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ENVIR. APPEALS BOARD

August 27, 2007

Duane A. Siler
202-457-5615
DSiler@pattonboggs.com

By Hand

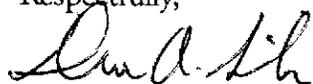
Hon. Kathie Stein
Environmental Appeals Board
U.S. Environmental Protection Agency
1341 G Street, N.W.
Suite 600
Washington, D.C 20005

Re: In re Shell Offshore Inc, OCS Appeal Nos. 07-01 & 07-02

Dear Judge Stein:

Enclosed please find a courtesy copy of Shell Offshore Inc.'s Errata to its Response to the Reply Briefs of Petitioners, as filed today. The errata correct clerical errors regarding two attachments to SOI's response filed August 15, 2007. We regret any inconvenience occasioned by the errors.

Respectfully,



Duane A. Siler
Counsel for Shell Offshore Inc.

Cc: with enclosure

Eric Jorgensen
Clayton Jernigan
Michael LeVine
EARTHJUSTICE
325 Fourth Street
Juneau, AK 99801

August 27, 2007
Page 2

Chris Winter
Crag Law Center
917 SW Oak St., Suite 417
Portland, OR 97205

Elliot Zenick
Juliane Matthews
Office of Regional Counsel
U.S. EPA, Region 10
1200 Sixth Avenue
Seattle, WA 98101

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ENV. APPEALS BOARD

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BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In re:

Shell Offshore Inc.
Kulluk Drilling Unit and
Frontier Discoverer Drilling Unit

OCS Permit Nos. R10OCS-AK-07-01
R10OCS-AK-07-02

OCS Appeal Nos. 07-01 & 07-02

**SHELL OFFSHORE INC.'S ERRATA TO RESPONSE
TO PETITIONERS' REPLY BRIEFS**

Shell Offshore Inc. ("SOI") hereby files this Errata to its Response to the Reply Briefs of Petitioners North Slope Borough ("NSB") and REDOIL, Northern Alaska Environmental Center, Alaska Wilderness League, Center for Biological Diversity, Natural Resources Defense Council ("NRDC") (collectively "REDOIL"). It has come to SOI's attention that its Response to Petitioners' Reply Briefs, filed on August 15, 2007, contained clerical errors regarding two attachments.

SOI's Amended Response to Petitions for Review, filed July 30, 2007, included fifteen attachments. For purposes of its Response to Petitioners' Reply Briefs, SOI continued this

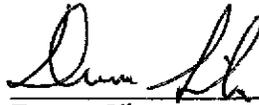
numbering scheme; therefore, the three attachments included in SOI's Response are numbered SOI Attachments 16, 17, and 18. The internal citations to SOI's attachments were correctly numbered. See SOI Response at 5, 30 and 31, respectively. However, the numbers on the cover sheets for two of the attachments were reversed. Correctly numbered versions of these two attachments are submitted herewith as follows:

Name/Description of Attachment:	Incorrectly numbered when attached to SOI's Response as:	Cited in SOI's Response and renumbered herein as:
EPA Region 4 Letter to Chevron USA regarding Destin Dome OCS project, dated February 8, 1999	SOI Attachment 17	SOI Attachment 16 (cited at pg. 5)
Declaration of Rodger Steen and attachments	SOI Attachment 16	SOI Attachment 17 (cited at pg. 30)

In addition, renumbered Attachment 17 -- the declaration of Rodger Steen -- references two documents that were inadvertently not attached to the declaration. First, paragraph 7 of Mr. Steen's declaration discusses an email dated March 20, 2007 from Mr. Steen to Dan Meyer at Region 10. Second, paragraph 8 of the declaration cites the Addendum to SOI's minor OCS source air permit applications, dated March 26, 2007. Both documents are contained in the administrative record, and SOI provided record citations to them in its Response. However, for completeness, the March 20, 2007 email and relevant pages from the March 26, 2007 Addendum are attached to renumbered SOI Attachment 17.

Respectfully submitted,

PATTON BOGGS LLP
Attorneys for Shell Offshore Inc.



