Re: DRAFT - Foss T-5 Term Lease.docx

A couple hundred K. Will try to get something more precise.

Sent from my iPhone

On Feb 2, 2015, at 7:27 AM, "Burke, Michael" <Burke.M@portseattle.org> wrote:

> What would be the cost to clean the lines they will use.
>
> Sent from my iPhone
>
> On Feb 2, 2015, at 7:23 AM, Jones Stebbins, Stephanie <JonesStebbins.S@portseattle.org> wrote:

[redacted]

Stephanie

From: Tanaka, Tom
Sent: Sunday, February 01, 2015 12:16 PM
To: Styrk, Linda; Pattison, Scott
Cc: McLaughlin, Michael; Campagnaro, Mike; Jones Stebbins, Stephanie; Burke, Michael; Goodwin, Traci; Meyer, Paul
Subject: RE: DRAFT - Foss T-5 Term Lease.docx

[redacted]

From: Styrk, Linda
Sent: Saturday, January 31, 2015 8:22 PM
To: Pattison, Scott
Cc: McLaughlin, Michael; Tanaka, Tom; Campagnaro, Mike; Jones Stebbins, Stephanie; Burke, Michael; Goodwin, Traci; Meyer, Paul
Subject: Re: DRAFT - Foss T-5 Term Lease.docx

Adding Paul

On Jan 31, 2015, at 16:30, Pattison, Scott <Pattison.S@portseattle.org> wrote:

All –

Attached please find a DRAFT term lease for Foss at Terminal 5.
Please review.
I will schedule a meeting for Monday morning for those who are available to review/revise together.

Best,
Scott Pattison
<Foss T-5 Term Lease.docx>
<Foss Lease 2014-02-01 THT SJS.docx>

LEASE AGREEMENT

Between

PORT OF SEATTLE

And

FOSS MARITIME COMPANY

deposit security shall be paid to Lessee within thirty (30) days following the termination (or expiration) date without interest; otherwise the Port shall, in addition to any and all other rights and remedies available under this Lease or at law or equity, retain title thereto.

5.3. Application of Security. The Port may apply all or part of the Security to unpaid Rent or any other unpaid sum due hereunder, or to cure other defaults of Lessee. If the Port uses any part of the Security, Lessee shall restore the Security to its then-currently required amount within fifteen (15) days after the receipt of the Port's written request to do so. The retention or application of such Security by the Port pursuant to this Section does not constitute a limitation on or waiver of the Port's right to seek further remedy under law or equity.

SECTION 6: USE OF PREMISES

6.1. Use of Premises. Lessee shall use the Premises for a vessel supply base and storage depot related to vessel supply activities [redacted] and shall not use them for any other purpose without the written consent of the Port.

[redacted]

6.2. General Standards Regarding Use.

6.2.1. Lessee shall occupy and use the entire Premises for the purpose set forth in Section [redacted] in a first-class manner [redacted] during the entire term of this Lease, with the exception of temporary closures for such periods as may reasonably be necessary for repairs [redacted] or for reasons beyond Lessee's reasonable control. As part of operating in a first-class manner, Lessee is provided with information about [redacted] Terminal 5, including, but not limited to Exhibits B-1 through B-6 (Buildings, Environmental Cap and Well Locations, Stormwater Basins, Underground Utility Structures' Design Loading Criteria, Live Load Combinations for Areas Designation "C", and Load Restriction Areas).

[redacted]

6.2.2. Lessee shall not use or occupy or permit the Premises or any part thereof to be used or occupied, in whole or in part, in a manner which would in any way: (i) violate any present or future Legal Requirements, (ii) violate any of the covenants, agreements, provisions and conditions of this Lease, (iii) violate the certificate of occupancy then in force with respect thereto, (iv) as will constitute a public or private nuisance, (v) impair, in the Port's reasonable judgment, with the character, reputation or appearance of the Port, or (vi) occasion discomfort, inconvenience or annoyance to either the Port or its adjoining tenants. For purposes of this Lease, the term "Legal Requirements" shall mean and refer to all laws, statutes and ordinances including building codes and zoning regulations and ordinances and the orders, rules, regulations and requirements of all federal, state, county, city or other local jurisdiction departments, agencies, bureaus, offices and other subdivisions thereof, or any official thereof, or of any other governmental, public or quasi-public authority, which may be applicable to or have jurisdiction over the Premises, or the sidewalks or streets adjacent thereto and all requirements, obligations and conditions of all instruments of record on the date of this Lease.

6.2.3. Lessee shall not conduct or permit to be conducted without the prior written consent of the Port, any auction, fire, bankruptcy, "going out of business" or other distress sales of any nature upon or from the Premises, whether voluntary, involuntary, pursuant to any assignment for the payment of creditors, or pursuant to any bankruptcy or other insolvency proceeding, unless ordered by a court of competent jurisdiction.

6.3. Continuing Compliance. Throughout the term of this Lease, Lessee shall, at its own cost and expense, promptly and diligently observe and comply with: (i) all Legal Requirements (including, without limitation, those relating to environmental matters) and the requirements of any fire insurance rating organization and all insurance companies writing policies covering the Premises or any part or parts thereof; (ii) all applicable rules and regulations of the Port pertaining to the building or other realty of which the Premises are a part now in existence or hereafter promulgated for the general safety and convenience of the Port, its various tenants, invitees, licensees and the general public; and (iii) all permits, licenses, franchises and other authorizations required for Lessee's use of the Premises or any part thereof. Lessee shall comply with each of these whether or not they are now in force or at any time in the future may be passed, enacted, or directed.

EXHIBIT 17a

From:	Pattison, Scott </O=FIRST ORGANIZATION/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=SHP>
Sent:	Tuesday, February 3, 2015 6:21 PM
To:	Paul Gallagher (pgallagher@foss.com)
Cc:	scott pattison (pattison.s@portseattle.org); Styrk, Linda <Styrk.L@portseattle.org>; Tanaka, Tom <Tanaka.T@portseattle.org>; Goodwin, Traci <Goodwin.T@portseattle.org>; McLaughlin.M@portseattle.org
Subject:	Foss T-5 Term Lease.docx
Attach:	Foss T-5 Term Lease.docx

Paul, Attached find a word document containing the proposed draft lease agreement between the Port of Seattle and Foss Maritime Company. Exhibits to follow in three or four "packets" so do not exceed file size limits.
Please confirm receipt.
Best,
Scott Pattison

From: Panger, Trevor
Sent: Tuesday, February 03, 2015 6:18 PM
To: Pattison, Scott
Subject: Foss T-5 Term Lease.docx

Scott,

See final draft for external distribution attached.

Trevor Panger
Sr. Lease Administration Specialist
Port of Seattle
P.O. Box 1209
Seattle, WA 98111
(206) 787-3880

application of such Security by the Port pursuant to this Section does not constitute a limitation on or waiver of the Port's right to seek further remedy under law or equity.

SECTION 5: USE OF PREMISES

5.1. Use of Premises. Lessee shall use the Premises for a cargo terminal which means a transportation facility in which quantities of goods or container cargo are stored without undergoing any manufacturing process, transferred to other carriers or stored outdoors in order to transfer them to other locations. Cargo terminals may include accessory warehouses, railroad yards, storage yards, and offices. Lessee shall not use the Premises for any other purpose without the written consent of the Port.

5.2. General Standards Regarding Use.

5.2.1. Lessee shall occupy and use the entire Premises for the purpose set forth in Section 5.1 in a first-class manner continuously during the entire term of this Lease, with the exception of temporary closures for such periods as may reasonably be necessary for repairs or for reasons beyond Lessee's reasonable control. As part of operating in a first-class manner, Lessee is provided with information about Terminal 5, including, but not limited to Exhibits B-1 through B-6 (Buildings, Environmental Cap and Well Locations, Stormwater Basins, Underground Utility Structures' Design Loading Criteria, Live Load Combinations for Areas Designation "C," and Load Restriction Areas).

5.2.2. Lessee shall not use or occupy or permit the Premises or any part thereof to be used or occupied, in whole or in part, in a manner which would in any way: (i) violate any present or future Legal Requirements, (ii) violate any of the covenants, agreements, provisions and conditions of this Lease, (iii) violate the certificate of occupancy then in force with respect thereto, (iv) as will constitute a public or private nuisance, (v) impair, in the Port's reasonable judgment, with the character, reputation or appearance of the Port, or (vi) occasion discomfort, inconvenience or annoyance to either the Port or its adjoining tenants. For purposes of this Lease, the term "Legal Requirements" shall mean and refer to all laws, statutes and ordinances including building codes and zoning regulations and ordinances and the orders, rules, regulations and requirements of all federal, state, county, city or other local jurisdiction departments, agencies, bureaus, offices and other subdivisions thereof, or any official thereof, or of any other governmental, public or quasi-public authority, which may be applicable to or have jurisdiction over the Premises, or the sidewalks or streets adjacent thereto and all requirements, obligations and conditions of all instruments of record on the date of this Lease.

5.2.3. Lessee shall not conduct or permit to be conducted without the prior written consent of the Port, any auction, fire, bankruptcy, "going out of business" or other distress sales of any nature upon or from the Premises, whether voluntary, involuntary, pursuant to any assignment for the payment of creditors, or pursuant to any bankruptcy or other insolvency proceeding, unless ordered by a court of competent jurisdiction.

5.3. Continuing Compliance. Throughout the term of this Lease, Lessee shall, at its own cost and expense, promptly and diligently observe and comply with: (i) all Legal Requirements (including, without limitation, those relating to environmental matters) and the requirements of any fire insurance rating organization and all insurance companies writing policies covering the Premises or any part or parts thereof; (ii) all applicable rules and regulations of the Port pertaining to the building or other realty of which the Premises are a part now in existence or hereafter promulgated for the general safety and convenience of the Port, its various tenants, invitees, licensees and the general public; and (iii) all permits, licenses, franchises and other authorizations required for Lessee's use of the Premises or any part thereof. Lessee shall comply with each of these whether or not they are now in force or at any time in the future may be passed, enacted, or directed.

5.4. Terminal Security.

5.4.1. Without limiting the generality of either Section 5.2 or 5.3, Lessee shall comply at all times with all local, state and federal laws, rules and regulations relating to homeland security ("Security Laws") applicable to the Premises or any larger facility of which the Premises are a part. If the Premises, either directly or as a result of its location within a larger Port facility, are subject to a government-required security plan ("Security Plan"), Lessee will

EXHIBIT 18a

From:	Panger, Trevor </O=FIRST ORGANIZATION/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=TP3>
Sent:	Thursday, February 12, 2015 9:22 AM
To:	Wilen, Jerome <Wilen.J@portseattle.org>
Cc:	Campagnaro, Mike <Campagnaro.M@portseattle.org>; Pattison, Scott <Pattison.S@portseattle.org>
Subject:	RE: Request 15-2 Terminal 5
Attach:	Foss T-5 Term Lease.docx

Jerome,

See attached – 15 mb due to the many exhibits. I've password protected the file so that it's read-only – that shouldn't be a problem but let me know if so.

Note that if there are any further "versions" created in SharePoint, they will be generated from changes to the SharePoint metadata only and not the document contents itself.

Trevor
ext. 3880

From: Wilen, Jerome
Sent: Thursday, February 12, 2015 7:14 AM
To: Panger, Trevor
Subject: RE: Request 15-2 Terminal 5

Trevor –

For now please send a copy of the final lease. Thank you.

From: Panger, Trevor
Sent: Wednesday, February 11, 2015 5:27 PM
To: Wilen, Jerome
Subject: RE: Request 15-2 Terminal 5

Jerome,

If you only need to see a single file with all the final Tracked Changes, we can provide that file. If you are actually looking for each separate Word file, then we only have one of them. As the attached version history on our document shows, a draft had already been started outside of our group and then uploaded to our SharePoint site on February 2nd. For any drafts previous to what's shown here, you will have to track down whoever was working on it prior to that date.

Also, we had sent Foss three separate "blackline" drafts generated from our single source draft for their reference during negotiations.

All four files are available if you need them.

Trevor

ext. 3880

From: Campagnaro, Mike
Sent: Wednesday, February 11, 2015 4:52 PM
To: Wilen, Jerome
Cc: Panger, Trevor
Subject: RE: Request 15-2 Terminal 5

Jerome: We have the executed lease. Do you need to also see the base documents with edits?

Just let me know and I will have Trevor Panger send you the electronic sharepoint links.

Thanks, Mike

From: Wilen, Jerome
Sent: Wednesday, February 11, 2015 2:58 PM
To: Campagnaro, Mike
Subject: Request 15-2 Terminal 5

Mike –

Traci Goodwin and I spoke regarding the Terminal 5 request. I need a copy of the Terminal 5 lease (Final) and any drafts that may be available.

Thank you,

Jerome Wilen
Port of Seattle
Public Disclosure Manager
Direct: 206-787-4141
Fax: 206-787-3205
Cell: 206-605-6786
Wilen.J@portseattle.org

http://portofseattle.nextrequest.com/

deposit or other security in an amount equal to [redacted] months' the Base Rent (hereinafter referred to as "Security"), and shall be adjusted annually on January 1st for CPI adjustments and expansions of Premises, if any, to secure Lessee's full performance of this Lease, including the payment of all fees and other amounts now or hereafter payable to the Port hereunder., the removal of any tenant improvements as may be requested by the Port per Section 7 of the Llease and Lessee's proper cleaning of stormwater lines per Section 19.8 of the Llease. The amount, form, provisions and nature of the Security, and the identity of the surety or other obligor thereunder, shall at all times be subject to the Port's approval. The Security shall remain in place at all times throughout the full term of this Lease and throughout any holdover period. If the Security is in a form that periodically requires renewal, Lessee must renew the Security not less than 45 days before the Security is scheduled to expire. No interest shall be paid on the Security and the Port shall not be required to keep the Security separate from its other accounts. No trust relationship is created with respect to the Security.

4.2. Return of Security. The Security is a part of the consideration for execution of this Lease. If Lessee shall have fully performed all terms and conditions of this Lease, any cash deposit security shall be paid to Lessee within thirty (30) days following the termination (or expiration) date without interest; otherwise the Port shall, in addition to any and all other rights and remedies available under this Lease or at law or equity, retain title thereto.

4.3. Application of Security. The Port may apply all or part of the Security to unpaid Rent or any other unpaid sum due hereunder, or to cure other defaults of Lessee. If the Port uses any part of the Security, Lessee shall restore the Security to its then-currently required amount within fifteen (15) days after the receipt of the Port's written request to do so. The retention or application of such Security by the Port pursuant to this Section does not constitute a limitation on or waiver of the Port's right to seek further remedy under law or equity.

SECTION 5: USE OF PREMISES

5.1. Use of Premises. Lessee shall use the Premises for a vessel supply base and storage depot related to vessel supply activities consistent with the master use permit for Terminal 5 and shall not use them for any other purpose without the written consent of the Port. Lessee shall use the Premises for a cargo terminal which means a transportation facility in which quantities of goods or container cargo are stored without undergoing any manufacturing process, transferred to other carriers or stored outdoors in order to transfer them to other locations. Cargo terminals may include accessory warehouses, railroad yards, storage yards, and offices. Lessee shall not use the Premises for any other purpose without the written consent of the Port.

5.2. General Standards Regarding Use.

5.2.1. Lessee shall occupy and use the entire Premises for the purpose set forth in Section 5.1 in a first-class manner continuously during the entire term of this Lease, with the exception of temporary closures for such periods as may reasonably be necessary for repairs [redacted] or for reasons beyond Lessee's reasonable control. As part of operating in a first-class manner, Lessee is provided with information about [redacted] Terminal 5, including, but not limited to ExhibitExhibits B-1 through B-6 (Buildings, Environmental Cap and Well Locations, Stormwater Basins, Underground Utility Structures' Design Loading Criteria, Live Load Combinations for Areas Designation "C.", and Load Restriction Areas).

5.2.2. Lessee shall not use or occupy or permit the Premises or any part thereof to be used or occupied, in whole or in part, in a manner which would in any way: (i) violate any present or future Legal Requirements, (ii) violate any of the covenants, agreements, provisions and conditions of this Lease, (iii) violate the certificate of occupancy then in force with respect thereto, (iv) as will constitute a public or private nuisance, (v) impair, in the Port's reasonable judgment, with the character, reputation or appearance of the Port, or (vi) occasion discomfort, inconvenience or annoyance to either the Port or its adjoining tenants. For purposes of this Lease, the term "Legal Requirements" shall mean and refer to all laws, statutes and ordinances including building codes and zoning regulations and ordinances and the orders, rules, regulations and requirements of all federal, state, county, city or other local jurisdiction departments, agencies, bureaus, offices and other subdivisions thereof, or any official thereof, or of any other governmental, public or quasi-public authority, which may be applicable

EXHIBIT 42

COMMISSION SPECIAL MEETING AGENDA

Port of Seattle Commission

Tom Albro
Stephanie Bowman
Bill Bryant
John Creighton
Courtney Gregoire

Chief Executive Officer

Ted Fick

Web site:
www.portseattle.org

E-mail:
Commission-public-records @portseattle.org

Port Commission:
(206) 787-3034

Meeting and Agenda Information:
(206) 787-3210

Our Mission:
The Port of Seattle is a public agency that creates jobs by advancing trade and commerce, promoting industrial growth, and stimulating economic development

Strategic Objectives:
- Position the Puget Sound region as a premier international logistics hub
- Advance this region as a leading tourism destination and business gateway
- Use our influence as an institution to promote small business growth and workforce development
- Be the greenest, and most energy efficient port in North America

Date: **January 13, 2015**

Location: Seattle-Tacoma International Airport
Conference Center at Sea-Tac

ORDER OF BUSINESS

12:00 noon

1. **CALL TO ORDER AND PLEDGE OF ALLEGIANCE**
2. Recess to **EXECUTIVE SESSION*** – Pursuant to RCW 42.30.110, if necessary.

1:00 p.m.: Reconvene or Call to Order

OPEN PUBLIC SESSION

3. **SPECIAL ORDERS OF BUSINESS**

   None.

4. **UNANIMOUS CONSENT CALENDAR*****

   4a. Removed from Agenda.

   4b. Approval of the Claims and Obligations for the period December 1-December 31, 2014, in the amount of $48,512,737.97 including accounts payable check nos. 901191-901751 in the amount of $39,389,473.27 and payroll check nos. P-178372-178990 in the amount of $9,123,264.70 for a fund total of $48,512,737.97. **(memo enclosed)**

5. **PUBLIC TESTIMONY** — Public testimony procedures may be found online at *www.portseattle.org/About/Commission/Procedures*.

6. **DIVISION, CORPORATE, AND COMMISSION ACTION ITEMS**

   6a. Authorization for the Chief Executive Officer to execute a purchased services contract for Manual Encoding Services at Seattle-Tacoma International Airport for up to five years, not to exceed $775,000. **(memo enclosed)**

7. **STAFF BRIEFINGS**

   7a. Update on the Airport's International Arrivals Facility Program. **(memo, attachment, presentation 1, and presentation 2 enclosed)**

   7b. Sustainable Airport Master Plan Planning Update. **(memo and presentation enclosed)**

   7c. Seaport Briefing – Terminal 5 Modernization Project, East and West Waterway Deepening Project, T-5 Interim Uses and Pier 34 Mooring Dolphins. **(memo and presentation enclosed)**

   7d. Update from Legal Counsel on Implementation of Resolution no. 3694, as amended. **(no enclosure)**

8. **ADDITIONAL NEW BUSINESS**
9. **ADJOURNMENT**

* ***An Executive Session may be held at any time after the convening time, if necessary.***
** ***Please silence all personal electronic devices during the Public Session.***
*** ***Consent Calendar items are considered routine and are adopted by one motion without discussion. If requested, items may be removed from Consent and considered individually following public testimony.***

EXHIBIT 43

EARTHJUSTICE

ALASKA CALIFORNIA FLORIDA MID-PACIFIC NORTHEAST NORTHERN ROCKIES
NORTHWEST ROCKY MOUNTAIN WASHINGTON, D.C. INTERNATIONAL

January 28, 2015

Port of Seattle Commissioners
PO Box 1209
Seattle, WA 98111

RE: Request for Reconsideration Regarding Terminal 5 Interim Lease

Dear Commissioners Albro, Bowman, Bryant, Creighton and Gregoire:

The undersigned ask the Port of Seattle to reconsider its decision to proceed with an interim lease for use of Terminal 5 by Foss Maritime without complying with the State Environmental Policy Act (SEPA). This matter moved at such a fast pace that we are concerned the Port did not give the applicability of SEPA and the environmental implications of this lease full consideration.

On January 13, 2015, the Port of Seattle voted 3-2 not to prohibit Port staff from signing a lease with Foss Maritime for use of Terminal 5 on an interim basis during the modernization project. While the interim lease might further the Commissioners' goal of bringing in revenues and creating some jobs during the early stages of the modernization project, it might also have environmental impacts that counsel in favor of rejecting the lease or including lease conditions to prevent environmental harm. It is our understanding that the lease term would begin in March 2015 for a two-year term, with the possibility of extensions for up to four years if the project would avoid interfering with the modernization activities.

The Port appears poised to enter into a lease with Foss without undertaking any environmental review under SEPA. The Commission has invoked a SEPA categorical exemption that applies to leasing real property. That exemption applies only "when the property use will remain essentially the same as the existing use for the term of the agreement." WAC 197-11-800(5)(c). Previously, the Port had leased Terminal 5 to Eagle Marine Services, Ltd. for use as a container terminal. In July 2014, the Port terminated that lease because the container terminal operations were incompatible with the activities required to modernize the terminal.

The critical question, for purposes of the SEPA categorical exemption, is whether Foss's proposed uses of Terminal 5 are "essentially the same" as the prior container terminal operations. Foss is proposing two uses with possible additional ones during the lease term. Our concern is with the proposal by Foss, in partnership with Royal Dutch Shell, to use approximately 50 acres of Terminal 5 as a home port for offshore exploration drilling and support vessels.

NORTHWEST OFFICE 705 SECOND AVENUE, SUITE 203 SEATTLE, WA 98104

T: 206.343.7340 F: 206.343.1526 NWOFFICE@EARTHJUSTICE.ORG WWW.EARTHJUSTICE.ORG

The proposal remains vague. Disclosed materials indicate at times that 24 vessels would berth at Terminal 5 and at other times 8 vessels. The vessels have been described as exploration drill rigs, ice breakers, provisioning vessels, environmental response vessels, tugs and barges. They would be moored at Terminal 5 from October through May; in June, the vessels would make the journey to the Arctic for the drilling season. Foss Maritime provides vessel repairs, major conversions, vessel construction, and routine maintenance, and the Shell drilling fleet has needed extensive repairs, maintenance and conversions in the past. If such activities would be conducted at Terminal 5, the lease would change the use of the terminal from a container terminal to a shipyard, which discharge runoff laden with toxic chemicals.

While the current proposal is to enter into an interim lease with Foss, the Port must consider how the use of Terminal 5 as a homeport for Shell's Arctic fleet might evolve over time. Legally, if the Port renews the lease for a second or third term, the uses would likely remain essentially the same as those under the initial interim lease. Accordingly, the SEPA categorical exemption would likely apply to a lease renewal. The Port must, therefore, consider not only the uses currently identified by Foss, but also the possibility that the Port could become the permanent homeport for Shell's Arctic fleet with expanded vessel repair and servicing activities in the event the modernization plans fail to move forward and obtain public financing.

The Port invoked the leasing categorical exemption without any analysis of the activities that would be conducted by Foss under the lease. In particular, other categorical exemptions reveal the need for heightened scrutiny of activities that occur wholly or partially on lands covered by water or where water pollution will result from the land use. *See* WAC 197-11-800(1)(a) & (2)(a) (categorical exemption for minor construction inapplicable in these circumstances); 6(d) (exemption for certain subdivision and play approvals inapplicable to lands covered by water). Where a project would involve overwater structures or water pollution, the categorical exemptions envision that SEPA should apply and the state or local agency should review the environmental impacts under ordinary SEPA procedures.

Turning Terminal 5 into an interim home port for Shell's Arctic drilling could have a range of environmental impacts, including toxic runoff from vessel reconstruction and maintenance and water pollution from the vessels at port and during transit. Shell's Arctic drilling fleet has an abysmal track record when it comes to water pollution and compliance with environmental laws. The *New York Times Magazine* published an article on December 30, 2014, *The Wreck of the Kulluk*, which recounts the myriad ways in which Shell cut corners on safety in its Arctic drilling operations. Many of these shortcomings are relevant to the proposed activities in Puget Sound. For example, the Department of Interior conducted a review after Shell's 2012 Arctic offshore drilling program "raised serious questions regarding its ability to operate safely and responsibly." *Review of Shell's 2012 Alaska Offshore Oil and Gas Exploration Program* at 1 (March 8, 2013). The Review "confirmed that Shell entered the drilling season not fully prepared in terms of fabricating and testing certain critical systems and establishing the scope of its operational plans" and identified "shortcomings in Shell's management and oversight of key contractors" operating, servicing and refurbishing vessels. *Id*. More specifically, the Review

"identified a number of weaknesses indicating that Shell's management systems were insufficiently robust, particularly in the area of contractor oversight, to successfully manage and minimize overall operational risks" and found that "[t]he most significant shortcomings in Shell's management systems were in the area of contractor management and oversight," pointing to air permit violations and deficiencies in the *Noble Discoverer,* as examples. *Id*. at 30, 31. Shell fell short in managing and monitoring risks identified during operational planning. *Id*. at 30. And the systems that Shell did employ failed to oversee the risks associated with ancillary maritime transportation or logistics activities, *id*. at 31, precisely the types of activities that the Terminal 5 lease would bring to Puget Sound.

The travails of the *Noble Discoverer* raise particular concerns about allowing Terminal 5 to serve as the home port for Shell Arctic drilling vessels. After the ship completed drilling operations, its main engine and other equipment failed. As a result of deficiencies in its safety management system, the Coast Guard placed the vessel under a Port State detention pending corrective measures, which the Coast Guard does in only approximately 1% of its vessel safety examinations. Ultimately, the *Noble Discoverer* had to be loaded onto a vessel and dry-towed to Asia for repairs. The federal government indicted Noble Drilling (US) LLC for environmental and maritime crimes in operating the *Noble Discoverer*. On December 8, 2014, Noble pled guilty to eight felony offenses, agreed to pay $12.2 million dollars in fines and community service payments, and was placed on probation for four years. Among its offenses, Noble failed to have operational pollution control equipment, developed make-shift systems that discharged bilge and wastewater directly overboard, pumped oil-contaminated water into the ballast water tanks and discharged the contents overboard instead of through pollution control equipment, failed to notify the Coast Guard of hazardous conditions with the vessel's equipment, which led to an explosion and engine fire, and falsified records pertaining to its collection, transfer, storage and disposal of oil and the inoperability of pollution control equipment. Noble's actions led to the discharge of oil-contaminated water, which in one instance created an oily sheen in Broad Bay, Unalaska.

The *Noble Discoverer*, still operated by *Noble*, would be one of the drill ships stationed at Terminal 5, along with another drill ship, the *Polar Pioneer,* owned by Transocean, the owner of the *Deepwater Horizon,* which paid more than $1.4 billion in criminal and civil fines for its role in the 2010 Macondo oil spill. After a summer drilling season in the harsh conditions of the Arctic, the *Noble Discoverer* and other vessels have needed extensive repairs. Making such repairs at Terminal 5 would differ from the normal fare of a container terminal and would produce the type of contaminated runoff associated with shipyards.

The discharge of oil from the vessels and toxic pollution from vessel maintenance and reconstruction can be particularly harmful to salmon. Terminal 5 is located near the mouth of the Duwamish River, which is habitat to Puget Sound Chinook salmon that are listed as threatened under the federal Endangered Species Act. Water pollution from the proposed homeport may harm threatened salmon, as well as their prey.

The serious deficiencies in the Shell Arctic drilling fleet stem from its rush to conduct exploratory drilling in the Arctic, a pristine ocean frontier known for its harsh climate and remoteness. The nation watched in horror as *Deepwater Horizon* exploded, burned, and sank, spewing an estimated 210 million gallons of oil into the Gulf of Mexico. If the unthinkable were to occur in the Arctic, it would be catastrophic, perhaps even more so than in the relatively accessible and placid Gulf of Mexico. The Arctic lacks the infrastructure to respond to an oil spill—the nearest Coast Guard station is 1,000 miles away, and there are no roads, deep-water ports, hotels, or major airports to facilitate response efforts—and there are no proven means of containing or removing spilled oil in the Arctic's seasonally ice-covered and stormy seas. An oil spill would devastate the region's irreplaceable wildlife and the vibrant indigenous culture that has thrived there for millennia. Even without a spill, Shell's drilling would introduce noise, disturbance, and air and water pollution into the fragile region already suffering immense stress from climate change that is occurring at twice the rate as the rest of the world, melting the sea ice upon which species such as polar bears, walrus, and seals depend on for their survival. Shell's drill ships, ice-breakers, helicopters, and supply ships would descend and operate in vital habitat for already-stressed Arctic species during the critical few summer months these species use the Arctic Ocean to feed, give birth, and rear their young. Shell proposes to drill in the heart of the bowhead whale migration corridor, potentially disturbing mothers and calves in critical feeding and resting areas. It also proposes to operate in an important walrus habitat, potentially chasing walruses and their young from vital feeding grounds and adding to the species' woes as the animals try to adapt to the loss of sea ice by congregating in massive onshore haul outs where they are vulnerable to trampling from disturbance and must swim long distances, sometimes over a hundred miles, to find food. Shell's operations will also kill birds such as threatened eiders, disturb seals and other species of whales, and discharge harmful air and water pollution. What's more, any oil Shell finds and develops will only exacerbate climate change and undermine internationally agreed climate goals. Indeed, a recent scientific study in the journal *Nature* specifically concludes that Arctic oil and gas should be left in the ground if we are to limit warming to 2 degrees Celsius and avoid the worst effects of climate change. *See* McGlade, Christophe and Paul Ekins, "The geographical distribution of fossil fuels unused when limiting global warming to 2°C", *Nature* 517(187) (2015).

Shell's quest to drill in the Arctic has been a dirty business, exposing people and natural resources to harm along the way. Before bringing the Shell drilling fleet to Terminal 5, the Port should, and legally must, assess the environmental harm that could befall the Puget Sound.

For these reasons, we ask that you reconsider invoking a categorical exemption to preclude SEPA compliance for allowing Terminal 5 to serve as a home port for Shell's Arctic drilling fleet. We ask that the Port apply greater scrutiny to the proposed lease, including through additional public hearings and public disclosure of the full extent of the operations that would be permitted at Terminal 5 under the proposed lease and all documents revealing such information. Should the Port persist in entering into the lease and in invoking a categorical exemption from SEPA, it must provide a full written justification for doing so. Port of Seattle Resolution 3650, § 9.3, at http://www.portseattle.org/Environmental/Environmental-

Documents/SEPA-NEPA/Pages/default.aspx. Moreover, in light of the public controversy over this lease, it would be prudent for the Port to structure any lease to insulate the Port from contractual or financial liability should the lease be invalid due to violations of SEPA or other laws.

We ask that you respond to this letter by February 9, 2015, to let us know how the Port intends to proceed. Please respond by contacting Patti Goldman at (206) 343-7340 extension 1032 or pgoldman@earthjustice.org.

Sincerely,

Patti Goldman, Northwest Managing Attorney
Amanda Goodin, Staff Attorney
Earthjustice

Tom Campion, Trustee
Campion Foundation

Gregg Small, Executive Director
Climate Solutions

Becky Kelley, President
Washington Environmental Council

Mike McGinn
Former Mayor of Seattle

Peter Goldman, Director
Washington Forest Law Center

Emily Johnston, Communications Coordinator
350 Seattle

Cindy Shogan, Executive Director
Alaska Wilderness League

Marcie Keever, Legal Director & Oceans & Vessels Program Director

Fred Felleman, Northwest Consultant
Friends of the Earth

Stan Senner, Director, Bird Conservation,
Pacific Flyway
National Audubon Society

Susan North, Conservation Manager
Seattle Audubon Society

Dan Ritzman
Alaska Program Director
Sierra Club

Jesse Piedfort
Seattle Group
Washington Chapter Sierra Club

John Deans
Brian Manning
Greenpeace

cc: Linda Styrk, Managing Director, Seaport Division
Port Environmental Services, sepa.p@portseattle.org
Traci Goodwin, General Counsel's Office
Port of Seattle, Pier 69

EXHIBIT 44

PILOT'S REPORT OF INCIDENT

BOARD OF PILOTAGE COMMISSIONERS
2901 Third Avenue, Seattle, Washington 98121
(206) 515-3904 FAX (206) 515-3906

DATE: 9 March 2015
FILE WITH COMMISSION WITHIN 10 DAYS

A state licensed pilot involved in an incident is required by law to notify the Board of Pilotage Commissioners by telephoning (1-800-627-3924) or radioing (Channel 20) the Marine Exchange of Puget Sound as soon as the situation is stabilized or within one hour of reaching shore. A pilot is also required to complete this form and submit it to the Board of Pilotage Commissioners as soon as possible after the incident, but in no event more than ten days afterwards.

An incident includes an actual or apparent collision, allision, or grounding. An incident is also a navigational occurrence resulting in actual or apparent personal injury, property or environmental damage.

PILOT: Scott T. Coleman	STATE LICENSE NO. 191		FEDERAL LICENSE NO. Ref #2526040
VESSEL Aiviq	FLAG USA		MASTER Joe Borkowski
OWNER/AGENT Edison - Chouest			OFFICIAL NUMBER 1237683
DATE OF INCIDENT Everett - Pier 3 South 15 Mar 9		TIME OF INCIDENT (a.m./p.m.) 0810 (AM)	
LOCATION (Established by bearings and distance, geographical point, or latitude & longitude) Alongside Everett Pier 3 South			
LENGTH OF VESSEL (LOA) 362' 02"	BEAM 80' 00"	DRAFT FORWARD/AFT 28'02"	GROSS TONNAGE (INT'L) 12892
WEATHER CONDITIONS (clear, rain, snow, sleet, hail, fog, etc.) Fog			
VISIBILITY +/- 0.25nm		WIND (Direction, velocity, steady, gusty, etc.) SE Airs	
TIDAL CONDITIONS HW 0745 10.5'			
NAME OF TUG(S) USED Bo Brusco		TUG MASTER(S) John Juker	

NARRATIVE DESCRIPTION AND CAUSE OF INCIDENT: Describe the incident, including the chain of events leading to it. Attach additional sheets, as necessary, and complete diagram on reverse.

NOTE — IN CASE OF GROUNDING, COLLISION or ALLISION: State all facts, including all necessary time, courses steered (true or magnetic), speed of vessel, compass error if known, ship's heading at time of incident, and navigational instruments used. Include radar, compass, fathometer, GPS, LORAN, etc. If vessel is equipped with radar, state particulars - manufacturer, range used, if operating satisfactorily, who was operating it, and information furnished. Describe all precautions or actions taken to avoid the incident, including soundings, use of electronic navigation equipment, position plotting, and navigation procedures including soundings, whistle echoes and signals where applicable. Describe methods used to refloat the vessel, if applicable. In case of collision or allision, include whistles exchanged, engine orders, and wheel orders.

NARRATIVE TOPICS TO CONSIDER

- ☐ Perceptions
- ☐ Communications
- ☐ Language Difficulty
- ☐ Judgments
- ☐ Ship Configuration or Loading
- ☐ Personal Alertness
- ☐ Contributing Factors
- ☐ Decisions
- ☐ Actions or Inactions

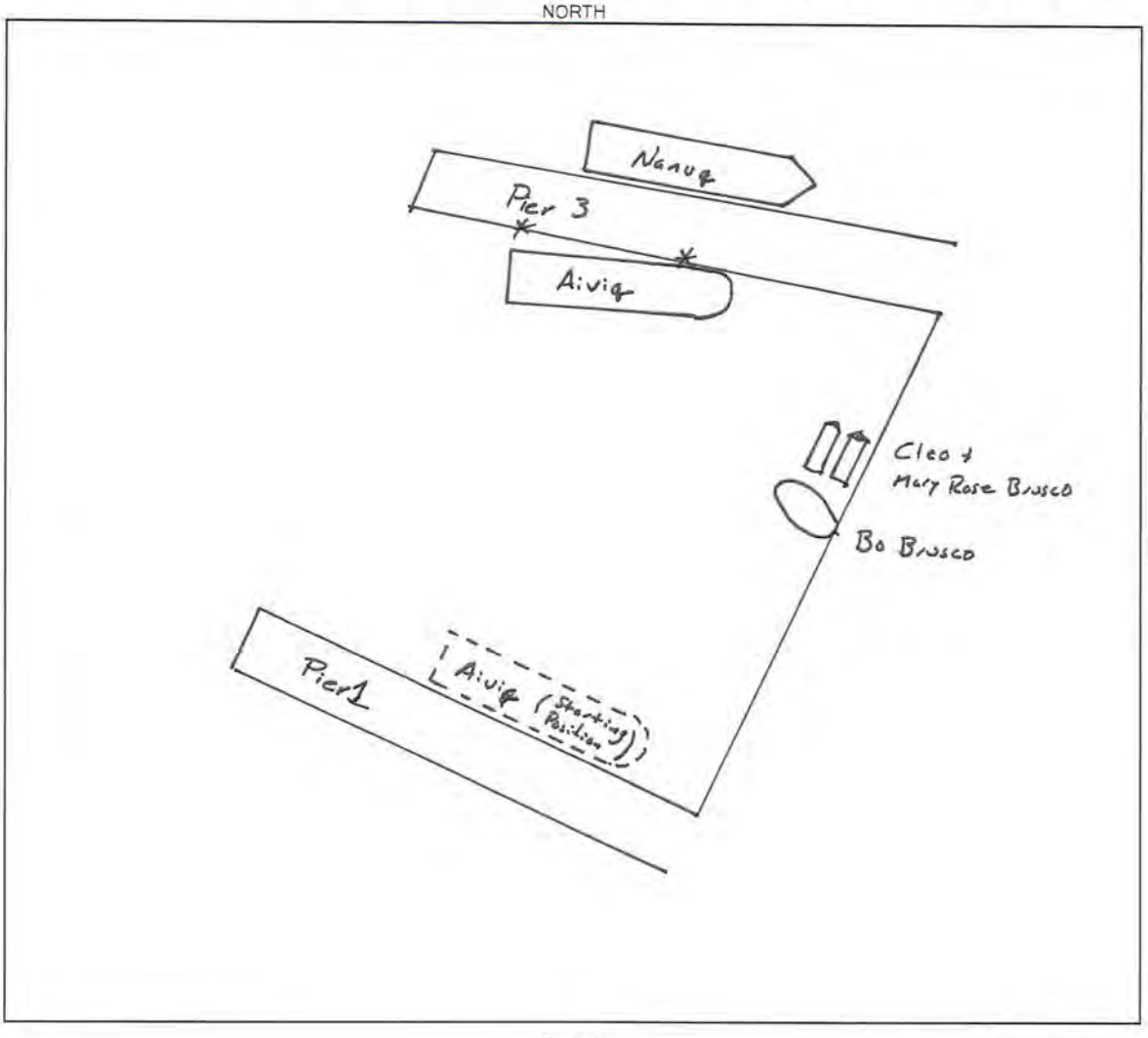
Please see attached narrative

DESCRIBE ACTUAL OR APPARENT PERSONAL INJURY OR PROPERTY OR ENVIRONMENTAL DAMAGE:

Damage was cracking the dock stringers in two places. One where the bow touched down and one where the stern touched down. Please see pictures attached.