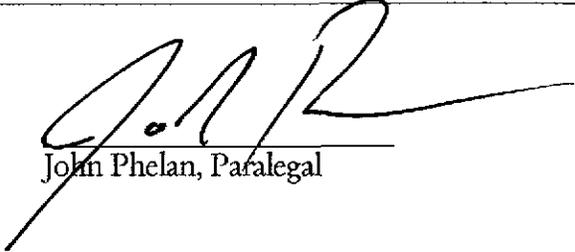
Duane Siler
Susan M. Mathiascheck
2550 M Street NW
Washington DC 20036
Telephone: 202-457-6000
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August 27, 2007

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Errata to Response to Petitioners' Reply Briefs was electronically filed with the Environmental Appeals Board and sent, via Federal Express and Electronic Mail on the 27th day of August 2007, to the following:

<p>Chris Winter Crag Law Center 917 SW Oak St., Suite 417 Portland, OR 97205 Phone: (503) 525-2725 Facsimile: (503) 296-5454 Email: chris@crag.org</p>	<p>Michael LeVine Eric Jorgensen Clayton Jernigan 325 Fourth Street Juneau, AK 99801 Phone: 907-586-2751 Facsimile: 907-463-5891 mlevine@earthjustice.org</p>
<p>Dan Meyer Richard Albright Office of Air, Waste and Toxics U.S. EPA, Region 10 1200 Sixth Avenue Seattle, WA 98101 Phone: (206) 553-1200 Facsimile: (206) 553-0110 meyer.dan@epa.gov</p>	<p>Juliane Matthews Edward Kowalski, Regional Counsel Office of Regional Counsel U.S. EPA, Region 10 1200 Sixth Avenue Seattle, WA 98101 Phone: (206) 553-1083 Facsimile (206) 553-0163 matthews.juliane@epa.gov</p>
<p>Richard Ossias Associate General Counsel Office of General Counsel (MC-2344A) 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460-0001 Phone: (202) 564-7606 Facsimile: (202) 564-5603 ossias.richard@epa.gov</p>	<p>Elin Miller, Regional Administrator U.S. EPA, Region 10 1200 Sixth Avenue Seattle, WA 98101 Phone: (206) 553-1234 Facsimile: (206) 553-1809 Email: miller.elin@epa.gov</p>


John Phelan, Paralegal

SOI Attachment 16 (corrected)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8860

FEB 8 1999

4APT-ARB

Ms. Sandi M. Fury
EPA Representative
Chevron U.S.A., Inc.
210 Grand Street
New Orleans, Louisiana 70112

SUBJ: Destin Dome Outer Continental Shelf Source

Dear Ms. Fury:

Chevron U.S.A., Inc. is presently preparing an Outer Continental Shelf (OCS) air permit application to be submitted to the Environmental Protection Agency (EPA) for a proposed natural gas development and production project in Destin Dome Unit 56. This project will be located off the coast of Florida in the Eastern Gulf of Mexico and is subject to the requirements of the OCS air regulations, codified at 40 C.F.R. part 55. This correspondence outlines the requirements for Chevron to consider in the preparation of their air permit application by: (1) defining the OCS source for the Destin Dome project with respect to Prevention of Significant Deterioration (PSD); (2) specifying requirements regarding the ambient air impact analyses; and (3) detailing the concurrent process for issuance of the OCS air permit and the Title V federal operating permit. The information presented herein is consistent with OCS air permitting actions and determinations made by EPA in Region 4, Region 9, Region 10, and the Office of Air Quality Planning and Standards, and in the governing federal and state regulations and Clean Air Act (Act) statutes.

According to preliminary information submitted by Chevron to the Minerals Management Service (MMS), the Destin Dome Unit 56 development and production project will encompass as many as 21 wells producing up to 450 million cubic feet per day of natural gas. Destin Dome Unit 56 encompasses eleven contiguous blocks located approximately 25 miles offshore of Pensacola, Florida (at their northernmost point). The proposed project will include the drilling of 20 new wells and the production of 21 wells (new and existing locations). The gas will be produced from satellite well locations which will be routed through infield lines to a central processing facility. There will be living quarters adjacent to the processing facilities and the field will be manned by a trained crew of experienced operators on a 24-hour basis. From the central processing facility, the gas will be moved by pipeline across federal waters to an area off the coast of Mobile, Alabama, where it will eventually be sent to shore in Mobile County through existing or proposed third party pipelines. All support for the project activities will come from existing shorebase facilities in Theodore, Alabama, or Bayou La Batre, Mississippi, and will be provided by boat or helicopter.