THIS SPACE TO BE USED FOR DRAWING DIAGRAM OF VESSEL AND OTHER OBSTACLES AT TIME OF INCIDENT.

NORTH



WEST

EAST

SOUTH

DID YOU NOTIFY THE VESSEL MASTER OF YOUR INTENT TO FILE THIS REPORT? ☑ YES ☐ NO

(PILOT'S SIGNATURE)

I reported aboard the Aiviq at 0150. She was moored in Everett at Terminal 1 North, starboard side to. I was given a room where I rested to until 0645. I was on the bridge at 0705. Once the Master was on the bridge at around 0730 I had him fill out the white card and we discussed the shift. The vessel was to move from Terminal 1 North starboard side to, nearly directly across to Terminal 3 South port side to. The moorage at T-3 was the same long term moorage where the vessel is usually moored. The deep draft was discussed and that the shift would be completed utilizing the vessels thrusters and main engines. The Master did request that I contact Brusco, which had just completed a ship assist, and ask that if available, they just 'stand by' at their berth at Hewitt Terminal in case there was any issue. I inquired further as to any deficiencies and was told that there had been 'communication issues' in the past (meaning with the electronic controls), but that everything had been tested and checked out as working. As long as the tug was available he just wanted an extra layer of protection in case anything unexpected were to occur. I contacted the tug Bo Brusco and they agreed to stand by and monitor an agreed upon channel.

Once the gangway was cleared by the shore gang, the thrusters were used to pin the vessel alongside while all of the lines were brought in. The last line was aboard at 0751. Once clear the thrusters were stopped and used to move the vessel bodily to port from the berth. Thruster use was continued for lateral motion and main propulsion for fore and aft positioning.

Because of the layout of the bridge aboard the Aiviq, if one is standing where they can see the side shell they are either not in good line of sight or communication with the person at the controls. Also, all of the indicators are located at the main controls. Therefore if you are standing where you can see the side shell you cannot see the controls or indicators.

The vessel approached the berth on azimuth at Terminal 3. It appeared that our closure rate was a just slightly fast for the distance off. Just as I was about to speak to slowing, the Master told the mate that he needed to decrease the closure rate. The Master then walked centerline to check on the mate, leaving me on the port side. At this time I voiced again that the closure rate need to be taken off, and instead of the closure decreasing the bow started to fall in towards the dock. I repeated, more than once, that the bow was still falling in and that it needed to be lifted. I walked to where I could see the controls and they were set to thrust to starboard, away from the dock. The vessel's shoulder came along side at 0810 with a slight angle but with enough momentum that it cracked the stringer on either side of a ladder opening where it touched down. At this point the Master and I agreed to get the Bo Brusco over to assist. The stern then settled in and touched down also with enough force to crack the stringer where it contacted.

Once settled out the Bo was in position to and used to assist in bringing the Aiviq lightly alongside. Lines were run out and the main propulsion was used to slide into position. The vessel was all fast at 0845.

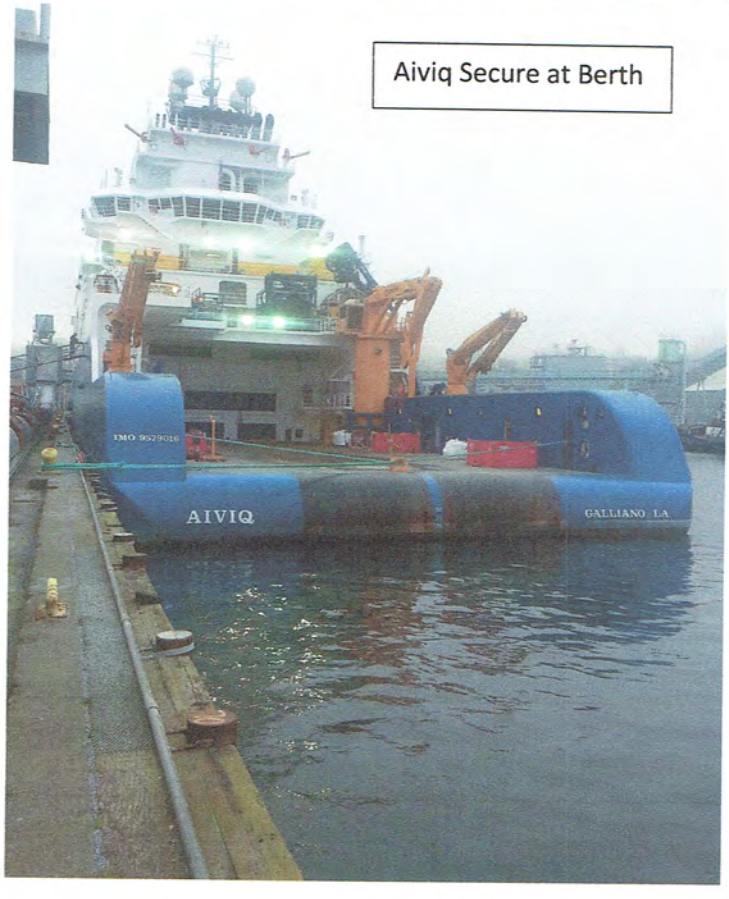
Apparently in the final approach there was a malfunction with the thrusters. I was not made aware of the failure until after the vessel touched down alongside. I was told that the handles and the feed-back readouts gave good indication of thrust in the direction requested. But, what was requested by the operator and what happened were not the same. There was question whether the thrusters just failed to operate or in fact operated in the opposite direction as ordered. Once alongside and secured the thrusters were all tested again and checked to be working fine and thrusting in the requested direction.

Afterwards in speaking to the operator of the Bo Brusco he said that from where they were moored, just off the Aiviq's starboard bow, he saw thruster wash from the bow in what he thought was the wrong direction as the bow was swinging to port just when the vessel was in its final approach alongside.

I informed the Master that I would be submitting an incident report to the WSBOPC and he said that he would contact the Port of Everett about the damage to the dock stringers. I was ashore at 0900. I contacted the commission office at 0927 and spoke to Shawna Ericson. I proceeded directly for a post-incident drug and alcohol test.

Cracked Stringer Fwd

Cracked Stringer Aft



Aiviq Secure at Berth

MASTER'S CERTIFICATION

I, Joe Borkowski (PRINT), Master of this vessel, certify the following information:

	YES	NO
Is the engine room properly staffed, the engine able to maneuver, and all related equipment in good order?	☑	☐
Does this ship meet United States Coast Guard regulations governing safety and navigation?	☑	☐
Does this vessel comply with current international agreements governing safety and radio equipment?	☑	☐
Is this vessel leaking oil?	☐	☑
Is this vessel experiencing propulsion or maneuvering difficulties?	☐	☑

I HAVE NOTIFIED THE UNITED STATES COAST GUARD CAPTAIN OF THE PORT OF ANY DEFICIENCIES NOTED ABOVE AND HE HAS AUTHORIZED THE VESSEL TO PROCEED. ANY SUCH DEFICIENCIES WILL BE CORRECTED BEFORE THE TIME THE VESSEL IS SCHEDULED TO LEAVE THE WATERS OF WASHINGTON STATE.

MASTER'S SIGNATURE

PILOT'S REPORT

Date: 9 March 2015

Vessel Name: Aiviq

Flag: USA

I, Scott T. Coleman (PRINT), a Pilot licensed by the State of Washington, certify that upon boarding the above-named vessel on this date, I requested to see the following certificates:

	Acceptable	Not Readily Available	Unacceptable
SOLAS Certificate	☐	☒	☐
FMC Certificate of Financial Responsibility	☐	☒	☐

PILOT'S SIGNATURE

PILOT: Return to Pilot Association with Vessel Charge ticket
WASHINGTON STATE BOARD OF PILOTAGE COMMISSIONERS
WAC 363-116-2051–Vessel Certification Form
BPC-2051 (11-00)

MEETING MINUTES

STATE OF WASHINGTON ~ BOARD OF PILOTAGE COMMISSIONERS

April 16, 2015

Present:
Chairman: Harry Dudley
Commissioners: Scott Ferguson, Sheri Tonn, Chuck Adams, Ned Kiley, Phil Morrell, Grant Stewart, Don Mayer, Ed Marmol
Assistant Attorney General: Guy Bowman
Administration: Shawna Erickson, Peggy Larson

David Grobschmit, David Sanders, Stephan Moreno, Walt Tabler: Puget Sound Pilots
Mike Moore, Jordan Royer: Pacific Merchant Shipping Association
Gary Nelson: Port of Grays Harbor (*by telephone*)
Bari Bookout: Port of Seattle
Lou Paulsen: Port of Tacoma
James Tynan: USCG Sector Puget Sound
Bill Rich: Polar Tankers
David Surface, James Carstensen: Pilot trainees
Fred Felleman: Friends of the Earth
Loren Lee: Public

REGULAR MEETING

The regular meeting of the Board of Pilotage Commissioners was convened at 9:35 a.m. by Chairman Harry Dudley in the Rainier Conference Room, 2901 Third Avenue, Seattle, Washington.

Minutes. The March 12, 2015 Minutes stand approved as written.

OLD BUSINESS

Pilot's Report of Incident: PS Pilot Coleman – *AIVIQ*, 3-9-15

Everett, Pier 3 South	Additional information has been received from the AIVIQ captain verifying the accurateness of the pilot's report. (Thruster failure)	Motion: Mayer/Kiley File as an Incident with damage and without pilot error – Carried.

Discussion and Possible Resolution Concerning Setting the Number of Pilots in the Puget Sound Pilotage District as provided in WAC 363-116-065. The number of licensed pilots in the Puget Sound Pilotage District stands at 53. This item will remain on the agenda for future reevaluation while tracking vessel traffic over the summer.

Discussion and Consideration of *Statement of Policy Regarding Definition of Terms*. The draft Statement of Policy as written by the Tariff Policy Committee was reviewed and accepted. Motion: Stewart/Tonn – adopt the document as a Statement of Policy – Carried.

NEW BUSINESS

Consideration of Request for Vessel Exemption:

Motor Yacht *LAGNIAPPE* – 136', 398 gt, Marshall Islands registry, Captain Barry Bramhill
Motion: Ferguson/Morrell – concur with Chair's granting of a one-year exemption – Carried.

Motor Yacht *CAROLINA* – 156', 499 gt, Cayman Islands registry, Captain Jeremy Stevens
Motion: Ferguson/Morrell – grant a one-year exemption – Carried.

Motor Yacht *TRITON* – 163', 527 gt, Marshall Is. registry, Captains Paul Johns & Bruno Herregods
Motion: Ferguson/Morrell – grant a one-year exemption – Carried.

Motor Yacht *ARROWHEAD* – 115', 193 gt, Marshall Islands registry, Captain Michael St. Pierre
Motion: Ferguson/Morrell – grant a one-year exemption – Carried.

Approval of Pilot License Upgrade Program. Captain Scott Coleman is nearing completion of his first license year. Motion: Mayer/Marmol - approve the license upgrade program for Captain Coleman as drafted by the TEC with a minor modification - Carried.

Pilot's Report of Marine Safety Occurrence: *MAERSK CAMEROUN,* 3-12-15

Elliott Bay East Anchorage	Frozen anchor. Tugs assisted vessel to Terminal 37 for repairs.	Navigational Safety Concern	Motion: Adams/Ferguson File as a Marine Safety Occurrence – Carried.

Pilot's Report of Marine Safety Occurrence: *MAERSK GEORGIA,* 3-12-15

Elliott Bay East Anchorage	Badly damaged anchor chain link required repair.	Navigational Safety Concern	Motion: Adams/Ferguson File as a Marine Safety Occurrence – Carried.

Pilot's Report of Marine Safety Occurrence: *SAFMARINE CHILKA,* 3-27-15

2.5 nm west of Buoy SA	Loss of propulsion.	Navigational Safety Concern	Motion: Adams/Ferguson File as a Marine Safety Occurrence – Carried.

Pilot's Report of Marine Safety Occurrence: *CITY OF TOKYO,* 3-26-15

Approaching Sitcum WW, Tacoma	Engine failure while shifting from anchorage to the berth.	Near Miss	Motion: Adams/Ferguson File as a Marine Safety Occurrence – Carried.

Pilot's Report of Marine Safety Occurrence: *PHOENIX OCEAN,* 3-26-15

Buoy SA precautionary area	Engine failure.	Navigational Safety Concern	Motion: Adams/Ferguson File as a Marine Safety Occurrence – Carried.

Pilot's Report of Marine Safety Occurrence: *DELPHINUS,* 4-5-15

Area of Smith Cove West	Engine malfunction.	Navigational Safety Concern	Motion: Adams/Ferguson File as a Marine Safety Occurrence – Carried.

2015 Annual Tariff Hearing Preparation – Puget Sound Pilotage District: In accordance with the timetable established for tariff document submission, a 2015 written tariff proposal from the Puget Sound Pilots was submitted to the Board. A CR-102 was filed setting a public hearing for May 14, 2015 at 9:30 a.m. in the Rainier Conference Room. Motion: Tonn/Kiley – at PMSA's request, amend the Timetable for Tariff Document Submission to reflect a two-day extension of the due date for their proposal submittal from April 28 to April 30, and further, at PSP's request, a two day extension from May 6 to May 8 for the submittal of their rebuttal to the PMSA tariff proposal – Carried.

A PowerPoint presentation by Lou Paulsen and Bari Bookout displayed mocked up invoices for various vessel moves, demonstrating the application of the various current and projected tonnage charges.

BPC Staff Report.

- Month-end spreadsheets of pilot statistical data were distributed.
- Clarity was provided concerning tariff hearing procedures.
- The five "independent" members of the Board will meet with the P-4 on Wednesday, May 13th for a tariff Q & A.

***A CLOSED SESSION was called from 12:15 to 1:20 p.m. to discuss personnel evaluation** matters relative to the training program. In attendance were Commissioners Dudley, Ferguson, Adams, Kiley, Stewart, Morrell, Mayer and Marmol; Guy Bowman, Shawna Erickson and Peggy Larson. Regular session was convened by the Chairman immediately following closed session.*

Committee Reports.

Trainee Evaluation Committee:

- The TEC met on April 10.
- Training Program progress was reviewed for all current trainees: Captains Surface, Lowe, Carstensen, Kelleher, Henderson, Furst and Rounds.
- A Train-the-Trainer class for all new pilots licensed since the last T-t-T class in 2012 is scheduled for early June.
- Motion: Mayer/Marmol – modify the language in all fourth-year license upgrade programs to adjust for the change in tanker trade – Carried.

Legislative/WAC Committee: HB 1449, SB 5057, SB 5087, SB 5834 and SB 5686.

- The *Oil Transportation Safety* bills (HB1449 and SB5057) are continuing through the legislative process with many recent amendments. Scott Ferguson and Mike Moore briefed the Board on their ever-changing status. The legislative (regular) session is set to close on April 26.
- Scott Ferguson has been named by the Oregon Board of Maritime Pilots as a Washington Department of Ecology "technical liaison" to their Board. It is their hope that our Board will accept a reciprocal appointment from Oregon. A letter of intent is forthcoming.
- If S-2620.7 passes, it will provide $30,000 to the Board for our annual report to include policies and procedures for increased diversity. Chairman Dudley apologized for the late submittal of our annual reports citing an overly demanding workload on a minimal staff.

Exam Committee:

- Progeny Systems Corporation has been named the Apparent Successful Contractor.
- Target dates for the next pilot exam are April 5, 2016 for the written and April 11-15 for the simulator evaluations. This is a preliminary timeframe. Official notice will come later this year.

Activity Reports. Gary Nelson, representing Port of Grays Harbor, Captain David Grobschmit, representing Puget Sound Pilots, and Captain Mike Moore, representing Pacific Merchant Shipping Association, offered current and projected statistical data as well as updates on current maritime events.

Approval of Pilot Training Program Addendum – Captain David Surface. The TEC has developed a supplemental training program in Puget Sound for Grays Harbor trainee Captain David Surface. It is designed to allow him to observe and train under Puget Sound pilots in order to better prepare him for the Evaluation Phase of his Grays Harbor Training Program. Motion: Mayer/Adams – adopt the program created by the TEC and reviewed by the Board for Captain David Surface – Carried. Motion: Mayer/Morrell – task the staff to explore the possibility of hiring a contractor to evaluate our training program primarily in Grays Harbor but possibly in Puget Sound as a third disinterested party for Board review and approval – Carried.

Review of Pilot/Trainee Physical Examination Reports. Motion: Marmol/Adams - accept the physicians' reports for Captains D.S. Anacker, F.A. Coe, V.O. Engstrom, E.C. Lichty and S.D. Semler for annual pilot license renewal – Carried. Captain J.K. Ward remains unfit for duty since 9/8/14.

Commissioner Comments. Scott Ferguson suggested a meeting in Aberdeen to better tune in to the changes that are taking place in Grays Harbor. He also offered to share information relating to fuel switching and propulsion loss avoidance.

Confirmation of Next Regular Meeting Dates. The next regular meeting dates are set for May 14, and June 18, 2015, at 2901 3rd Avenue, Seattle. The May meeting will be preceded by a public hearing on WAC 363-116-300: Pilotage Rates for the Puget Sound Pilotage District.

There being no further business to come before the Board, Chairman Dudley adjourned the regular session Board meeting at 3:15 p.m.

Respectfully submitted,

Peggy Larson, Executive Director

Harry H. Dudley, Chairman

Scott J. Ferguson, Vice Chairman

Commissioner Sheri J. Tonn

Commissioner Charles F. Adams

Commissioner Edmund I. Kiley

Commissioner Philip Morrell

Commissioner J. Grant Stewart

Commissioner Donald W. Mayer

Commissioner Edmund Marmol

From: Yuri Maghrabi [ymaghrabi@live.com]
Sent: Friday, March 13, 2015 12:56 PM
To: Don Mayer
Cc: Larson, Peggy (WSF- Pilotage)
Subject: Re: Everett dock 3

CC: Ms. Peggy Larson, Board of Pilotage Executive Director

Good day Sir,

Please be advised, Captain Coleman's account of events are very accurate and we appreciate the promptness making the report available.

Also, note worthy is Captain Coleman's professionalism and competence throughout and post shift evolution. Again Thank you very much.

Yuri Maghrabi,
508.472.8255

On Mar 13, 2015, at 11:10 AM, Don Mayer <dmayer@pspilots.org> wrote:

Captain,

My name is Don Mayer, pilot representative on the Board of Pilotage Commissioners. I have been asked by the Board to follow-up Captain Coleman's account of the pier one to pier three shift with the ship's account of that shift in order to see whether there are any major discrepancies in the account. The Board is a governing body and can impose disciplinary action, if a pilot's actions on the job causes damage. Your account or a verification of Captain Coleman's account will be greatly appreciated.

Regards,

Don Mayer
Board of Pilotage Commissioner
Puget Sound Pilot

CC:
Captain Ed Marmol, Pilotage Commissioner, Puget Sound Pilot
Ms. Peggy Larson, Board of Pilotage Executive Director

Yuri Maghrabi
508.472.8255

EXHIBIT 45

Skip Navigation

Foreign & Offshore Compliance Division (CG-CVC-2)

Formerly CG-5432

Monthly List of IMO Reportable Detentions

The table below contain the U.S Coast Guard's List of Ships Detained for safety related deficiencies. The purpose of publishing this information is to aid the Coast Guard in carrying out its Port State responsibilities. The worldwide goal of Port State Control is to identify substandard vessels not in compliance with International Conventions.

2015-06 (June-Partial)	PDF
2015-05 (May)	PDF
2015-04 (April)	PDF
2015-03 (March)	PDF
2015-02 (February - Partial)	PDF
2015-01 (January)	PDF
2014-12 (December)	PDF
2014-11 (November)	PDF
2014-10 (October)	PDF
2014-09 (September)	PDF
2014-08 (August)	PDF
2014-07 (July)	PDF
2014-06 (June)	PDF

The List of Ships Detained includes the vessel name, IMO number, date of detention, ship type, port, flag, Recognized Organization (Only for Safety), Recognized Security Organization (Only for Security) and deficiency summary.

The detention lists are subject to change without notice based on appeals made by the owner, operator, and/or classification society. A detention decision may be appealed under the provisions of Title 46, Code of Federal Regulations (CFR), Part 1.03. Furthermore, if a party believes they are not the owner, operator or managing operator of a vessel detained under the Coast Guard's Port State Control Authority, they should immediately provide the Port State Control Office with the documentation to substantiate their belief. However, all provisions of the detention will remain in effect while an appeal is pending.

All recognized organizations appealing their association with a vessel detention should contact:

Office of Foreign & Offshore Compliance Division (CG-CVC-2)

U.S. Coast Guard, Stop 7501
2703 Martin Luther King Jr Ave., SE
Washington, DC 20593-7501
202-372-1251

Appeal letters from vessel owners and operators regarding the substance of a detention should be sent directly to the appropriate Coast Guard Sector that detained the vessel.

Ship Name: **ANATOLI**

Flag: **Greece**

IMO Number: **9138941**

Date of Action: **04/02/2015**

Action Taken: **Detention**

Port: **New Orleans, Louisiana**

Ship Type: **Bulk Carrier**

Recognized Org: **Lloyd's Register of Shipping**

Recognized Security Organization

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management:

Owners, Operators, or Managers

Anatoliki -Special Maritime Enterprises

Marmaras Navigation, Ltd.

Charterers

NYK Bulkship (Atlantic) N.V.

Deficiencies:

Code - Category	Description
0610 - Lifeboats	**Before the ship leaves port and at all times during the voyage, all lifesaving appliances shall be in working order and ready for immediate use. PSCO observed starboard lifeboat brake inoperable resulting in uncontrollable lowering evolution. Additionally, PSCO observed starboard lifeboat winch inoperable and unable to recover lifeboat.**

Ship Name: **BARNACLE**

Flag: **Cyprus**

IMO Number: **9409742**

Date of Action: **04/21/2015**

Action Taken: **Detention**

Port: **St. Petersburg, Florida**

Ship Type: **Bulk Carrier**

Recognized Org: **DNV GL MARITIME**

Recognized Security Organization

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management:

Owners, Operators, or Managers

Sikar Shipping Limited

Navarone S. A.

Charterers

Canfornav Inc.

Deficiencies:

Code - Category	Description
0730 - Appliances (general equipment)	**The Port State Control Officer found #1 heavy fuel oil service tank and #2 heavy fuel oil settling tank pneumatic shut-off valves held open with wire tied, preventing them from closing.**

Ship Name:	**BARUC**	Ship Type:	**LPG Gas Carrier**
Flag:	**Panama**	Recognized Org:	**Bureau Veritas**
IMO Number:	**8818805**	Recognized Security Organization	
Date of Action:	**04/29/2015**		
Action Taken:	**Detention**	Recognized Org (RO) Related:	**No**
Port:	**Corpus Christi, Texas**	Organization Related to Detention:	

Ship Management: Owners, Operators, or Managers

Transgas Shipping Line

Gastanker Investment Corp.

Deficiencies:	Code - Category	Description
	1138 - Liquefied gases in bulk	**Light fittings should have pressurized enclosures or should be of the flameproof type. PSCO discovered multiple light fixture wirings and enclosures not meeting flameproof standards in the cargo compressor room.**
	0725 - Fixed fire extinguishing installation	**On the ships carrying flammable or toxic products or both, a water-spray system for cooling fire prevention and crew protection should be installed. During operations test of the deck water spray system, PSCO's observed atleast 25 plugged nozzles including multiple nozzles on each tank dome.**

Ship Name: **CENTURY PEARL**

Flag: **Panama**

IMO Number: **9370393**

Date of Action: **04/20/2015**

Action Taken: **Detention**

Port: **New Orleans, Louisiana**

Ship Type: **Bulk Carrier**

Recognized Org: **Nippon Kaiji Kyokai**

Recognized Security Organization

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Naviera Florida Myers Inc.

Hiong Guan Navegacin Co,. Ltd

Charterers

PS International Ltd.

Deficiencies: Code - Category	Description
0735 - Personal equipment - fire fighting	**PSCO discovered that there are no self-contained breathing apparatus onboard. All SCBA's and associated bottles were sent ashore for maintenance prohibiting vessel from responding to a fire onboard requiring the use of a fire fighter's outfit.**
0715 - Detection	**PSCO discovered a plastic bag over fire detection system within the engineering work shop. The Chief Engineer state that the bag was there for 3 days as not to activate fire section systems during normal workshop operations.**
2550 - Maintenance of ship and equipment	**PSCO believes that there is objective evidence in discovered deficiencies to believe that the ship is not being maintained or operated as required in relation to fire fighting systems/maintenance. Request ISM audit be conducted by the certificate issuing authority.**

Ship Name: **DESPINA**

Flag: **Greece**

IMO Number: **9309007**

Date of Action: **04/27/2015**

Action Taken: **Detention**

Port: **Alameda, California**

Ship Type: **Oil Tankship**

Recognized Org: **American Bureau of Shipping**

Recognized Security Organization

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Despina Investments ENE

Diamlemos Shipping Corp.

Deficiencies: Code - Category	Description
0610 - Lifeboats	**Before the ship leaves port and at all times during the voyage, all life-saving appliances shall be in working order and ready for immediate use. Rescue boat on port side cannot be fully retrieved into stowed position.**

Ship Name:	**FEDERAL RIDEAU**	Ship Type:	**Bulk Carrier**
Flag:	**Hong Kong**	Recognized Org:	**DNV GL MARITIME**
IMO Number:	**9200445**	Recognized Security Organization	
Date of Action:	**04/11/2015**		
Action Taken:	**Detention**	Recognized Org (RO) Related:	**No**
Port:	**New Orleans, Louisiana**	Organization Related to Detention:	

Ship Management:

Owners, Operators, or Managers

Anglo Eastern Ship Management Ltd.

Charterers

Fednav International Ltd.

Fednav International Ltd.

Deficiencies:

Code - Category	Description
2050 - Operation of machinery	**A ship when in a port of another Contracting Government is subject to control by officers duly authorized by such Government concerning operational requirements in respect of the safety of ships, when there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the safety of ships. Upon testing of emergency generator, PSCO found generator was not operationally ready due to quick closing valve not fully open, resulting in the insufficient supply of fuel from the service tank, due to crew previously testing fuel quick closing valve and not resetting supply valve properly.**

Ship Name:	**GEA**	Ship Type:	**Bulk Carrier**
Flag:	**Panama**	Recognized Org:	**Lloyd's Register of Shipping**
IMO Number:	**9300910**	Recognized Security Organization	
Date of Action:	**04/22/2015**		
Action Taken:	**Detention**	Recognized Org (RO) Related:	**No**
Port:	**Baton Rouge, Louisiana**	Organization Related to Detention:	

Ship Management: Owners, Operators, or Managers

Naviera Ulises Ltd.

Allpine Wordwide Ltd

Deficiencies:	Code - Category	Description
	0725 - Fixed fire extinguishing installation	**PSCO noted the crew had placed the water mist system on the main control panel in manual mode, contrary to manufactory's instructions and rendering the system incapable of automatically operating in the event of an engine room fire.**
	2510 - Safety and environmental policy	**The company should ensure that the safety and environmental protection policy is implemented and maintained at all levels of the organization both ship-based and shore-based. The vessel failed to fully implement the requirements of the safety management system. On 21APR15, PSCO's found a diaphragm pump within the steering gear room with oily substance on the suction and discharge connections. Afterward a ship's crew member notified PSCO that the same pump was used to pump oily bilge water into the sewage treatment plant. the crew member also pointed out the hoses used with the pump. All of which appears to have been used to bypass the OWS. PSCO also noted inconsistencies with the oil record book. Recommend an external audit. Provide a corrective action report prior to departure.**

Ship Name:	**GULF TRADER**	Ship Type:	**General Dry Cargo Ship**
Flag:	**Tanzania**	Recognized Org:	**Compania Nacional de Registro y Inspecciones de Naves**
IMO Number:	**6718142**	Recognized Security Organization	
Date of Action:	**04/02/2015**		
Action Taken:	**Detention**	Recognized Org (RO) Related:	**Yes**
Port:	**Miami, Florida**	Organization Related to Detention:	**Compania Nacional de Registro y Inspecciones de Naves**

Ship Management: Owners, Operators, or Managers

Caribbean Ship Services, Inc.

Gulf Trader International S.A.

Deficiencies:	Code - Category	Description
	2510 - Safety and environmental policy	**Objective evidence discovered during an expanded ISM exam revealed the following non-conformities; the vessel failed to fully implement the requirements of the ISM Code through their SMS procedures as evident by the following identified deficiencies. These identified deficiencies taken with the remaining material deficiencies discovered during the exam are evidence that the ship and/or company are not meeting the SMS requirements.** **No. 1- The Master is not familiar with the familiarization training and annual review requirements outlined in the vessel's SMS.** **No.2- The vessel has numerous fuel leaks in the engine room and fire appliances that were known to be inoperable with no non-conformities reports made to the company.** **No.3- The company should ensure that obsolete documents are promptly removed. The crew was using an obsolete document to conduct maintenance checks.** **No. 4 - The company should carry out internal safety audits on board and ashore at intervals not exceeding twelve months. The company has not carried out an internal audit since September 30, 2013.**
	1420 - Cleanliness of engine room	**The condition of the ship and its equipment shall be maintained to ensure that the ship will remain fit to proceed to sea. Excessive fuel leaks were found on the following machinery appliances; main diesel engine, fuel return line on the emergency generator and starboard side fuel filter connections. These fuel leaks present a substantial fire hazard in the engine room. Additionally, the port side generator has a jacket water leak.**

1240 - Cargo and other hatchways	**The means for securing and maintaining weather tightness shall be to the satisfaction of the Administration. Over 15 clamping devices were found missing or bent on cargo hatch covers making the cargo envelope non-weathertight.**

Ship Name:	**KENAN**	Ship Type:	**Bulk Carrier**
Flag:	**Malta**	Recognized Org:	**Lloyd's Register of Shipping**
IMO Number:	**9644172**	Recognized Security Organization	
Date of Action:	**04/07/2015**		
Action Taken:	**Detention**	Recognized Org (RO) Related:	**Not Determined**
Port:	**Baltimore, Maryland**	Organization Related to Detention:	

Ship Management: Owners, Operators, or Managers

Ciner Gemi Acente Isletmeleri Sanayi Ve Ticaret As

Kenan Maritme Ltd

Charterers

Swiss Marine PTE Ltd

Deficiencies:	Code - Category	Description
	1730 - Oily-water separating equipment	**A ship when in a port or offshore terminal of another party is subject to inspection by officers duly authorized by such Party concerning operational requirements under this annex, where there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the prevention of pollution by oil. Upon testing of the oily water separator and oil content meter, crew was unable to demonstrate proper operation of the system. The sample inlet line from the OWS discharge pipe to the OCM was secured, thereby simulating 0 PPM and allowing overboard discharge of unmonitored bilge water. When the sample inlet valve was opened, the OCM immediately alarmed over 30 PPM and would not decrease until crew flushed OCM with fresh water. Crew attempted to test for over 10 minutes with same results. Review of OCM operations confirmed ORB entries; however absence of high level alarms indicated that the sample inlet has been secured during operation.**

Ship Name: **KIND SEAS**

Flag: **Marshall Islands**

IMO Number: **9205847**

Date of Action: **04/24/2015**

Action Taken: **Detention**

Port: **Portland, Oregon**

Ship Type: **Bulk Carrier**

Recognized Org: **Nippon Kaiji Kyokai**

Recognized Security Organization:

Recognized Org (RO) Related: **Yes**

Organization Related to Detention: **Nippon Kaiji Kyokai**

Ship Management: Owners, Operators, or Managers

All Seas Marine S.A

Fairplay Maritime Limited

Deficiencies:

Code - Category	Description
1499 - Other (Prop. & Aux. Machinery)	**The electrical power available shall be available shall be sufficient to supply all those services that are essential for safety in an emergency, due regard being paid to such services as may have to be operated simultaneously. The emergency source of electrical power shall be capable, having regard to starting currents and the transitory nature of certain loads, of supplying simultaneously, at least the services listed in this regulation, if they depend upon an electrical source for their operation. The emergency generator was able to start, however did not produce power to the emergency bus.**

Ship Name: **MARIA THEO**

Flag: **Marshall Islands**

IMO Number: **9231030**

Date of Action: **04/14/2015**

Action Taken: **Detention**

Port: **Alameda, California**

Ship Type: **Bulk Carrier**

Recognized Org: **Nippon Kaiji Kyokai**

Recognized Security Organization:

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Kea Shipping Ltd.

Evripos Shipmanagment Inc

Deficiencies:

Code - Category	Description
2020 - Fire drills	**Drills shall be conducted as if there were an actual emergency. Crew failed two fire drills due to the following reasons: lack of firefighting equipment, fire boundaries were not maintained by crew, fire teams could not access spaces to fight fire, and lacked fire control plan knowledge of ships spaces.**

Ship Name: **NOBLE DISCOVERER**

Flag: **Liberia**

IMO Number: **6608608**

Date of Action: **04/23/2015**

Action Taken: **Detention**

Port: **Honolulu, Hawaii**

Ship Type: **Other**

Recognized Org: **DNV GL MARITIME**

Recognized Security Organization

Recognized Org (RO) Related: **Not Determined**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Noble Drilling (US) LLC

Noble Drilling International GmbH

Charterers

Noble International Limited

Deficiencies:

Code - Category	Description
1730 - Oily-water separating equipment	**The installed MEPC 107(49) oil filtering equipment failed to process oily bilge water from the vessel's bilge water remaining in the tank. At each attempt to operate the oil filtering equipment it failed with error.**

Ship Name: **SHANGHAI SPIRIT**

Flag: **Hong Kong**

IMO Number: **9326328**

Date of Action: **04/10/2015**

Action Taken: **Detention**

Port: **New Orleans, Louisiana**

Ship Type: **Bulk Carrier**

Recognized Org: **Nippon Kaiji Kyokai**

Recognized Security Organization

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Asia Maritime Pacific (Shanghai Limited)

Shanghai Spirit Shipping Limited

Charterers

Gulf Inland Marine Services

Deficiencies:

Code - Category	Description
0715 - Detection	**The following fire protection systems shall be kept in good order so as to ensure their required performance if a fire occurs: fire detection and fire alarm systems. PSCO observed a failure in the smoke detectors above the boilers, service generators, and lube oil pumps.**

Ship Name: **SICHEM MELBOURNE**

Flag: **Marshall Islands**

IMO Number: **9376921**

Date of Action: **04/15/2015**

Action Taken: **Detention**

Port: **Baltimore, Maryland**

Ship Type: **Chemical Tankship**

Recognized Org: **DNV GL MARITIME**

Recognized Security Organization:

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Selandia Ship Management (India) PVt. Ltd

Saffron Ship Management (India) Pvt, LTD.

Deficiencies:

Code - Category	Description
1730 - Oily-water separating equipment	**During the operational test of OWS, sample line to OCM was closed, preventing OCM from reading oil content of effluent being discharged. Once the sample line valve was opened, OCM showed "ERROR". PSCOs were able to view historical data no entries in OCM were found to reflect alarms or operations Recorded in ORB Part 1.**

Ship Name: **UBC SAIKI**

Flag: **Cyprus**

IMO Number: **9255062**

Date of Action: **04/13/2015**

Action Taken: **Detention**

Port: **New Orleans, Louisiana**

Ship Type: **Bulk Carrier**

Recognized Org: **DNV GL MARITIME**

Recognized Security Organization:

Recognized Org (RO) Related: **No**

Organization Related to Detention:

Ship Management: Owners, Operators, or Managers

Athena Marine Co., Ltd.

Southern Queen Shipping Company Limited

Charterers

CAI Trading, LLC

Deficiencies:

Code - Category	Description
0715 - Detection	**A ship when in the port of another Contracting Government is subject to control by officers duly authorized by such Government concerning operational requirements in respect of the safety of ships, when there are clear grounds for believing that the master or crew are not familiar with essential shipboard procedures relating to the safety of ships. PSCO noted 01 smoke detector covered with a plastic bag in the engine room, rendering the detector inoperable in the event of a fire.**

EXHIBIT 46

PUBLIC INFORMATION

Revised Outer Continental Shelf Lease Exploration Plan

Chukchi Sea, Alaska

Burger Prospect: Posey Area Blocks 6714, 6762, 6764, 6812, 6912, 6915

Chukchi Sea Lease Sale 193

Revision 1 (May 2011)

Revision 2 (March 2015)

Submitted to:

U.S. Department of the Interior

Bureau of Ocean Energy Management

Alaska OCS Region

Submitted by:

Shell Gulf of Mexico Inc.