Internet Address (URL) • <http://www.epa.gov>

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OCS Source Definition

Since the promulgation of the federal OCS air regulations in September 1992, OCS sources have been issued permits by EPA or delegated agencies in Regions 4, 9, and 10. For these permits, the OCS source was defined as all of the platforms and activities associated with the oil or natural gas project. These projects included:

Santa Barbara (CA) Air Pollution Control District

- Chevron, Point Arguello Project-3 platforms, onshore facility
- Exxon, Santa Ynez Unit-3 platforms, onshore facility
- Nuevo Energy (Unocal), Dos Cuadras Field-5 platforms
- Nuevo Energy (Unocal), Point Pedernales Project-1 platform, onshore facility
- Pacific Operators Offshore, Carpinteria Field-2 platforms
- Texaco, Pitas Point Unit-1 platform

EPA Region 10

- Arco Alaska, Beaufort Sea-2 drilling vessels/platforms
- BP Exploration Alaska, Liberty-gravel island, 1 platform, pipeline

EPA Region 4

- Chevron, Destin Dome 97-1 platform
- Chevron, Destin Dome 56-1 platform

According to §55.2, an "OCS source" is defined as:

any equipment, activity, or facility which: (1) emits or has the potential to emit any air pollutant; (2) is regulated or authorized under the Outer Continental Shelf Lands Act (OCSLA) and; (3) is located on the OCS or in or on waters above the OCS. This definition shall include vessels only when they are: (1) permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA or; (2) physically attached to an OCS facility, in which case only the stationary sources aspects of the vessels will be regulated.

For an OCS source the "potential emissions" are defined as:

the maximum emissions of a pollutant from an OCS source operating at its design capacity. Any physical or operational limitation on the capacity of a source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a limit on the design capacity of the source if the limitation is federally enforceable. Pursuant to section 328 of the Act, emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while enroute to or from the source within 25 miles of the source, and shall be

included in the 'potential to emit' for an OCS source. This definition does not alter or affect the use of this term for any other purposes under §§55.13 or 55.14 of this part, except that vessel emissions must be included in the 'potential to emit' as used in §§55.13 and 55.14 of this part.

According to §55.13(d), the requirements of PSD (40 C.F.R. §52.21) apply to OCS sources located within 25 miles of a state's seaward boundary if the requirements of §52.21 are in effect in the corresponding onshore area (COA) and to OCS sources located beyond 25 miles of the state's seaward boundary. For the Destin Dome project, which is proposed to be located within 25 miles of the State of Florida's seaward boundary, the PSD requirements are in effect in the COA (i.e., in the State of Florida). In accordance with §55.14(e), the Florida PSD requirements have also been incorporated by reference into Appendix A of part 55.

For the purposes of PSD, a stationary source is defined as any building, structure, facility, or installation which emits or may emit any air pollutant subject to regulation under the Act. "Building, structure, facility, or installation" means all the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties and are under common ownership or control. An "emissions unit" is any part of a stationary source that emits or has the potential to emit any pollutant subject to regulation under the Act. To determine applicability with regard to the Chevron Destin Dome project, the three source criteria must be examined.

The term "same industrial grouping" refers to the "major groups" identified by two-digit codes in the Standard Industrial Classification (SIC) Manual, which is published by the Office of Management and Budget. The SIC Major Group encompassing the Chevron Destin Dome development and production project is Major Group 13 - Oil and Gas Extraction.

The MMS lease blocks encompassing Destin Dome Unit 56 are contiguous. The terminology "adjacent" is defined most recently in correspondence, dated May 21, 1998, from EPA Region 8 to the Utah Division of Air Quality (see Enclosure). According to this determination, the distance that is associated with "adjacent" must be considered on a case-by-case basis, and clearly falls within the distances presented for the Destin Dome project.

For the Chevron Destin Dome project, there is no dispute that the platforms and production wells are under common control, have the same Major Group SIC Code and are located on contiguous or adjacent properties. To conclude, based on these definitions, requirements, and guidance, the "OCS source" for the Destin Dome project includes the production platform, living quarters platform, and 21 production wells (proposed maximum). The potential emissions for the source would be the maximum air pollutant emissions from the production platform, living quarters platform, production wells, and vessels (including service vessels) constituting the Destin Dome project. If the maximum annual emissions will exceed 250 tons per year of any regulated air pollutant, then the OCS permit application from Chevron must meet the PSD permitting requirements contained in Chapter 62-212 of the Florida Administrative Code (F.A.C.) (the PSD requirements of §52.21).