3601 C Street, Suite 1000

Anchorage, AK 99503

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS & ABBREVIATIONS

ACRONYMS & ABBREVIATIONS	
~	approximately
º	degree(s)
/	per
2D	two-dimensional
3D	three-dimensional
4MP	Marine Mammal Monitoring and Mitigation Plan
ac	acre(s)
ACMP	Alaska Coastal Management Program
ACS	Alaska Clean Seas
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
AES	ASRC Energy Services
AEWC	Alaska Eskimo Whaling Commission
APD	Application for Permit to Drill
API	American Petroleum Institute
APM	Application for Permit to Modify
AQRP	Air Quality Regulatory Program
ASA	Applied Science Associates, Inc.
ASRC	Arctic Slope Regional Corporation
bbl	barrel(s) – 42 U.S. gallons
BOEM	Bureau of Ocean Energy Management
BOP	blowout preventer
BSEE	Bureau of Safety and Environmental Enforcement
Burger #1 well	OCS-Y-1413 (legacy Burger #1 well)
BWASP	Bowhead Whale Aerial Survey Project
CDPF	catalytic diesel particulate filters
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CLO	community liaison officer
cm	centimeter(s)
CO	carbon monoxide
COCP	Critical Operations and Curtailment Plan
Com Center	Communications and Call Centers
cu yd	cubic yard(s)
CZMA	Coastal Zone Management Act
dB	decibel(s)
DIMP	Drilling Ice Management Plan
Discoverer	M/V *Noble Discoverer*
DNV	Det Norske Veritas
DPP	development and production plan
E	east
EA	Environmental Assessment
EIA	Environmental Impact Analysis
EMP	Environmental Monitoring Program
ENE	east-northeast
EP	Exploration Plan

ACRONYMS & ABBREVIATIONS	
EP Revision 1	Chukchi Sea Exploration Plan Revision 1 (Shell 2011)
EP Revision 2	Chukchi Sea Exploration Plan Revision 2 (Shell 2015)
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FR	Federal Register
ft.	foot/feet
ft^3	cubic feet
FTP	Fuel Transfer Plan
gal	gallon(s)
GEMS	Geoscience Earth & Marine Services, Inc.
GOM	Gulf of Mexico
GP	General Permit
H_2S	hydrogen sulfide
hp	horsepower
hr.	hour(s)
HSWUA	Hanna Shoal Walrus Use Area
HSSE	Health, Safety, Security and Environment
IMO	International Maritime Organization
in.	inch(s)
Initial Chukchi Sea EP	Shell's initial Chukchi Sea Exploration Plan (Shell 2009)
IRA	Indian Reorganization Act
KDR	Kitchen/dining/recreation
KIC	Kikiktagruk Inupiat Corporation
kg	kilogram(s)
km	kilometer(s)
lb.	pound(s)
LBCHU	Ledyard Bay Critical Habitat Unit
m	meter(s)
m^3	cubic meter(s)
mi	statute mile(s)
mi^2	square miles
min	minute(s)
MARPOL	International Convention for the Prevention of Pollution from Ships
MAWP	maximum anticipated wellhead pressure
MD	measured depth
MLC	mudline cellar
mm	millimeter(s)
MMPA	Marine Mammal Protection Act
MMS	U.S. Department of the Interior, Minerals Management Service
MODU	Mobile Offshore Drilling Unit
MSW	municipal solid waste
mt	metric ton(s)
M/V	Motor Vessel
N/A	not applicable
NAAQS	National Ambient Air Quality Standards
NaCl	sodium chloride
NAD 83	North American Datum 1983

ACRONYMS & ABBREVIATIONS	
NARL	Naval Arctic Research Laboratory
NE	northeast
NMFS	National Marine Fisheries Service
nmi	nautical mile(s)
NNE	north-northeast
NOI	Notice of Intent
NOx	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NSB	North Slope Borough
NTL	Notice to Lessee
NWAB	Northwest Arctic Borough
NWP	Nationwide Permit
OCS	Outer Continental Shelf
OSFR	oil spill financial responsibility
OSR	oil spill response
OSRO	Oil Spill Removal Organization
OSRP	Oil Spill Response Plan
OSRV	oil spill response vessel
OST	oil storage tanker
OSV	offshore supply vessel
OWS	oil-water separator
OxyCat	oxidation catalysts
PAEL	Preapproved Emission Limit
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns
PM_{10}	particulate matter less than 10 microns
ppb	parts per billion
ppm	parts per million
PPOR	potential place of refuge
POC	Plan of Cooperation
Polar Pioneer	Mobile Offshore Drilling Unit (MODU) Transocean *Polar Pioneer*
PSD	Prevention of Significant Deterioration
PSO	Protected Species Observer(s)
PTD	proposed total depth
RKB	rotary kelly bushing
rms	root mean square
ROV	Remotely Operated Vehicle
RQ	reportable quantity
RS/FO	Regional Supervisor, Field Operations
SA	subsistence advisor
SAPP	sodium acid pyrophosphate
SAR	Search and Rescue
SCR	selective catalytic reduction
sec	second(s)
SEPCO	Shell Exploration & Production Company
Shell	Shell Gulf of Mexico Inc.
SO_2	sulfur dioxide
SS	subsea

ACRONYMS & ABBREVIATIONS	
SSV	sound source verification
TA	temporarily abandon
TBD	to be determined
TD	total depth
TDS	treatment/disposal/storage
TSP	Total Suspended Particulate
TVD	true vertical depth
UIC	Ukpeaġvik Iñupiat Corporation
ULSD	ultra-low sulfur diesel
UN	United Nations
U.S.	United States
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VOC	volatile organic compound
V/V	volume/volume
VHF-AM	very high frequency – amplitude modulation
WBM	water based mud
WCD	Worst Case Discharge
WCP	Well Control Plan
WNW	west-northwest
XC	Xanthomonas campestris, also known as xanthan gum
YBP	years before present
ZVSP	zero-offset vertical seismic profile

GLOSSARY OF SELECTED DRILLING TERMS

GLOSSARY OF SELECTED DRILLING TERMS		
Item	**Definition/Description**	**Source**
Annular Blowout Preventer	Blowout preventer that uses a shaped elastomeric sealing element to seal the space between the tubular and the wellbore or to seal an open hole.	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Barrels (bbl)	"Barrel (bbl)" means 42 U.S. gallons	Alaska Oil and Gas Conservation Commission, Definitions, Alaska Admin. Code tit. 20 § 25.990, December 7, 2012.
Blind Shear Ram	A closing and sealing component in a ram blowout preventer that first shears certain tubulars in the wellbore and then seals the bore, or acts as a blind ram if there is no tubular in the wellbore.	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Blind Ram	A closing and sealing component in a ram blowout preventer that seals the open wellbore.	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Blowout Preventer (BOP)	Equipment installed on the wellhead or wellhead assemblies to contain wellbore fluids either in the annular space between the casing and the tubulars, or in an open hole during well drilling, completion, and testing operations.	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Capping Stack	A set of subsea devices (included but not limited to ram-type BOPs) assembled to provide direct surface intervention with the capability of capping and containing a well.	Shell Wells Department
Containment System	The containment system is a subsea spill collection system that provides the means to intercept uncontrolled well flows from subsea blowout situations as close to the source as possible. The containment system is housed on the Arctic Challenger barge and includes the containment dome, topside processing facilities, flare boom, an ROV, two workboats, and living quarters.	Shell Emergency Response Department

GLOSSARY OF SELECTED DRILLING TERMS		
Item	**Definition/Description**	**Source**
Lower Marine Riser Package (LMRP)	The upper section of a two-section subsea BOP stack consisting of the hydraulic connector, annular BOP, ball/flex joint, riser adapter, jumper hoses for the choke, kill and auxiliary lines and subsea control modules. The LMRP interfaces with the lower subsea BOP stack.	API SPEC 16D, Specification for Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment, Upstream Segment, Second Edition, July 2004.
Maximum Anticipated Surface Pressure (MASP)	A design load that represents the maximum pressure that can occur at the surface during well construction or production.	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Maximum Anticipated Wellhead Pressure (MAWP)	The highest pressure predicted to be encountered at the wellhead in a subsea well. The MAWP may be calculated for each hole section during well construction.	API STD 53, Blowout Prevention Equipment Systems for Drilling Wells, Upstream Segment, Fourth Edition, November 2012.
Mobile Offshore Drilling Unit (MODU)	Facilities designed or modified to engage in drilling and exploration activities. The term MODU includes drilling vessels, semisubmersibles, submersibles, jack-ups, and similar facilities that can be moved without substantial effort. These facilities may or may not have self-propulsion equipment on board and may require dynamic positioning equipment or mooring systems to maintain their position.	API RP 54, Recommended Practice for Occupational Safety for Oil and Gas Well Drilling and Servicing Operations, Third Edition, August 1999 (2007).
Mudline Cellar (MLC)	A hole or excavation in the seafloor designed to protect the wellhead and attached BOP in areas where the seafloor is prone to scouring from ice floes (typically shallow waters in Arctic areas). The MLC (aka well cellar [30 CFR 250.451(h)]) is sufficiently deep such that the top of any wellhead equipment or a BOP attached to the wellhead situated in the MLC is sufficiently below the mudline and out of reach for potential ice scour from ice floes.	Shell Regulatory Affairs Department & 30 CFR 250.451 (h)
Permanent Guidebase	Structure that sets alignment and orientation relative to the wellhead system and provides entry guidance for running equipment on or into the wellhead assembly.	API STD 65 – Part 2, Isolating Potential Flow Zones During Well Construction, Upstream Segment, Second Edition, December 2010
Pipe Ram	Rams whose ends are contoured to seal around pipe to close the annular space.	API SPEC 16D, Specification for Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment, Upstream Segment, Second Edition, July 2004.

GLOSSARY OF SELECTED DRILLING TERMS		
Item	**Definition/Description**	**Source**
Ram BOP	BOP that uses two opposing metal elements (rams) with integral elastomer seals to contain pressure within a wellbore. Rams may be designed to close on a specific pipe size (fixed pipe rams), a range of pipe sizes (variable bore rams), or open hole (blind or blind/shear rams).	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Riser	See *Lower Marine Riser Package*	
Rotary Kelly Bushing (RKB)	Bushing that sits on top of the rotary table. It transmits torque from the rotary table to the kelly and is commonly used as a reference for vertical measurements from the drill-floor.	ISO 13624-1:2009, Petroleum and natural gas industries – Drilling and production equipment – Part 1: Design and operation of marine drilling riser equipment.
Semi-submersible	A floating offshore drilling vessel which is ballasted at the drilling location and conducts drilling operations in a stable, partly submerged position.	API RP 64, Recommended Practice for Diverter Systems Equipment and Operations, Second Edition, November 2001 (March 1, 2007).
Shear Ram BOP (Blind/Shear Rams)	Rams having cutting blades that will shear tubulars that may be in the wellbore. Shearing blind rams additionally close and seal against the pressure below. Casing shear rams are designed specifically to shear casing, and may not seal the well bore.	API SPEC 16D, Specification for Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment, Upstream Segment, Second Edition, July 2004.
Variable Bore Ram	A pipe ram that seals on more than one pipe size.	API RP 96, Deepwater Well Design and Construction, First Edition, March 2013.
Zero-Offset Vertical Seismic Profiling (ZVSP)	A geophysical technology for measuring the seismic properties in a profile of the earth using a set of sources and receivers, either of which are placed along the depth (vertical) axis and where the source is near the well-head above the vertical receiver array.	Rector, J. and M. Mangriotis. 2011. Encyclopedia of Solid Earth Geophysics. Harsh K. Gupta (ed.) Department of Civil and Environmental Engineering, University of California at Berkeley, Berkeley, CA, USA. Applied Geophysics, Institute of Engineering Seismology and Earthquake Engineering (ITSAK), Thessaloniki, Greece.

c) Drilling Units

All planned exploration drilling in the identified lease blocks will be conducted with the *Discoverer* and the *Polar Pioneer*.

The *Discoverer* is a turret moored self-propelled drillship. Station keeping is accomplished using a turret-moored, 8-point anchor system. The underwater fairleads prevent ice fouling of the anchor lines. Turret mooring allows orientation of the vessel's bow into the prevailing metocean conditions to present minimum hull exposure to drifting ice. The vessel is rotated around the turret by hydraulic jacks. Rotation can be augmented by the use of the fitted bow and stern thrusters. Ice-strengthened sponsons have been retrofitted to the drillship's hull.

The *Discoverer* is classed by Det Norske Veritas (DNV) as a MODU for worldwide service. It is a "1A1 Ship-Shaped Drilling Unit l" and is capable of performing drilling operations offshore of Alaska. The *Discoverer* has been issued with a DNV Appendix to Class stating:

"*The structural strength and material quality of the 'Ice Belt' formed by the sponsons below the 8,950 mm A/B level, have been reviewed against the requirements for the DNV ICE-05 Additional Class Notation and found to meet those requirements (as contained in DNV Rules for Classification of Ships, Pt 5 Ch. 1, July 2006) for a design temperature of -15 degrees C.*"

The *Polar Pioneer* is classed by DNV as a MODU for worldwide service. It is a non-self-propelled, "SPM thruster assisted" semisubmersible offshore drilling unit of twin-hull configuration. The rig is a "+ A1 Column Stabilized Unit" and is capable of performing drilling operations offshore of Alaska. Positioning is accomplished with a combination of an eight-point all chain catenary mooring system and thruster assisted mooring system.

The *Polar Pioneer* was built in 1985, with unlimited operation area, in accordance with the Norwegian Maritime Directorate and to DNV regulations, current at that time. While operating in Norwegian waters, the installation, with its inventory, equipment, crew and machinery was required to comply with current rules and regulations for operation on the Continental Shelf of Norway. The *Polar Pioneer* is generally used in waters that are at least 230 ft. (70 m) in depth. However, the *Polar Pioneer* is able to operate in waters shallower than 230 ft. (70 m), such as those at the Burger Prospect, with a completed riser analysis and mooring analysis. These analyses are proprietary documents and are submitted to BSEE as part of the Application for Permit to Drill.

Both drilling units will comply with all of the regulations of DNV, the International Maritime Organization (IMO), and the U.S. Coast Guard (USCG). All exploration drilling operations will be conducted under the provisions of 30 CFR Part 250 Subpart D, and other applicable regulations and notices including those regarding the avoidance of potential drilling hazards, safety and pollution control. The drilling units will undergo inspections by BSEE, DNV and USCG before entering the theater.

Procedures for monitoring and reacting to ice in the prospect areas are provided in the COCP and the DIMP which are attached as Appendices F and G, respectively.

Discoverer

Polar Pioneer

Table 1.c-1 Specifications of the *Discoverer* and the *Polar Pioneer*

Specification	*Discoverer*	*Polar Pioneer*
Dimensions		
Hull Length	514 ft. (156.7 [m])	279 ft. (85 m)
Hull Width	85 ft. (26.0 m)	233 ft. (71 m)
Height	274 ft. (83.2 m)	319 ft. (97.3 m)
Derrick Height	175 ft. (53.3 m)	170 ft. (51.8 m)
Draft		
Transit Draft	26.9 ft. (8.2 m)	30 ft. (9.15 m)
Operating Draft at Load line	26.9 ft. (8.2 m)	75.4 ft. (23 m)
Berths	124 berths	114 berths
Storage Capacity		
Potable Water	1,670 barrels (bbl) (266 cubic meters [m^3])	4,843 bbl (770 m^3)
Drill Water	5,798 bbl (922 m^3)	11,140 bbl (1,770 m^3)
Liquid Mud	2,400 bbl (382 m^3)	6,180 bbl (982 m^3)
Bulk Cement	6,400 cubic feet (ft^3) (180 m^3)	12,678 ft^3 (359 m^3)
Fuel	6,497 bbl (1,033 m^3)	11,290 bbl (1,794 m^3)
Propulsion Engines	(1) MAN Diesel B&W l 6,480 horsepower (hp)	Not Applicable
Power Plant	(6) Caterpillar 3512 1,476 hp	(5) Bergen KVG-18 3,890 hp
Mooring		
Anchors	9 – 15 metric ton (mt) Stevshark, 8 each	9 – 15 mt Stevshark, 8 each
Anchor Lines	2.75-inch (in.) (7-centimeters [cm]) wire rope 2.5- in. (6-cm) chain	3.3 in (88 mm) K-4 chain
Anchor Line Length	(8 each) 2,750 ft. (838 m) wire + 1,150 ft. (351 m) chain (useable) per anchor	(8 each) 6,458 to 6,675 ft. (1,969 to 2,035 m) chain per anchor
Transit Speed	8.0 knots	N/A (non-self-propelled)
Marine Sanitation Device	OMNIPURE Series 55	Piranha WRS-40

d) Service Fee

The required permit fee of $20,652 (six drill sites at $3,442 each) has been paid in full.

SECTION 13.0 SUPPORT VESSELS AND AIRCRAFT INFORMATION

a) Planned Vessel and Aircraft List

- Drilling units: *Discoverer and Polar Pioneer*
- Ice management vessels (x2)
- Anchor handlers (x3)
- OSVs (x3)
- Science vessels (x2)
- MLC ROV system vessel
- Support tugs (x2)
- Shallow water vessels (x2)
- Supply tugs (x2) and barges (x2) (one tug of which may have temporary duties accompanying the *Discoverer* during transiting to and from a drill site)
- OSRV (x1)
- OSR tugs (x2) and barges (x2)
- OSTs (x2)
- Containment system (tug [x2]and barge [x1]
- SAR helicopter
- Crew change/resupply helicopters (x3)
- Fixed wing aircraft for ice reconnaissance
- Fixed wing aircraft for PSO flights
- Fixed wing aircraft for crew change between Barrow and Wainwright

Drilling Units

The *Discoverer* and the *Polar Pioneer* will be the drilling units used to drill the wells on the Burger Prospect. The specifications for these drilling units are listed in Section 1c).

Support Vessels

The drilling units will be supported by the types of vessels listed in Table 13.a-1.

Oil Spill Response Vessels

The OSR support vessels will consist of those types of vessels listed in Table 13.a-2.

Table 13.a-1 Specifications of Support Vessel Types

Specification	Ice Management Vessels (x2)[1,2]	Anchor Handlers (x3)[1,3]	OSVs (x3)[1,4]	Science Vessels (x2)[1,5]	Shallow Water Vessels (x2)[1,6]	Support Tugs (x2)[1,7]	Supply Tug and Barges (x2)[1,8]		MLC ROV System Vessel [1,9]
							Tug (x2)	Barge (x2)	
Length	380 ft. (116 m)	361 ft. (110 m)	300 ft. (91.5 m)	300 ft. (91.5 m)	85 ft. (25.9 m)	146 ft. (44.5 m)	150 ft. (45.7 m)	400 ft. (122 m)	280 ft. (85.3 m)
Width	85 ft. (26 m)	80 ft. (24.4 m)	64 ft. (19.5 m)	64 ft. (19.5 m)	20 ft. (6.1 m)	46 ft. (14 m)	40 ft. (12.2 m)	99.5 ft. (30.3 m)	60 ft. (18.3 m)
Draft	27 ft. (8.4 m)	28 ft. (8.5 m)	19.6 ft. (5.9 m)	19.6 ft. (5.9 m)	4.5 ft. (1.4 m)	21 ft. (6.4 m)	19.5 ft. (5.9 m)	25 ft. (7.6 m)	16.5 ft. (5 m)
Accommodations	77	64	50	50	50	13	11	--	26
Maximum Speed	16 knots (30 km/hr.)	15 knots (28 km/hr.)	13 knots (24 km/hr.)	13 knots (24 km/hr.)	20 knots (37 km/hr.)	16 knots (30 km/hr.)	12 knots (22 km/hr.)	--	13 knots (24 km/hr.)
Available Fuel Storage	14,192 bbl (2,256 m^3)	11,318 bbl (1,799 m^3)	5,786 bbl (920 m^3)	5,786 bbl (920 m^3)	43 bbl (6.8 m^3)	5,030 bbl (799 m^3)	4,800 bbl (774 m^3)	--	6,233 bbl (991 m^3)

[1] Or similar vessel
[2] *Based on Nordica*
[3] Based on *Aiviq*
[4] Based on the *Harvey Champion*
[5] Based on the *Harvey Champion*
[6] Based on the *King C* (formerly the *Diana G*)
[7] Based on the tug *Ocean Wave*
[8] Based on the *Lauren Foss* (tug) and *Tuuq* (barge)
[9] Based on the *Harvey Spirit*

Table 13.a-2 Specifications of the Major Oil Spill Response Vessels

Specifications	OSRV [1,2] (x1)	Offshore OSR [1,3]		Nearshore OSR [1,4]		OST [1,5] (x1)	OST [1,6] (x1)	Containment System [1,7]	
		Tug (x1)	Barge (x1)	Tug (x1)	Barge (x1)			Tug (x2)	Barge (x1)
Length	301 ft. (91.9 m)	136 ft. (41.4 m)	333 ft. (101.5 m)	90 ft. (27.4 m)	205 ft. (62.5 m)	748 ft. (228 m)	813 ft. (248 m)	150 ft. (45.7 m)	316.5 ft. (96.5 m)
Width	60 ft. (18.3 m)	37 ft. (11.2 m)	76 ft. (23.1 m)	32 ft. (9.8 m)	90 ft. (27.4 m)	105 ft. (32 m)	141 ft. (48 m)	40 ft. (12.2 m)	105 ft. (32 m)
Draft	19 ft. (5.8 m)	20 ft. (6.0 m)	22 ft. (6.7 m)	10 ft. (3 m)	15 ft. (4.6 m)	66 ft. (20 m)	69 ft. (21 m)	19.5 ft. (5.9 m)	12.5 ft. (3.8 m)
Accommodations	41	10	--	8	--	25	25	11	72
Maximum Speed	16 knots (30 km/hr.)	12 knots (22 km/hr.)	--	12 knots (22 km/hr.)	--	15 knots (28 km/hr.)	15 knots (28 km/hr.)	10 knots (19 km/hr.)	--
Available Fuel Storage	7,692 bbl (1,223 m^3)	3,690 bbl (586 m^3)	3,857 bbl (616 m^3)	1,286 bbl (204.5 m^3)	--	16,121 bbl (2,563 m^3)	20,241 bbl (3,218 m^3)	4,800 bbl (763 m^3)	6,630 bbl (1,054 m^3)
Available Liquid Storage	12,245 bbl (1,947 m^3)	--	76,900 bbl (12,226 m^3)	--	17,000 bbl (5,183 m^3)	106,000 bbl[8] (16,852 m^3)	670,000 bbl (106,518 m^3)	--	--
Workboats	(3) 34 ft. work boats	--	--	--	(1) skim boat 47 ft. (14 m) (3) work boats 34 ft. (10 m) (4) mini-barges	--	--	--	--

[1] Or similar vessel
[2] Based on the *Nanuq*
[3] Based on the tug *Guardsman* (tug) and *Klamath* (barge)
[4] Based on the *Point Oliktok* (tug) and *Endeavor* (barge)
[5] Based on a Panamax type tanker
[6] Based on an Aframax type tanker
[7] Based on the *Corbin Foss* (tug), *Arctic Challenger* (barge)
[8] Total available storage is 350,000 bbl; however, 244,000 bbl of ULSD or a fuel with equal or lower sulfur content (used to refuel the drilling units and support vessels) will take up storage space, leaving 106,000 bbl for recovered liquid ds. Storage space for recovered liquids will increase as fuel is dispensed for refueling.