Ambient Air Impact Analyses

In terms of the ambient air impact analyses required as part of a PSD permit application for the Chevron Destin Dome project, you should follow the guidance contained in EPA's New Source Review Workshop Manual (Draft, 1990) and Guideline on Air Quality Models, codified at 40 C.F.R. part 51, appendix W. As has been the procedure used for the permitting of major OCS sources within 25 miles of a state boundary in EPA Regions 9 and 10, the PSD rules, and any applicable state requirements, must be complied with. Therefore, the Florida Department of Environmental Protection PSD regulations apply to the Chevron Destin Dome project.

Accordingly, it must be demonstrated that the proposed emissions from the Chevron Destin Dome project will not cause or contribute to a violation of any PSD increment or National Ambient Air Quality Standard at all receptors beyond that area, if any, considered to be "non-ambient air." For land-based projects, non-ambient air includes the area owned or under the control of the source for which public access is restricted by a physical barrier. For OCS sources, non-ambient air is determined on a case-by-case basis and may be based on legal restricted access and control of the waters surrounding the project.

40 C.F.R. Part 70 (Title V) Federal Operating Permit

For the purposes of part 70 permitting, a "major source of air pollution" or a "Title V source" is defined under Chapter 62-210 of the F.A.C. as a facility containing an emissions unit or any group of emissions units, which is or includes any of the following:

- (a) for pollutants other than radionuclides, any emissions unit or group of emissions units that emits or has the potential to emit, in the aggregate, 10 tons per year or more of any one hazardous air pollutant (HAP), 25 tons per year or more of any combination of HAPs, or any lesser quantity of a HAP as established through EPA rulemaking. Notwithstanding the preceding sentence, HAP emissions from any oil or gas exploration or production well (with its associated equipment) and HAP emissions from any pipeline compressor or pump station shall not be aggregated with HAP emissions from other similar units, whether or not such units are in a contiguous area or under common control, to determine whether such units or stations are Title V sources, or
- (b) an emissions unit or group of emissions units, all belonging to the same two-digit Major Group as described in the SIC Manual, that directly emits or has the potential to emit 100 tons per year or more of any regulated air pollutant.

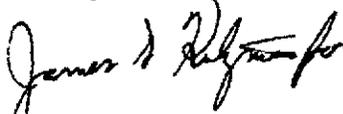
Based on the potential emissions from the Chevron Destin Dome project, these criteria will make the project subject to the part 70 operating permit requirements.

The State of Florida has an approved part 70 operating permits program. However, the State of Florida has not been delegated the authority for the OCS air program for sources located within 25 miles of the state's seaward boundary. For this reason, EPA Region 4 will issue a part 70 operating permit to Chevron for the Destin Dome project. The permit application should

follow the requirements of Chapter 62-213 of the F.A.C. The part 70 permit application will be processed concurrently with the OCS air permit application.

If you have any questions or comments concerning these OCS air permitting requirements, please contact Mr. Scott Davis of my staff at (404) 562-9127.

Sincerely,



Winston A. Smith
Director
Air, Pesticides and Toxics
Management Division

Enclosure

cc: Debbie Tucker, Florida Governor's Office
Howard Rhodes, Florida DEP
Terry Scholten, MMS
David Sanders, OAQPS
Dan DeRoeck, OAQPS

SOI Attachment 17 (corrected)

**BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.**

In re:)
)
Shell Offshore Inc.)
Kulluk Drilling Unit and)
Frontier Discoverer Drilling Unit)
)
OCS Permit Nos. R10OCS-AK-07-01)
R10OCS-AK-07-02)
)
)

DECLARATION OF RODGER STEEN

The undersigned hereby makes the following declaration pursuant to 28 U.S.C. § 1746.

1. I am a principal with Air Sciences, Inc. ("Air Sciences"). Air Sciences is headquartered in Denver, Colorado. The firm specializes in dispersion modeling, visibility modeling, emission inventories, monitoring, permitting, and engineering services. Since the firm was founded over twenty years ago, Air Sciences has worked with industry and government on technical aspects of air pollution control. Industry sectors have included minerals extraction, minerals refining, power production, natural gas processing, chemical manufacturing, painting processes, and pesticide formulation. Government work has included fire emissions modeling and fire effects model development and application for federal land managers and studies of dust movement and modeling for EPA. Air Sciences' personnel have also provided technical air quality

services, including air program development, to over 20 Indian tribes. Our experience includes working in all aspects of de-centralized air pollution planning, including emission inventory development for communities, Tribes, States, and Regional Planning Organizations.

2. I received my BS degree in 1969 from Brown University and my MS degree in 1972 from the University of Chicago. I am a professional engineer, registered in Colorado and a Certified Consulting Meteorologist.

3. In early-2006, Shell Offshore Inc. engaged Air Sciences to assist in obtaining OCS air permits from EPA Region 10 for the Kulluk and Frontier Discoverer for a program of exploration drilling by each vessel in the Beaufort Sea. Air Sciences prepared projected emissions inventories for each vessel's drilling activities at specific drill sites and performed modeling of predicted air quality impacts of projected emissions at individual drill sites, the results of which SOI submitted in its permit applications in December 2006. Thereafter Air Sciences personnel worked on SOI's behalf to provide data, analyses and other technical information requested by Region 10 to assist in formulating the permits. I was primarily responsible for this effort at Air Sciences.

4. In the third week of February 2007, Air Sciences provided EPA Region 10 with two requested modeling reports, one for the impacts of the Shell Kulluk drill vessel, *Air Quality Impact Evaluation Report – No Exclusion Zone, Shell Kulluk 2007 – 2009 Beaufort Sea Exploratory Drilling Program, February 15, 2007*, and one for the impacts of the Frontier Discoverer, *Air Quality Impact Evaluation Report – No Exclusion Zone, Frontier Discoverer Beaufort Sea Exploratory Drilling Program, February 19, 2007*. The information, which we also filed electronically with Mr. Herman Wong at Region

10, demonstrated that the National Ambient Air Quality Standards (NAAQS) for NO_x, PM-10 and SO₂ would be met at the hull of each drill vessel. That modeling exercise also showed air quality impacts with distance from the drill vessel. That exercise was performed consistent with acceptable procedures which included use of the ISC-PRIME dispersion model and screening meteorology. Mr. Wong responded telephonically to me with an acceptance of this modeling effort in mid-March, 2007.

5. On approximately March 19, 2007 I reported to Mr. Dan Meyer of EPA Region 10 by telephone that, by superimposing on the previously-reported air quality impacts from the drill ship the same impacts again, but shifting the superimposed location and, thus, the impacts by 500 meters upwind, the worst-case short-term combined impacts of two drill vessels drilling simultaneously at least 500 meters apart (highest 24-hour PM₁₀ impacts), and the worst-case longer-term combined impacts of a single vessel relocating 500 meters for a second drill program (highest annual NO_x impacts), are shown to be below the NAAQS. There was no alteration of the February 2007 dispersion modeling analyses submitted to EPA and the results of our analysis as reported to Mr. Meyer could be readily replicated and our results confirmed.

6. More specifically, demonstration of compliance with the annual NAAQS for NO_x was provided by superimposing the impact of the Shell Kulluk at 500 meters (25 ug/m³) upwind on the Kulluk at its hull (65 ug/m³), yielding an annual combined NO_x impact at the hull of the downwind vessel of 90 ug/m³. (The Kulluk NO_x impacts were higher than those of the Frontier Discoverer so the Kulluk impacts were used here.) Adding a background of 3 ug/m³ yielded a total impact of 93 ug/m³ which is under the standard of 100 ug/m³. Demonstration of compliance with the 24-hour PM₁₀ standard

was provided by a similar superimposing of impacts, but with the two vessels drilling simultaneously separated by 500 meters (hull to hull). In this configuration the Shell Kulluk was assumed downwind of the Frontier Discoverer since the Shell Kulluk's PM₁₀ impacts are larger than those of the Frontier Discoverer. Superimposing the impact of the Frontier Discoverer at 500 meters (36 ug/m³) on the Shell Kulluk at its hull (103 ug/m³) yields a 24-hour combined PM₁₀ impact of 139 ug/m³ at the hull of the Shell Kulluk. Adding a background of 7.9 ug/m³ yielded a total impact of 147 ug/m³ which is under the 24-hour PM₁₀ standard of 150 ug/m³. Considering that the installation of PM₁₀ filters is required on all engines under 600 horsepower, and the associated 60% or greater reduction in emissions was not taken into account in the modeling analysis, the PM₁₀ impacts will be smaller than estimated by this screening modeling. Impacts of the other criteria pollutants were all lower than these worst-case combined impacts relative to the applicable NAAQS.