Photograph of an Ice Management Vessel

Two primary ice management vessels will support the drilling units (photograph of the M/V *Nordica*). These vessels will enter and exit the Chukchi Sea with the drilling units or before and will generally remain in the vicinity of the drilling units during the drilling season. Ice management and ice reconnaissance is expected to occur at distances of 20 mi (32 km) and 30 mi (48 km) respectively. However, these vessels may have to expand beyond these ranges depending on the ice conditions.

Photograph of an Anchor Handler

Three anchor handlers (photograph of the *Aiviq*) will support the drilling units and the containment system tugs and barge. These vessels will enter and exit the Chukchi Sea with the drilling units or before, and will generally remain in the vicinity of the drilling units during the drilling season. When not anchor handling, these vessels will be available to provide other general support if needed.

Photograph of an OSV

The planned exploration drilling operations will require three OSVs for resupply of the drilling units and support vessels. Drilling materials, food, fuel and other supplies will be picked up in Dutch Harbor (with possible minor resupply coming out of Kotzebue) and transported to the drilling units and support vessels.

Shell plans to use up to two science vessels to monitor discharges from the drilling units during drilling. The science vessel specifications are based on a large OSV (Harvey Champion [photograph] or similar) but may be a smaller vessel. This vessel will help sample drilling discharges that are defined in the EPA NPDES exploration facilities GP AKG-28-8100.

Photograph of a Shallow Water Vessel

Shell plans to use two shallow water vessels, based in Kotzebue Sound (photograph of the *Diana G*, now known as the *King C*). These vessels will be used to transport supplies and crew between Kotzebue and the vessels moored in Kotzebue Sound. These vessels will have a shallow draft and be capable of entering shallow water.

Photograph of a Support Tug

Two support tugs will tow the *Polar Pioneer* to the Burger Prospect (photograph of the *Ocean Wave*). After the *Polar Pioneer* is moored, the tugs will remain in the vicinity of the drilling units to help move them in the event that either drilling unit has to be moved off a drilling site due to ice or any other event.

Photograph of a Supply Tug

Shell plans to use two tugs and supply barges (photograph of the tug *Lauren Foss*) that may be based in Kotzebue Sound. The barges will house well material for the drilling vessels and for the containment system tugs and barge, provide contingency accommodations for personnel in Kotzebue Sound, and carry mooring equipment for the containment system barge.

Shell also plans to use an OSV type vessel to support an MLC ROV system that may be used to construct some of the MLCs. If used, this vessel will be located at a drill site on the Burger Prospect. When not in use, the vessel will be outside of the Chukchi Sea lease sale planning area.

Photographs of OSRV

An OSRV such as the Nanuq (or similar) will be staged in the vicinity of the drilling units when either is drilling in liquid hydrocarbon bearing zones. This will enable the OSRV to immediately respond to a spill and provide containment, recovery, and storage for the initial operational period following a spill event.

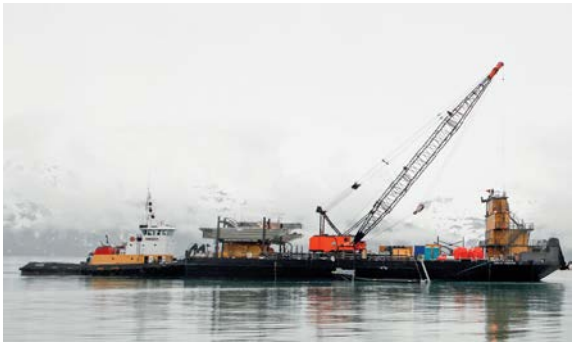
Photographs of Offshore OSR Tug and Barge

An OSR tug and barge, (photograph of the *Guardsman* tug and *Klamath* barge), will be staged in the Chukchi Sea. Together with the OSRV, it will have sufficient containment, recovery, and storage capacity for the initial operational period in the event of a spill.

Photograph of an OST

Shell plans to use up to two OSTs (photograph of a Panamax tanker). As planned, one OST with specifications of a Panamax tanker will be staged in the vicinity of the Burger Prospect. This tanker will hold fuel for Shell's drilling units and support vessels in addition to storage space to store collected recovered liquids if there is a well control event. A second OST, with specifications of an Aframax tanker, will be stationed in the Chukchi Sea lease sale planning area. The Aframax tanker will be sited such that it will be able to respond to a well control event before the Panamax tanker reaches its recovered liquid capacity.

Photograph of a nearshore Tug and Barge



A tug and barge (Photograph of the *Endeavor* barge) will be used for nearshore OSR. It will carry a 47 ft. (14 m) skimming vessel, three 34 ft. (10 m) workboats, four mini-barges, boom, and duplex skimming units for nearshore recovery. This tug and barge will be moored in or near Goodhope Bay in Kotzebue Sound.

Photograph of containment system barge

Shell's oil spill containment system, housed on the *Arctic Challenger* barge, will be accompanied by two tugs, likely the *Corbin Foss* and a similar tug. The containment system tugs and barge will be moored in or near Goodhope Bay in Kotzebue Sound.

Kotzebue Sound Mooring Location

There are four proposed mooring locations for vessels that will be stationed in Goodhope Bay, Kotzebue Sound. These locations are in the vicinity of the potential place of refuge (PPOR) in the Northwest Alaska Subarea Plan (e.g., approximately 66° 13' N 163° 28' W), which is in excess of 7 mi (11 km) from land, in a water depth of approximately 30 ft. (9 m). The proposed mooring locations are:

- Approximately longitude 66º 13.658' N and latitude 163º 28.138' W
- Approximately longitude 66º 12.986' N and latitude 163º 27.989' W
- Approximately longitude 66º 13.037' N and latitude 163º 26.305' W
- Approximately longitude 66º 13.704' N and latitude 163º 26.523' W

Setting of four mooring buoys is anticipated with each buoy having up to three anchors. The vessels expected to moor in this location include the containment system tugs and barge, nearshore OSR tug and barge, and two supply tugs and barges.

The mooring locations in Goodhope Bay in the western portion of Kotzebue Sound were selected based on detailed evaluations of environmental and traditional knowledge information regarding subsistence activities in this area of southwest Kotzebue Sound. The site of these four, closely spaced, temporary mooring locations were selected in large part because the area has been selected and approved by the State of Alaska as a potential place of refuge (PPOR) in addition to traditional knowledge. The review process for selecting PPORs considers the existence of sensitive resources such as historic properties. SS surveys have not been conducted at the location, but it is the conclusion of an archaeological review

requested by Shell that there is low potential for any effects to historic resources from the planned moorings and staging in Goodhope Bay. Shell visited the local communities in January 2014 (Kotzebue), July 2014 (Kotzebue and Deering) and in January 2015 (Kotzebue, Deering and Buckland) and informed local residents of Shell's proposed activities, including the mooring of vessels in Goodhope Bay, southwest Kotzebue Sound. During these community meetings (Appendix D) the residents did not raise concerns that the mooring of the vessels would cause disturbance to subsistence resources or subsistence use. Shell will employ SAs and CLOs in nearby communities to mitigate potential disturbances to subsistence issues that may arise. In addition, Shell will establish a Communication Center (Com Center) in Kotzebue. The SAs and CLOs will be hired, and the Com Center established prior to Shell vessels entering Kotzebue Sound.

Shell selected the area in large part because it has been selected and approved as a PPOR. The review process for selecting PPORs considers the existence of sensitive resources such as historic properties. Subsea surveys have not been conducted at the location, but it is the conclusion of an archaeological review requested by Shell that there is low potential for any effects to historic resources from the planned moorings and staging in Goodhope Bay.

Vessels will remain compliant with the existing waste management plan, MARPOL regulations, and NPDES Vessel GP for any discharge of gray water or effluent. Crew changes will occur throughout the season using shallow water vessels (yet to be contracted) transiting out from Kotzebue to the vessel locations in Kotzebue Sound. Vessels may also receive resupply of food stores via a shallow water vessel.

Shell plans to refuel the support vessels moored in or near Goodhope Bay, Kotzebue Sound at least once during the drilling season. It is anticipated that the support vessels will require approximately 250,000 gal (5,950 bbl) of ULSD (or other fuel with equivalent or lower sulfur content). Refueling will be done with an OSV or other support vessel capable of transferring fuel and will follow the procedures outlined in the FTP. The shallow water landing crafts may be fueled dockside at Kotzebue by a commercial entity.

Aircraft

Offshore operations will be serviced by up to three helicopters operated out of an onshore support base in Barrow. Sikorsky S-92s (or similar) will be used to transport crews between the onshore support base and the drilling units and support vessels with helidecks. The helicopters will also be used to haul small amounts of food, materials, equipment, samples between vessels and the shorebase. Approximately 40 Barrow-Burger Prospect round trip flights will occur each week (up from approximately 12/week in EP Revision 1) to support the additional crew change necessities for another drilling unit and support vessels and required sampling and analytical requirements under the NPDES exploration facilities GP.

Generalized flight corridors over the onshore and nearshore areas are indicated on Figure 13.e-2. The route chosen will depend on weather conditions and whether subsistence users are active on land or at sea. These routes may be modified depending on weather and subsistence uses.

Shell will also have a dedicated helicopter for Search and Rescue (SAR). The SAR helicopter is expected to be a Sikorsky S-92 (or similar). This aircraft will stay grounded at the Barrow shorebase location except during training drills, emergencies, and other non-routine events. The SAR helicopter and crews plan training flights for approximately 40 hr./month.

A fixed wing propeller or turboprop aircraft, such as Saab 340-B, Beechcraft 1900, or De Havilland Dash 8, will be used to transport crews, materials, and equipment between Wainwright and hub airports such as Barrow or Fairbanks. Additionally, rotary winged S-92s (or similar) in Barrow may provide crew transport between Barrow and Wainwright. It is anticipated that there will be one round trip flight every three weeks.

A fixed wing aircraft, Gulfstream Aero Commander (or similar), will be used for PSO flights (aka offshore aerial wildlife monitoring flights). PSO flights will take place daily depending on weather conditions. PSO flight paths are located in the 4MP (Appendix B).

An additional Gulfstream Aero Commander will be used to provide ice reconnaissance flights to monitor ice conditions around the Burger Prospect. Typically, the flights will focus on the ice conditions within 50 mi (80 km) of the drill sites, but more extensive ice reconnaissance may occur beyond 50 mi (80 km). These flights will occur at an altitude of approximately 3,000 ft. (915 m).

Fuel Storage Information and Frequency of Trips

The frequencies of trips the above-referenced marine vessels and aircraft would be expected to make during the planned exploration drilling program are listed below in Table 13.a-3.

Table 13.a-3 Fuel Storage Capacity and Trip Information for Support Vessels and Aircraft

Vessel Type	Maximum Fuel Tank Storage Capacity (each vessel)	Trip Frequency or Duration/Location
Marine Support Vessels (or similar)		
Ice management vessels (x2)	14,192 bbl (2,256 m^3)	Will remain in the vicinity of the drilling units until its mission is finished
Anchor handlers (x3)	11,318 bbl (1,799 m^3)	Will remain in the vicinity of the drilling units until its mission is finished; may occasionally assist in Kotzebue Sound
OSVs (x3)	5,786 bbl (920 m^3)	Up to 30 round trips (combined for all OSVs) for resupply between drilling unit and Dutch Harbor/Kotzebue during each exploration drilling season
Supply Tugs (x2) and barges (x2)	4,800 bbl (774 m^3)	Will generally remain in Kotzebue Sound for storage; one tug may accompany the *Discoverer* when transiting to/from a drill site
Support Tugs (x2)	5,585 bbl (888 m^3)	Support for the *Polar Pioneer*
Science Vessel (x2)	5,786 bbl (920 m^3)	Will remain in the vicinity of the drilling units until its mission is finished
MLC ROV system vessel	6,233 bbl (991 m^3)	Located on the prospect establishing MLCs ahead of the drilling units
Shallow water vessels (x2)	43 bbl (6.8 m^3)	Occasional trips as needed in vicinity of Kotzebue
OSR Support Vessels (or similar)		
OSRV	7,692 bbl (1,223 m^3)	Will remain in the vicinity of the drilling units until its mission is finished
OSR tug (x1) and barge (x1) (offshore)	1,786 bbl (284 m^3)	Will remain in the vicinity of the drilling units until its mission is finished
OSR tug (x1) and barge (x1) (nearshore)	1,286 bbl (204.5 m^3)	Staged in Kotzebue Sound
OST (Panamax)	16,121 bbl (2,563 m^3)	Will remain in the vicinity of the drilling units until its mission is finished
OST (Aframax)	20,241 bbl (3,218 m^3)	Stationed in the Chukchi Sea lease sale planning area
Containment system tugs (x2) and barge (x1)	6,630 bbl (1,054 m^3)	Staged in Kotzebue Sound
Aircraft (or similar)		
Saab 340 B, Beechcraft 1900, or Dash 8 fixed-wing or similar (x1) – transport from shorebase to regional jet service in Barrow	9 bbl (1.4 m^3)	1 trip every 3 weeks between Wainwright and Barrow or Anchorage
Gulfstream 690 Aero Commander (or similar) (x2)	9 bbl (1.4 m^3)	PSO flights and ice reconnaissance; both to occur daily when possible
Helicopter S-92 (or similar) (x3) for crew rotation & groceries/supply	18 bbl (2.9 m^3)	Approximately 40 trips/ week between Barrow and the Burger Prospect (approximately 3.0 hr./trip)
Helicopter S-92 (or similar) – Search-and-Rescue (x1)	18 bbl (2.9 m^3)	Stationed in Barrow – 40 hr./month for proficiency training & trips made in emergency

b) Air Emissions

Projected air emissions from support vessels are indicated below in Table 13.b-1 and are discussed in more detail in Section 7.0 and Appendix K of this document.

Table 13.b-1 Project Annual Air Pollutant Emissions (Tons Per Year) from Support Vessels Associated with the Drilling Units

Vessels	NO_x	CO	PM_{10}	$PM_{2.5}$	VOC	SO_2
Ice Management Vessels (x2)	234	79	12	12	11	2
Anchor Handler Vessels (x3)	423	90	18	18	25	3
Science Vessels (x2)	111	45	5	5	10	1
Support Tugs (x2) & Supply Tug (x1)	172	22	6	6	13	1
OSVs (x2)	70	14	7	7	5	1
OSRV	117	44	8	8	6	1
OSR Workboats (x3)	18	5	0.4	0.4	5	0.2
OSR Tug (x1) and Barge (x1)	60	13	3	3	3	0.2
Oil Storage Tanker	156	35	12	12	8	2
MLC ROV system Vessel	145	44	3	3	6	1

Attachment A of Appendix K lists the source, composition, frequency and duration of air emissions associated with support vessels that will be within 25 mi (40 km) of the drilling units while each are anchored at a drilling location.

c) Drilling Fluids and Chemical Products Transportation

Each drilling unit will be preloaded with drilling fluids and other chemicals (Section 6.0) to be used for exploration drilling before being mobilized to the Burger Prospect at the start of each exploration drilling season. Any required additional drilling fluid components will be transported to the drilling unit via an OSV or tug and barge.

d) Solid and Liquid Wastes Transportation

An incinerator will be aboard each drilling unit and will be used to dispose of combustible municipal solid wastes. Authorized wastes will be discharged to the Chukchi Sea under the NPDES exploration facilities GP. The remaining wastes will be transported out of the Chukchi Sea by OSVs and disposed of at an approved disposal facility. Food wastes associated with the drilling vessels will be incinerated but, if conditions warrant, may be shipped out of the Arctic for disposal at a licensed facility. Descriptions of the transportation methods and a brief description of the composition, quantities, and destinations of the solid and liquid wastes to be transported by vessel from the drilling units are provided below in Table 13.d-1.

Table 13.d-1 Onshore Waste Disposal Facilities, Waste Type, Amount, Rate, and Disposal Method

Name/Location of Disposal Facilities	Type of Waste	Amount	Disposal Method
Waste Management Inc. Columbia Ridge Landfill, Arlington, OR (Subtitle D landfill)	Household trash (municipal solid waste [MSW]) only	Drilling Units: 17,000 lb. (8,500 lb./ month/drilling unit) Support Vessels: 23,454 lb./month	Landfill
Waste Management Inc. Chemical Waste Management, Arlington, OR (Subtitle C landfill)	Non-hazardous waste solids – including CESQG-exempt wastes (oily rags, unused chemicals, aerosols, batteries, lamps, cement, incinerator ash, etc.)	Drilling Units: 12,100 lb. (6,050 lb./ month/drilling unit - includes approximately 50 lb./month/ drilling unit of CESQG-exempt waste) Support Vessels: 4,765 lb./month	Landfill or Recycle
Marine Vacuum Service Inc. Seattle WA, - or Emerald Services, Inc., Seattle, WA or Thermo Fluids Portland, OR	Non-hazardous liquids in bulk shipments (bilge water, vessel slops, brine water)	Drilling Units: 100,000 lb. (50,000 lb./ month/drilling unit) Support Vessels: 123,975 lb. /month	Treat and Recycle
Seattle Iron & Metals Corp. Seattle WA, or Schnitzer Steel Industries, Anchorage, AK	Non Hazardous Waste Solids - Scrap Metal (uncontaminated scrap steel only)	Drilling Units: 13,000 lb. (6,500 lb./ month/drilling unit) Support Vessels: 1,220 lb./month	Recycle

e) Vicinity Map and Travel Routes

The locations of the planned exploration drilling activities relative to the shoreline and shorebase facilities and the primary route of the drilling units and routes of support vessels when entering and exiting the Chukchi Sea are indicated in Figure 13.e-1. Generalized flight corridors that helicopters would take between the shorebase and the Burger Prospect are indicated in Figure 13.e-2. The primary helicopter route between shorebase and the Burger Prospect is from the Barrow airport, directly offshore to the Burger Prospect. Helicopters would alternatively travel between Wainwright and the Burger Prospect under special circumstances. The planned use of Wainwright as a shorebase facility is only for the drilling seasons covered by EP Revision 2, and do not necessarily reflect Shell's planned shorebase operations in the extended term.