7. On March 20, 2007, I sent an e-mail to Mr. Meyer at Region 10 confirming that, based on Air Sciences' modeling of combined impacts described above, SOI believed a 500 meter radius around separate drill sites would ensure that air quality standards would not be exceeded at the locations of maximum potential impact. A copy of the e-mail is attached hereto. I understand that this document is Item E-32 in the certified Index to Administrative Record in this matter.

8. Air Sciences submitted to Region 10 an Addendum to the permit applications, which was dated March 26, 2007, that addressed a number of technical issues. A copy of the relevant pages of the Addendum is attached. The Addendum noted SOI's proposal that the permits impose a minimum separation of 500 meters for simultaneous or

successive drill sites and, consistent with my e-mail to Mr. Meyer dated March 20, 2007, stated, "from an impact analysis perspective this distance [500 meters] is sufficient even under the worst combinations of source locations and winds to avoid impact aggregation." March 26 2007 Addendum, Item 5 at page 5. I understand that this document is Item A-6 in the certified Index to Administrative Record in this matter.

9. I make this Declaration based on personal knowledge. I certify under penalty of perjury under the laws of the United States of America that, to the best of my knowledge, the foregoing is true, accurate and complete.



RODGER G. STEEN

Dated: August 14, 2007



Rodger Steen
 <rsteen@airsci.com>
 03/20/2007 04:18 PM

To Dan Meyer/R10/USEPAUS@EPA
 cc
 bcc
 Subject Radius of invalid permit

History: This message has been replied to

Dan,

I have signoff from Shell for a radius of 500 meters - based on our comfort level that the ambient annual NOx standard will not being exceeded under this condition (our internal analysis).

These is another issue here; that of one vessel (the Frontier Discoverer) needing to replace the first (the Kulluk) if the first could not successfully complete the well. I was not part of the September 2006 meeting and apparently this issue arose and it was to be allowed under certain conditions that I do not have. I have modified your text to account for this situation. Perhaps you can work on this, or describe for me what the conditions would be to allow for this exchange of vessels. How can one OCS source replace another; it cannot assume the same permit conditions because it is composed of a different set of sources.

"This permit is not valid in those instances when another OCS source, owned or operated by the permittee, is conducting exploratory activity within 500 meters of this OCS source. This permit is also not valid within 500 meters of a drill site previously explored by an OCS source owned or operated by the permittee during a single drilling season, unless the previous OCS source is being replaced, in which case the OCS source NOx emissions are restricted to the remaining annual allowance for the previous OCS source."

 Rodger G. Steen
 Air Sciences Inc.
 1301 Washington Ave., Suite 200
 Golden, CO 80401
 303-988-2960



Shell Offshore Inc.
3601 C Street, Suite 1334
Anchorage, AK 99503

March 26, 2007

Daniel L. Meyer
Office of Air, Waste and Toxics
U.S. EPA, Region 10
1200 Sixth Avenue, OAQ-107
Seattle, WA 98101

Re: Shell Kulluk and Frontier Discoverer - Addendum to Pre-Construction Permit Applications - Beaufort Sea OCS Exploration Drilling Program

Dear Mr. Meyer:

Enclosed is an addendum for the two Shell Offshore Inc. minor OCS source air permit applications, submitted December 29, 2006, and supplemented in a February 7, 2007 letter to you. This addendum addresses several clarifications and revisions to the applications, all of which have already been submitted informally to EPA over the past two months.

Please feel free to contact me (907-770-3700), Gene Pavia (907-339-5482) or Rodger Steen (303-988-2960) regarding any additional detail. We appreciate your attention to and expeditious processing of these applications.

Sincerely yours,

Shell Offshore Inc.

Susan Childs
Regulatory Coordinator, Alaska

Enclosures:

cc: *Susan Childs, Shell*
Keith Craik, Shell
Bill Walker, ADEC, DAQ
Gene Pavia, AES RTS
Rodger Steen, Air Sciences Inc.

ADDENDUM

OCS Pre-Construction Air Permit Applications
December 29, 2006

Shell Offshore Inc.
3601 C Street, Suite 1334
Anchorage, AK 99503

Shell Kulluk & Frontier Discoverer
Beaufort Sea
Exploratory Drilling Program

AirSci Project 180-15

March 26, 2007

1. Introduction

This addendum provides updates to the applications submitted December 29, 2006 by Shell Offshore Inc. (SOI) for the Shell Kulluk and Frontier Discoverer drilling units. These updates are categorized as:

- Revised list of source units,*
- Inclusion of particulate matter emission controls for some engines,*
- Decreased maximum SO₂ content of the diesel fuel consumed by the small engines on the drill vessels,*
- Establishment of the ambient boundary at the edge of the drill vessels,*
- Revised demonstration of synthetic minor status to include load-based emission estimation.*
- Owner Requested Limit of a minimum 500 meters distance between any two drill sites in any one year.*

2. Revised list of source units (engines, heaters, and incinerators)

In the process of upgrading the Kulluk and Frontier Discoverer for 2007 operations, there are changes in some of the source units. The revised lists of source units to be permitted for the two drilling vessels are provided in Tables 1 and 2.

Table 1 – Kulluk drilling unit emission units ^(a)

Unit ID	Unit Description	Make/Model	Rating	
K-1	Electrical Generator Engine	EMD / unknown	2,816	hp
K-2	Electrical Generator Engine	EMD / unknown	2,816	hp
K-3	Electrical Generator Engine	EMD / unknown	2,816	hp
K-4	Emergency Generator	Unknown	920	hp
K-5	Air Compressor Engine	leased / Tier 2 or 3	500	hp
K-6	Air Compressor Engine	leased / Tier 2 or 3	500	hp
K-7	Air Compressor Engine	leased / Tier 2 or 3	500	hp
K-8	Deck Crane Engine	Mercedes / OM404	293	kW
K-9	Deck Crane Engine	Mercedes / OM404	293	kW
K-10	Deck Crane Engine	Mercedes / OM404	293	kW
K-11	Thrustmaster Engine	Caterpillar / 3516 B	2,000	hp
K-12	Thrustmaster Engine	Caterpillar / 3516 B	2,000	hp
K-13	HPP Engine	Unknown	< 600	hp
K-14	HPP Engine	Unknown	< 600	hp
K-15	Heat Boiler	Unknown	2.4	mBtu/hr
K-16	Heat Boiler	Unknown	2.4	mBtu/hr
K-17	Hot Water Heat	Unknown	0.54	mBtu/hr
K-18	Hot Water Heat	Unknown	0.54	mBtu/hr
K-19	Incinerator	TeamTec / GS500C	125	kg/hr

^a All are diesel fueled.

Table 2 – Frontier Discoverer drilling unit emission units ^(a)

Unit ID	Unit Description	Make/Model	Rating
1	Electrical Generator Engine	Caterpillar / D399	976 kW
2	Electrical Generator Engine	Caterpillar / D399	976 kW
3	Electrical Generator Engine	Caterpillar / D399	976 kW
4	Electrical Generator Engine	Caterpillar / D399	976 kW
5	Electrical Generator Engine	Caterpillar / D399	976 kW
6	Electrical Generator Engine	Caterpillar / D399	976 kW
7 ^(b)	Propulsion Engine	Mitsubishi / 6UEC65	5375 kW
8	Emergency Generator	Caterpillar / 3304	90 kW
9	Air Compressor Engine	leased / Tier 2 or 3	500 hp
10	Air Compressor Engine	leased / Tier 2 or 3	500 hp
11	Air Compressor Engine	leased / Tier 2 or 3	500 hp
12	HPP Engine	Unknown	± 250 hp
13	HPP Engine	Unknown	± 250 hp
14	Port Crane Engine	Caterpillar / D343	365 hp
15	Starboard Crane Engine	Caterpillar / D343	365 hp
16	Cementing Unit Engine	Detroit / 8V-71N	335 hp
17	Cementing Unit Engine	Detroit / 8V-71N	335 hp
18	Logging Winch Engine	Detroit / 4-71N	128 hp
19	Logging Genset Engine	John Deere / 4024TF270	36 kW
20	Heat Boiler	Clayton / 200 Boiler HP	7.97 mmBtu/hr
21	Heat Boiler	Clayton / 200 Boiler HP	7.97 mmBtu/hr
22	Incinerator	TeamTec / GS500C	125 kg/hr

^(a) All are fueled with diesel fuel oil.