EXHIBIT 47

CHUKCHI SEA
REGIONAL EXPLORATION PROGRAM
OIL SPILL RESPONSE PLAN

SHELL

ANCHORAGE, ALASKA

MAY 2015

REVISION 3

Shell intends to utilize two drilling units, the drillship *Discoverer* and the semi-submersible drilling unit *Polar Pioneer,* or similar, to drill multiple wells to total depth. Exploration wells would be drilled, evaluated, and plugged and abandoned. Operations would be initiated each year following seasonal ice clearing and continue into freezeup.

The Discoverer

The *Discoverer* is a 514 ft (156 m) moored drillship with drilling equipment on a turret amidships and classified by DNV as a 1A1 Ship-Shaped Drilling Unit, winterized for service in the arctic offshore environment. It is designed for water depths ranging from 125 to 1,000 ft (38 to 305 m and has an eight-point mooring system attached to the bottom of the turret. The drillship is equipped with thrusters, which are used to rotate around the turret, keeping the drillship bow into the weather or ice floe. The *Discoverer* drilling depth can reach a maximum of 20,000 ft (6,096 m). It can house up to 124 people. Table 1.1-2 describes the service facilities on the *Discoverer*. A facility diagram and schematics of the drillship are provided in Figures 1.1-2 through 1.1-6.

Table 1.1-2
***Discoverer* Service Facilities**

SERVICE FACILITY	DESCRIPTION
Dimensions	514 ft (156.7 m) long x 85 ft (26 m) width
Capacities	
Bulk Mud and Cement	Total 2,264 bbl (360 cu m) [1,132 bbl (180 cu m) ea]
Sack Storage	5,845 bbl (934 cu m)
Total Liquid Mud	2,400 bbl (382 cu m)
Drilling Water	5,798 bbl (922 cu m)
Potable Water	1,670 bbl (266 cu m)
Fuel Oil	6,497 bbl (1,033 cu m)
Drilling Equipment	
Draw Works	EMSCO E-2,100, 1,600 hp
Pumps	Two (2) Continental EMSCO FB 1,800 Triple Mud Pumps
Rotary	National C-495
Derrick	IDECO 175 ft with 1,300,000 lbs nominal capacity
Blowout Prevention Equipment	
WP RAM-Type Preventers	Four 18 ¾ -inch 10,000 psi
Annular Preventers	Two 18 ¾ -inch 5,000 psi
Choke and Kill Lines	YES
Hydraulic Control Systems with Accumulator Back-up Closing	YES

The Polar Pioneer

The *Polar Pioneer*, a fourth generation semi-submersible rig, is especially designed and constructed to operate in arctic environments and in water depths up to 1,640 ft (500 m). The *Polar Pioneer* is classified by the DNV as a Maltese Cross 1A1 column-stabilized drilling unit and is supported by two (2) attending tugs. The *Polar Pioneer* drilling depth can reach a maximum of 25,000 ft (7,620 m) and houses up to 114 people. Table 1.1-3 describes the service facilities on the drilling unit. With the exception of the Accommodation Deck, the *Polar Pioneer's* general arrangement profile and plan schematics are provided for reference in Figures 1.1-7 through 1.1-15.

Table 1.1-3
***Polar Pioneer* Service Facilities**

SERVICE FACILITY	DESCRIPTION
Dimensions	400 ft long x 292 ft wide x 137 ft deep
Capacities	
Bulk Mud and Cement	5787 bbl (920 cu m)
Sack Storage	Mud additives in 45 pallets / 20 kg sack
Liquid Mud	1 6,180 bbl (982 cu m)
Drilling Water	11,140 bbl (1770 cu m)
Potable Water	4,843 bbl (770 cu m)
Fuel Oil	11,290 bbl (1,795 cu m)
Drilling Equipment	
Draw Works	EMSCO C-3, 3,000 hp
Pumps	Three (3) 5000 psi WP EMSCO FB 1,600
Rotary	EMSCO 49.5 inch diameter, T4950-65
Derrick	MH 164 ft x 40 ft x 40 ft, 1,300,000 lbs nominal capacity
Blowout Prevention Equipment	
WP RAM-Type Preventers	2 x double Hydril-Dual Rams; 15,000 psi
Annular Preventers	1 x Annular Hydril GX, 18 ¾ -inch, 10,000 psi
Choke and Kill Lines	YES
Hydraulic Control Systems with Accumulator Back-up Closing	YES

Drilling Support Vessels

The drilling units would be accompanied by support vessels as necessary for anchor handling, ice management, and general logistical support for the movement of supplies and personnel. Proposed support vessels are identified in Appendix A. It is Shell's intent to update information regarding specific vessels in the event that changes occur prior to each drilling season.

Oil Spill Response Support Vessels

In the event of an oil spill, Shell's primary response for the purposes of the OSRP would be conducted by the following vessels:

- OSR vessel (not more than 10 n mi from the drill site) and the OSR barge (not more than 30 n mi from the drill site) stationed near the drilling units while drilling into liquid hydrocarbon-bearing zones in the Chukchi Sea;
- Two VOSSs stationed within 42 hrs of each drilling unit when drilling into liquid hydrocarbon-bearing zones;
- OSR barge, stationed within 96 hrs of the Chukchi Sea nearshore zone while the drilling units are drilling into liquid hydrocarbon-bearing zones; and
- OST stationed in an area not more than 240 n mi from the Chukchi Sea drill site while drilling into liquid hydrocarbon-bearing zones. The OST would be the Arctic tanker *Marika* or similar (with a storage capacity of at least 513,000 bbl). A second Shell-chartered OST would be mobilized and arrive at the drill site by Day 20 following a spill event, as needed, with sufficient capacity to provide storage for the remaining recovered liquids for the duration of the 30-day WCD event.

Shell has chosen a conservative transit speed of 10 knots for offshore response vessel resources. Although service and maximum speeds for these vessels are significantly faster, the planning speed for response purposes has specifically been reduced to show robust response capability even in heavy sea conditions, reduced visibility, and requirement for additional power that may be necessary in the presence of ice. All major response assets are designed for and certified for operation in arctic conditions, including operation in high ice concentrations. The transit speed for the nearshore OSR barge is reduced to 5 knots to provide for similar planning considerations. Please refer to Appendix A for further information regarding general on-site vessel capabilities and, if applicable, class notations.

Project and Area Overview

Operations in the Chukchi Sea would begin with the drilling units traveling to the Chukchi Sea accompanied by support vessels, including the OSR vessels. The drilling units will move through the Bering Strait and into the Chukchi Sea on or about 1 July, and then onto the Burger Prospect as soon as ice and weather conditions allow.

An open water lead in the winter offshore ice is frequently created by prevailing easterly winds across the northern Chukchi Sea. This open water lead, or polynya, may be up to 30 mi (~50 km) across from shore paralleling the coast between Cape Lisburne and Point Lay. Breakup along the coast typically proceeds rapidly, changing from high ice concentration to open water in a few days. The timing of breakup is variable, ranging from early June to late July. Breakup tends to occur on the central coast one to three weeks earlier than at Point Barrow.

Project activities will commence after July 1 and continue into freezeup. When drilling in water depths of approximately 150 ft (46 m) or more, the environment will be dominated by open water throughout the drilling season. In midsummer, the Chukchi Sea pack ice is typically composed of a mixture of broken, eroded blocks and small floes. The edge of the ice pack is irregular and usually remains well north of the proposed operational area in the summer months. Storm events can rapidly drive multiyear floes southward at rates exceeding 7.5 mi/day (12 km/day). The fleet, consisting of the drilling units and support vessels, would exit the exploration sites through the open water pathway before winter ensues and the pack ice encroaches on the shoreline.

Shell's lease area lies on the federal OCS within the Chukchi Sea approximately 60 n mi, or more, off the north coast of Alaska in the Arctic Ocean. The waters of the Chukchi Sea begin just north of the Bering Strait and extend northward to the Arctic Ocean. The predominant current in the Chukchi Sea flows northward and slightly eastward at 0.15 to 0.2 m/sec (0.3 to 0.4 knots).

The ice free or broken ice season typically extends from June through November/December. However, some portions of the Chukchi Sea are affected by sea ice all year, containing both seasonal first-year ice and thicker multiyear arctic pack ice. Several smaller fresh water rivers including the Kobuk and Noatak Rivers empty into the Chukchi Sea. Annually, the waters of the Arctic go through variations in salinity. In the summer, waters are less saline than in the winter because of river inflow and ice melt. In winter, salinity increases result from reduced fresh water inflow from river freezeup and brine rejection during ice formation (reaching as high as 34.5 ppt). In the eastern Chukchi Sea, Alaska coastal waters also flow along the coast incorporating cooler fresh water at speeds of 0.24 to 0.30 m/sec (0.5 to 0.6 knots) past Point Hope, Cape Lisburne, and Icy Cape (MMS 2007).

Tides in the Chukchi Sea are mixed semidiurnal and increase in range from 0.4 ft (0.1 m) at Barrow to up to 3 ft (1.0 m) in Kotzebue Sound. Fetch distances are significantly greater than

the Beaufort Sea and wave energy levels are consequently greater. The possibility of cross-boundary impacts on Siberian waters does exist.

Predominately, the Chukchi coastal character is composed of cliffs that make up about 249 mi (400 km) of the approximately 385 mi (620 km) of total shoreline between Barrow and Point Hope. Ice-poor tundra cliffs dominate the north with bedrock cliffs exposed south of Kasegaluk Lagoon. The lowland coasts are characterized by low, sand barrier beaches and spits. Wildlife expected in the Chukchi Sea offshore exploration area includes polar bears, bowhead whales, gray whales, minke whales, fin whales, walrus, bearded seal, ringed seal, spotted seal, and marine birds.

TABLE OF CONTENTS

FIGURES

TABLES

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APPENDIX A RESPONSE EQUIPMENT [30 CFR 254.24]

A.1 EQUIPMENT INVENTORY [30 CFR 254.24(a)]

Spill response equipment is available through Shell for offshore and nearshore operations, and through Shell leased equipment and OSROs for onshore operations. Table A-1 lists OSROs, contact information, applicable tactics, and references to equipment inventory lists, as applicable.

For Tier I, II, and III spill responses, in-region (North Slope) resources would be made available as needed. These assets include:

- Shell-chartered personnel, equipment, and vessels; and
- Personnel, equipment, and vessels from OSROs (ACS, ARS, and AES-RO).

ACS, AES-RO and ARS are the equipment providers for Shell in the Chukchi Sea. As provided for in 30 CFR 254.4, Shell's OSRO equipment list, mutual aid and master service agreements are referenced within this OSRP to demonstrate additional response capability beyond that identified to meet the WCD (Appendix C). On a global scale, Shell is a contractual member of other OSROs, such as OSRL, through which additional Tier III assets may be accessed. Specific equipment available to support shoreline protection and recovery activities described in the WCD are listed in ACS Tactic L-6. Shell response assets available on the OSR vessels staged in the Chukchi Sea are presented in Shell Tactic LE-3. The response equipment operating limitations are provided in ACS Tactic L-6 and L-7 and further discussed in Appendix H within context of the potential environmental conditions that may be encountered in the Chukchi Sea. Description of response equipment is provided by reference to Tactics and associated OSR inventories through website links and/or contact information per provisions of 30 CFR 254.4.

Table A-1
OSRO Contacts and Equipment

OSRO	TELEPHONE	TACTIC	EQUIPMENT INVENTORY
ACS – OSRO, Personnel and Equipment Address: Pouch 340022 Prudhoe Bay, Alaska 99734 Main Number Prudhoe Bay ACS Operations Manager North Slope Mutual Aid (if applicable) managed through ACS	 907-659-2405 907-659-3202 907-659-2405	ACS Tactics: L-3 L-5 L-6, L-6A L-7 L-10 L-11	Available from ACS Technical Manual, online at: http://www.alaskacleanseas.org/tech-manual/
AES-RO – OSRO, Personnel and Equipment Address: 3900 C Street, Anchorage, Alaska 99503 Main Number Anchorage AES-RO Operations Manager	 907-339-6200 907-339-6200	Shell Tactic: LE-3	Staged on vessels within the Chukchi Sea or at Wainwright.
ARS – OSRO, Personnel and Equipment Address: 7260 Homer Drive Anchorage AK 99518 Activation and Main Number Wainwright-based Response Supervisors	 907-865-4900 907-223-2542 907-231-3451	N/A	Support Operations in Anchorage Pre-staged equipment in Wainwright.

Shell offshore response equipment for the Chukchi Sea is staged on each TF to provide operational flexibility in the event of a spill. Activation of Shell response equipment would be scaled as dictated by incident-specific response needs and environmental conditions. Not all equipment is deployed at once. For example, the WCD scenario illustrates the use of discrete

recovery assets from each TF, which are activated to meet specific response objectives by Shell's IC or QI. Major Shell-chartered and contracted equipment on each Shell TF is presented in Table A-2. Table A-3 lists personnel resources for a WCD.

Table A-2
Shell-Chartered Offshore Equipment Information

TASK FORCE	EQUIPMENT DESCRIPTION[1]	QUANTITY	OWNER	DISTANCE TO SITE
TF-1	OSR Vessel (300-ft)	1	Shell Charter	On site
	34-ft Work Boat (Shared with TF-2, 4, & 5)	3		
	Lamor LSC-5 Brush Skimmer	2		
	Ocean Boom	2,600 ft		
	Vertical Rope Mop Portable Skimmer	1		
	Duplex Mini-Brush/Disc Portable Skimmer	1		
	Storage Bladder (100 bbl)	1		
	Fire Boom System (*In Situ* Burning Containment)	500 ft		
	Dispersant Application Systems (Spray Arms)	2		
TF-2	OSR Barge	1	Shell Charter	< 25 n mi
	Transrec 150 Umbilical Weir Skimmer	2		
TF-3	OST (513,000 bbl minimum storage capacity)[2]	1	Shell Charter	< 240 n mi
TF-4	VOSS	1	Shell Charter	< 420 n mi
	Transrec 150 Umbilical Weir Skimmer	1		
TF-5	VOSS	1	Shell Charter	< 420 n mi
	Transrec 150 Umbilical Weir Skimmer	1		
TF-6	OSR Barge	1	Shell Charter	< 480 n mi
	Support Tug for OSR Barge	1		
	Lamor LSC-5 Brush Skimming Package	2		
	34-ft Workboats (Boom Deployment / Towing)	3		
	Lamor LORS-2C Brush Skimming Package	2		
	47-ft Response Vessel (Transport / Boom Deployment)	1		
	Coastal Boom (Shared with TF-7 & 8)	6,000 ft		
	Duplex Mini-Brush/Disc Portable Skimmer	1		
	Vertical Rope Mop	1		
	100-bbl Flexible Containment System	1		
	249-bbl Interim Storage Mini-barge	4		
	Ocean Boom	2,600 ft		
	Fire Boom Systems (*In Situ* Burning Containment)	500 ft		

Table A-2
Shell-Chartered Offshore Equipment Information (Continued)

TASK FORCE	EQUIPMENT DESCRIPTION	QUANTITY	OWNER	DISTANCE TO SITE
TF-7	Conventional Boom (Shared with TF-8)	10,000 ft	Shell Charter	Staged in Wainwright Incident Specific
	Coastal Boom (Shared with TF-8)	4,000 ft		
	Shoreline Guardian Boom	4,000 ft		
	26 to 32-ft Landing Craft	4		
	Workboats	6	ACS[3]	Staged in Deadhorse
TF-8	Oleophilic Skimmers[4]	20	ACS[3]	Staged in Deadhorse Incident Specific
	Bladders (500 to 2,640 gal)[4]	36		
	Portable Folding Tank (2,500 gal)[4]	29		
	Portable Folding Tank (2,500 gal)4	21	ARS	Staged in Wainwright - Incident Specific
	IMO Tanks (6,000 gal)4	1		

[1]See Table A-6 and vessel specifications for additional information on available offshore assets.
[2]Relief Tank Vessel with minimum 250,000 bbl storage capacity arrives on site Day 20.
[3]ACS activation number is (907) 659-2405.
[4]Equipment is identified for nearshore and shoreline response efforts. All equipment is available through Shell, Shell OSROs, or Shell response contractors and may be activated by the IC or QI. On-site equipment and supplies may be contained in heated storage units to ensure their operability during cold temperatures, as necessary. There are a number of conexes included in the vessel fleet which include a supply of contingency materials, tools, PPE, and spare parts.

Table A-3
Personnel Resources for Worst Case Discharge

TASK FORCE	UNIT DESCRIPTION	RESPONDER POSITIONS PER SHIFT	SHIFTS PER DAY	TOTAL PERSONNEL	TASK FORCE SIZE
TF-1	OSR Response Supervisor	1	2	2	36
	OSR Vessel Deck Crew	3	2	6	
	34-ft Work Boat Operator (Shared with TF-2, 4 & 5) x 3 boats	6	2	12	
	Lamor Skimmer Operators	2	2	4	
	OSR Vessel Operating Crew (*Nanuq* or similar)	**12**	N/A	12	
TF-2	OSR Response Supervisor	1	2	2	23
	OSR Barge Deck Crew	3	2	6	
	TransRec Operators	4	2	8	
	OSRB (Tug) Operating Crew (*Klamath* or similar)	**7**	N/A	7	
TF-3	Tanker Deck PIC	1	1	2	20
	Tanker Deck Crew	3	2	6	
	Tanker Operating Crew	**12**	N/A	12	
TF-4	VOSS Supervisor	1	2	2	38
	VOSS Deck Crew	3	2	6	
	Trans Rec Skimmer Operators	2	2	4	
	VOSS Operating Crew (*Aiviq* or similar)	26	N/A	26	
TF-5	VOSS Supervisor	1	2	2	28
	VOSS Deck Crew	2	2	4	
	Trans Rec Skimmer Operators	2	2	4	
	VOSS Operating Crew (*Sisuaq* or similar)	**18**	N/A	18	
TF-6	Nearshore Recovery Supervisor	1	1	1	19
	OSR Barge Deck Crew (*Endeavor* or similar)	3	1	3	
	47-ft Skimmer Boat Operators	3	1	3	
	34-ft Work Boat Operator x 3 boats	6	1	6	
	Nearshore Barge Operating Crew (tug)	**6**	N/A	6	
TF-7	Shoreline Protection Supervisor	1	1	1	37
	Shoreline Protection Labor	4	1	4	
	29-ft Work Boat (ACS Type C) Operators	4	1	4	
	18 to 26-ft Work Boat (ACS Type A & B) Operator	8	1	8	
	24-ft Work Boat Operators	4	1	4	
	26 to 32-ft Landing Craft Crew x 4 boats	8	1	16	
TF-8	Shoreline Recovery Supervisor (Supported by TF-7)	1	1	1	11
	Shoreline Recovery Labor (Supported by TF-7)	10	1	10	
Ice Management	Ice Management Vessel (*Fennica* or Similar)[1]	30	N/A	30	30
Subsea Containment	Subsea Containment and Processing Unit[1]	67*	N/A	67	67
	TOTAL PERSONNEL			**309**	**309**

For ACS or ARS personnel, the Total is the sum of vessel operators, technicians, and general laborers. For ACS or ARS personnel, the Team Leader is a separate person.

* Staffed during incident

Shift = 12hrs TF-6, TF-7 and TF-8 operate one 12-hr shift per day.

All TF-3 tasks, including PIC, will be performed by the tanker crew with no additional response staff from Shell or ACS.

Additional support personnel availability is described in Appendix A, ACS Tactics L-8, L-9 and L-10.

[1]Vessels tasked to support general drilling operations (anchor handling or ice management) may be reassigned to support response operations as needed. Table C-3 provides accounting for the response equipment to contain and recover the WCD to the maximum extent practicable.

A.2 MARINE VESSELS IN SUPPORT OF CHUKCHI SEA EXPLORATION DRILLING PROGRAM

Table A-4
List of Marine Vessels in Support of
Chukchi Sea Exploration Drilling Program

VESSEL	DESCRIPTION
OSR Vessel	M/V *Nanuq* or similar
OSR Barge (Offshore)	M/V *Klamath* or similar
OSR Barge Tug (Offshore)	*Guardsman* or similar
OST	*Marika* or similar
VOSS (Anchor Handling Icebreaker)	M/V *Aiviq* or similar
VOSS	M/V *Sisuaq* or similar
OSR Barge (Nearshore)	*Arctic Endeavor* or similar
OSR Barge Tug (Nearshore)	*Sea Prince* or similar
OSR Barge Carried Support Vessels:	Including:
47-ft Skimmer Boat	*Rozema* or similar
34-ft Work Boat	*Kvichak* or similar
249-bbl Mini-Barge	46-ft or similar
Anchor Handling / Ice Management Vessel (x 2)	MSV *Fennica* or similar
Containment System Barge	*Arctic Challenger* or similar

OSR VESSEL - *NANUQ* OR SIMILAR

GENERAL SPECIFICATIONS

Vessel Name	*Nanuq* (Hull 235)
Principal Dimensions	301 ft 6 inches x 60 ft x 24 ft
Horsepower	7,268 BHP
Deck Space	169 ft x 50.5 ft
Main Engines	(2) 3608 Caterpillar
Bow Thruster	2 x 1,700 HP/CP Tunnel
Stern Thruster	1,700 HP/CP Tunnel
Electronics	As per GMDSS requirements
Fuel Oil Capacity	6,867 bbl
Liquid Storage	12,690 bbl
Certification	USCG Subchapter L (OSV) and I (cargo); ABS=✠A1 (Hull); ABS=✠AMS (Machinery); ABS Load Line; ABS DP-2; Ice Class A1, SOLAS 2000; MARPOL 99

OFFSHORE OSR BARGE *KLAMATH* OR SIMILAR

GENERAL SPECIFICATIONS

Length	351 ft
Width	76 ft
Depth	22 ft
Liquid Cargo Storage (95%)	76,900 bbl
Classification	ABS - +A1, Grade B Oil Tank Barge

OFFSHORE TUG *GUARDSMAN* OR SIMILAR

GENERAL SPECIFICATIONS

Length	126 ft
Width	34 ft
Draft	16.5 ft
Main Engines	(2) 3606 Caterpillar
Horsepower	5,000 BHP
Fuel Storage	1,786 bbl

ARCTIC TANKER

Shell will charter for the purposes of mass oil storage an arctic tanker such as the *Marika*. A tanker with similar functional specifications would be engaged if these vessels are unavailable when operations begin.

A summary of the principal dimensions and capabilities for the *Marika* are as follows:

Name:	***Marika***
IMO Number	9332614
Flag State	Norway
Owner	LR ICE Shipping Ten LTD
Operator	Thome Ship Management
Type of Vessel:	Oil Tanker
Type of Hull:	Double Hull
Classification:	Det Norske Veritas
Class Notation:	+1A1 ICE-1A
Dimensions (meters):	
Length:	228
Breadth:	32
Draft (winter):	14
Tonnages (metric):	
Gross Tonnage :	42,835
Deadweight (tonnes):	74,996
Crude Capacity (bbl) (98%)	513,925

M/V *AIVIQ* MULTIPURPOSE ANCHOR HANDLER OR SIMILAR

GENERAL SPECIFICATIONS

Length	360 ft
Width	80 ft
Draft	24 ft
Accommodations	64 berths
Maximum Speed	15 knots
Fuel Storage	12,575 bbl

THE M/V *SISUAQ* OFFSHORE SUPPLY VESSEL OR SIMILAR

GENERAL SPECIFICATIONS*

Length	300 ft
Width	64 ft
Draft	19.9 ft
Accommodations	46 berths
Maximum Speed	14 knots
Fuel Storage	Approximately 6,500 bbl

*The M/V *Sisuaq* specifications are similar to those of other OSVs such as the *Harvey Champion* or *Harvey Spirit.* The M/V *Sisuaq* or a similar vessel may be established as an OSR vessel and appropriately equipped as a VOSS.

OSR BARGE AND ICE CLASS TUG OR SIMILAR

GENERAL SPECIFICATIONS

Vessel Name	*Sea Prince*	Vessel Name	*Arctic Endeavor*
Principal Dimensions	126 ft x 34 ft x 16.5 ft	Principal Dimensions	205 ft x 90 ft x 15 ft
Horsepower	5,000	Horsepower	Non-powered
Deck Space	30 ft x 30 ft	Deck Space	Approx. 200 ft x 80 ft
Main Engines	(2) Caterpillar 3606	Liquid Storage	18,636 bbl
Certification	USCG - Uninspected Towing Vessel ABS - A1, Towing Service, AMS	Certification	USCG - Freight Barge ABS - +A1, Oil Tank Barge, Ice Class C

ROZEMA 47-FT OIL SPILL RESPONSE WORK BOAT OR SIMILAR (WITH LAMOR HK2 BRUSH SKIMMERS)

Vessel use:

- Rapid response to the spill site.
- Oil recovery via LAMOR brush skimmer system.
- Operates in shallow water with adequate protection to propellers and rudders.
- Capable of operating in 6- to 8-ft seas.
- Has an approximate 22,000 lbs of bollard pull.
- Able to tow vessels and barges with a maximum weight of 75 gross tons alongside, astern, and pushing ahead.
- Capable of slow speed operation for skimming oil via the engine's MGX transmissions.
- Vessel strengthened around waterline for incidental ice contact.

GENERAL SPECIFICATIONS

Length Overall	51 ft x 16 ft 8 inches x 54 inches
Deck Length	47 ft
Deck Width	16 ft
Fuel Tank	800 gal
Engine, Twin Marine Diesel	600 hp, each
Molded Dimensions	47 ft x 16 ft
Approx. Top Speed	22 knots
Approx. Bollard Pull	22,000 lbs
Approx. Draft	60 inches light

KVICHAK 34-FT OIL SPILL RESPONSE WORK BOAT OR SIMILAR

Vessel use:

- Operates in open ocean and shallow water with adequate protection to propellers and rudders.
- Capable of operating in up to 6-ft seas depending upon wave characteristics.
- Has an approximate 7,000 lbs of bollard pull.
- Vessel strengthened with ice belting around waterline for incidental ice contact.

GENERAL SPECIFICATIONS

Overall Length	34 ft 6 inches
Overall Beam	12 ft
Deck Length	34 ft
Draft, Light Load	32 inches
Draft, Full Load	38 inches
Engine, Twin Marine Diesels	305 hp, each
Approx. Top Speed	20 knots
Approx. Bollard Pull	7,000 lbs
Fuel Oil	300 gal

249-BARREL MINI-BARGES

GENERAL SPECIFICATIONS

Overall Length	46 ft
Overall Beam	12 ft
Overall Depth	5 ft 5 inches
Maximum Storage Capacity	249 bbl in two tanks

MSV *FENNICA* ICE BREAKER / MANAGEMENT VESSEL OR SIMILAR

The MSV *Fennica* or similar is a multifunctional vessel specially designed for a wide range of offshore-related work.

Dimensions:

LOA	116 m	Gross Tonnage (ITC 69)	9,392
LBP	96.7 m	Net Tonnage (ITC 69)	2818
Breadth Moulded	26 m	Deadweight Tonnage	1650 to 4800
Depth Moulded	12.5 m	Bollard Pull Forward	234 T
Draught	8.4 m	Speed	16 knots
Class Notation	✠1A1 POLAR10 Icebreaker Tug Supply Vessel SF HELDK EPR EØ DYNPOS-AUTR		

A.3 AERIAL SUPPORT OF CHUKCHI SEA EXPLORATION DRILLING PROGRAM

Shell has chartered rotary-wing and fixed-wing aircraft for the support of the Chukchi Sea exploration drilling program. Rotary-wing aerial support assets include multiple Sikorsky S-92 (or similar) helicopters for multi-purpose duties that may include personnel transport, freight transport, and search and rescue. Fixed-wing aerial support assets include a Lockheed C-130A Hercules (or similar) for personnel and/or freight transport. Refer to Table G-2 (page G-6) for further information on aircraft staging locations.

Table A-5
List of Aircraft in Support of
Chukchi Sea Exploration Drilling Program

AIRCRAFT	DESCRIPTION
Rotary-wing multi-purpose support (x 3)	Sikorsky S-92 Helicopter or similar
Fixed-wing multi-purpose support	Lockheed C-130A Hercules, or similar

*GENERAL SPECIFICATIONS
SIKORSKY S-92 HELICOPTER OR SIMILAR
specifications may vary between operators' configurations

DIMENSIONS

Length	60 ft 7 inches
Width	12 feet 9 inches
Height	15 feet 5 inches
Main rotor diameter	56 ft 4 inches

CARGO/BAGGAGE

Passenger Cabin Volume: 700 cu ft (19.82 cu m)
Baggage compartment volume: 140 cu ft (3.96 cu m)
Sliding doors (SAR config.)

SPECIFICATIONS

Maximum gross weight:	26,500 lbs
Empty weight (standard SAR config.):	16,831 lbs
Useful load:	9,669 lbs
Fuel capacity:	760 gal/2,877 liters (210 gal [two aux tanks)
Average cruise speed:	138 kts/280 kph
Maximum range:	467 n mi/865 km (30-minute fuel reserve)
Passenger seats	10-19 passengers, depending upon configuration
Crew	2 pilots

POWER PLANT

Two (2) General Electric CT7-8A turboshaft engines with integral particle separators and pneumatic starters.

LANDING GEAR

Fixed skid type landing gear with automatic and pilot activated emergency pop-out float system.

LOADING INFORMATION

Basic weight	16,831 lbs
Pilots (2)	400 lbs
Engine oil	33 lbs
Windshield Washer Fluid	4 lbs
Manuals	10 lbs
Two additional crew	400 lbs
Loose SAR equipment	200 lbs
Operating Weight	**17,878 lbs**

*GENERAL SPECIFICATIONS
LOCKHEED C-130A HERCULES, OR SIMILAR

**specifications may vary between operators' configurations*

DIMENSIONS

Length	97.8 ft
Height	38.3 ft
Wingspan	132.6 ft

DISPERSANT PAYLOAD 3,250 gal

SPECIFICATIONS

Max Gross Weight	124,200 lbs
Average Basic Weight	~60,000 lbs
Fuel Capacity	Unknown (depends on configuration)
Fuel Consumption	575 - 800 gal per hr (dependent upon altitude / airspeed)
Average Cruise Speed	298 knots
Maximum Range	2,000 n mi
Passenger Seats	Not Authorized
Crew	2 pilots 1 Flight Engineer

POWER PLANT

Power Plant	Four (4) Allison T56 engines; 3,750 SHP each

LANDING GEAR

Retractable

LOADING INFORMATION

Basic Weight	~60,000 lbs
Full Fuel	Unknown (depends on configuration)
Pilots / Crew	600 lbs
Operating Weight	Unknown without fuel load
Max Gross Weight	124,200 lbs
Minus Op Weight	Unknown without fuel load
Total Dispersant Payload	3,250 gal / ~26,000 lbs

TOTAL DISTANCE	**FUEL REQUIRED	PAYLOAD OUTBOUND	FLIGHT TIME
2,000 n mi	Full	None	7.0
1,400 n mi	Unknown	26,000 lbs	4.5

****FUEL REQUIRED –** *includes ~30 minutes reserve fuel*

A.4 DISCUSSION OF SHELL TECHNOLOGIES AND SYSTEMS

For information purposes, Shell is providing Table A-6 to further describe the response assets available to deploy in the event of a spill in the Chukchi Sea. Shell has reviewed the ADEC BAT 2004 Conference Report issued in June 2006 and has adopted the following recommended technologies for the purposes of this OSRP. While not a regulatory requirement, the capping system is included in Table A-7 for informational purposes only. Shell has also selected response equipment for the containment and recovery of oil and the potential burning of oil that is considered to be the BAT for conditions commonly found in the Chukchi Sea. Brief descriptions of these technologies and systems follow:

Table A-6
Response Assets Available to Deploy

TECHNOLOGY / SYSTEM	DESCRIPTION
Annular water injection	Annular water injection is considered a proven breakthrough technology. It can be used during a spill response to expedite the transfer of discharged oil from a temporary storage tank to a more permanent storage facility. The technology involves reducing the discharge line pressure of a discharge hose by injecting a sleeve of water through the hose as the oil is pumped. The reduced pressure results in faster transfer rates and therefore, faster recovery time.
GT-A pumps	GT-A pumps are considered BAT and are used for lightering of viscous oil. During a spill response, the pumps significantly aid in the recovery efforts by accelerating the transfer rate for the discharge.
Transrec 150 Weir Skimmer	Transrec 150 weir skimmer is a well-proven recovery system and selected by major response organizations, including SERVS, MSRC, and the NOFO, as the primary open-ocean-skimming device. NOFO has performed extensive field tests of the Transrec skimmer both in actual spill events and open ocean trials using free crude oil. Shell's OSR assets include four (4) Transrec 150 weir skimmers. The offshore OSR barge is equipped with two (2) skimmer units mounted near the stern of the vessel, port and starboard. The two VOSS, staged within 42 hr of the drill site, are each equipped with one skimmer unit mounted near the stern of the vessel. This configuration permits the self-propelled, floating skimmer heads attached to a 312-ft (95-m) umbilical hose to be maneuvered into the thickest oil layers within the apex of the containment boom for optimum recovery. Each Transrec 150 has a name-plate recovery capacity up to approximately 2,516 bbl/hr (400 cu m/hr), giving Shell's OSR skimming capability a combined total capacity up to 10,064 bbl/hr (1,600 cu m/hr).
Lamor-Lori Brush Skimmers	Lamor-Lori brush skimmers, each consisting of two (2) five parallel stiff-brush chains, were selected as proven systems for conducting recovery operations. Shell's OSR vessel and nearshore OSR barge are each equipped with two of these over-the-side skimming packages, yielding a total name-plate recovery capacity of approximately 2,580 bbl/hr or 410 cu m/hr for each vessel. The unique Lamor-Lori Recovery Channel design recirculates surface water back into the recovery area, increasing the system's overall throughput efficiency. The skimmer automatically separates oils, emulsions and oily debris/ice from sea water making efficient use of on-board storage. Recovered oil normally contains less than 5 percent free water.
Lamor-Lori Brush Skimmers	Lamor-Lori brush skimmers were selected as the primary recovery system for Shell's 47-ft, self-propelled skimmer that will be stored on, and launched from the OSR barge. This skimmer is capable of operating effectively at vessel speeds of 2 to 3 knots, which results in much higher oil encounter rates than other types of advancing skimmers. The built-in skimmers, one on each side of the vessel, with a name-plate recovery capacity of approximately 516 bbl/hr (82 cu m/hr) gives this system a total potential recovery of approximately 1,032 bbl/hr (164 cu m/hr). This skimming system is ideally suited for a broad range of oil viscosities; it can operate in adverse weather and sea conditions; and, it is sufficiently maneuverable for the recovery of oil trapped or herded in pockets against ice.

Table A-6
Response Assets Available to Deploy (Continued)

TECHNOLOGY / SYSTEM	DESCRIPTION
Vertical Rope Mop Skimmers	Vertical Rope Mop Skimmers by Crucial Inc. have been selected as part of Shell's backup recovery system, each skimmer consists of eight continuous loops of oleophilic fiber mops with a combined name-plate capacity of approximately 503 bb/hr (80 cu m/hr). Stored onboard the OSR vessel, two of these skimmers provide an additional 1,006 bbl/hr (160 cu m/hr) recovery potential. Operated from a crane over the side of a skimming vessel or barge, these skimmers allow for the placement of the mops directly into heavy pockets of oil contained within a boom or trapped by ice.
Duplex Disc/Brush Skimmers	Small Duplex Disc/Brush skimmers with a floating Lobe Pump, providing for the careful placement of a skimming device into smaller pockets of oil (within a boom or trapped among ice cakes). Two of these disc/brush skimmers, each rated at approximately 88 bbl/hr (14 cu m/hr), will be located onboard the primary OSR vessel, giving flexibility for the recovery of oil from isolated pools. Their combined recovery potential represents another approximately 176 bbl/hr (28 cu m/hr).
RubberMax Boom	Made of vulcanized neoprene and hypalon, and is a durable, inflatable boom for use in open water and light ice conditions. The boom is manufactured to International ISO 9001-2000 Standards; has a high buoyancy-to-weight ratio; and, comes with a high visibility orange color. A complete system consists of a reel, power pack, and 200 m (656 ft) of boom. The height of the boom is 67 inches (170 cm) with a freeboard of 24 inches (60 cm) and a draft of 43 inches (110 cm). Eight of these systems will be available on site for use in multiple configurations such as a large open-apex deflection system; deflection booms secured to an OSR vessel, providing deflection for an OSR vessel; and as independent U-boom configurations for the collection of oil.
Hydro-Fireboom Packages	Three water-cooled, Hydro-Fireboom packages, each with 500 ft (152 m) of inflatable boom [with 14-inch (36 cm) floatation and 18-inch (46 cm) skirt] are stored on Shell's OSR vessel and OSR barge. Each package is supported by two water pumps, along with long tow lines and fire hose assemblies to provide each of the booms in a U-configuration with adequate cooling seawater to keep the boom from being damaged by the intense (approximately 1,000 ^{o}C) flames of a contained oil fire. The boom is towed in a U-configuration to capture and burn contained oil, or it can be held (in a station-keeping mode) at a surfacing blowout, providing enough burn area to eliminate 10,000 to 15,000 bopd. This boom has undergone rigorous testing with pit burns and in large tanks (Ohmsett Facility in New Jersey).

Table A-7
Capping Stack Overview

TECHNOLOGY / SYSTEM	DESCRIPTION
Capping Stack	The Arctic capping stack, depicted in Figure A-1, is designed to be the primary response tool during a blowout scenario in the Alaskan OCS. The capping stack will be maintained and deployed from the icebreaker *Fennica* (or similar), positioned as a primary ice management vessel in the Chukchi Sea. The stack will be maintained in a ready-to-respond condition, including periodic function testing per regulations. The entire capping stack is designed to 10,000 psi, consisting of new equipment built in accordance to API 16A. Trendsetter Engineering in Houston is building and testing the capping stack. The capping stack is built with the primary purpose of being able to land on a failed BOP and shut the well in. The capping stack engages with the BOP through an H4 connector which latches onto the H4 mandrel on top of the BOP stack. This connection uses the metal-to-metal seal to achieve a connection to 10,000 psi. The capping stack includes a spacer spool, designed to elevate the rams and ROV control panels above the mudline cellar and several feet above the seafloor to ensure good visibility during operations. Dual blind rams are included to give redundancy in ability to shut the well in and seal. Sufficient on-board hydraulic capacity exists to engage the H4 connector on the BOP and to shut both of the blind rams. Additional hydraulic capacity is obtained from the remote subsea BOP control module. The supply umbilical on this module can be connected to the capping stack to utilize the controls on the capping stack to function all components repeatedly. Included in the capping stack for deployment is a diverter spool with side outlet valves which can be used for a soft shut in. Additionally, these sacrificial valves can be removed and flowlines can be installed on the connector to enable either a cap-and-divert scenario or a kill scenario. To assist with deployment, guideline funnels are installed on the main frame of the capping stack. Pressure and temperature sensors are also included, which can be monitored acoustically from any vessel in the area. All controls have been designed inclusive of standard ROV tooling, allowing any of the fleet ROVs to operate the capping stack.

Figure A-1 Capping Stack