^(b) The propulsion engine (not used when stationary), therefore not subject to emissions limits.

3. Inclusion of particulate matter emission controls for some engines.

SOI commits to meet the particulate matter (PM) emission limit of 0.05 grains per dry standard cubic foot for all of its drilling vessel (Kulluk and Frontier Discoverer) diesel fuelled source units. The heaters and boilers meet this standard by design as do the diesel engines greater than 600 hp. The engines under 600 hp that are older than Tier 3, require the use of particulate matter filters in conjunction with low-sulfur (500 ppm) diesel fuel in order to meet this standard. Demonstration of compliance with this standard is provided in Appendix A.

4. Establishment of the Ambient Boundary at the edge of the Kulluk

Through the use of a more realistic impact estimation model (ISC Prime instead of SCREEN3), impacts from the drill vessels and surrounding vessel sources indicate that ambient standards will be met at the drill vessel hulls. It is unnecessary to use any safety exclusion zone boundary as the ambient air boundary. The more current impact modeling by ISC Prime is described in the attached reports, provided in Appendix B. The reports describe how the model was run and impact results. Appendix B includes a supplementary analysis of the maximum impact as a function of load on the drilling generators.

5. Revised demonstration of synthetic minor status to include load-based emission estimation

The Drill vessels are to be permitted as synthetic minor sources and emissions of all the criteria pollutants on a per-drill-site basis will remain below 250 tons per year. Emissions from the drill vessel and associated vessels, including primarily two ice breakers are included in the calculation. Since the primary source units are diesel engines and the fuel will have sulfur content of 0.19 percent or less, it is the NO_x emissions that will be the largest for this source, and by limiting the NO_x emissions, all other emissions will remain well below 250 tpy. This demonstration is provided in Appendix B, page B-1 of the December 29, 2006 applications. So, tracking of emissions is limited to the NO_x emissions and all source units (except the incinerators) will be tracked by a PEMS system based on fuel consumption or engine load. A constant emission from each incinerator is included, based on incinerator operation at capacity.

There will be three classes of source units for this NO_x emission tracking system, the units with an assumed constant emission factor (EF) with load, the units with varying emission factors as a function of load (EF[load]), and the incinerators with constant emissions. For the large sources (ice breaker propulsion and drill vessel drilling engines) each engine type is to be stack tested and the measured emission factors are used for estimation of NO_x emissions. If SOI chooses to monitor engine load (Kw), the emissions will be determined by an emission factor as a function of load (lb NO_x per Kw-hr). If SOI chooses to not monitor load, the emission factors are the maximum measured over

the normal engine operating range. The maximum EF (lb NOx per gallon fuel) is used with fuel consumption (gallons) to estimate NOx emissions.

For the small sources, an emission factor (lb NOx per gal fuel) is assumed equal to either the manufacturer's or EPA's estimate (AP42) and emissions are estimated based on this factor and the fuel consumed. The small sources, including the incinerators, account for less than 10 % of the source emissions. In this way, SOI ensures that the estimated NOx emissions will be equal to or higher than actual NOx emissions. SOI also commits to remaining below 245 tons per year, which is 5 tons per year below the major source threshold, thereby allowing for an additional uncertainty in aggregated measurements of 2 percent.

For stack testing purposes, there are to be three tests per engine type and they are to be at the low, middle, and high end of the normal operating ranges for the type of engine. For propulsion engines, the normal range is 35% to 80%. For the drilling generators it is 50 to 100 %. The propulsion ranges are estimates, developed from the ice breaker operators (and Corbett and Koehler, 2003, Updated Emission From Ocean Shipping, JGR, Vol 108, No. D20, Table 7). The drill generator range is estimated by the drillers.

6. Owner Requested Limit of a minimum 500 meters distance between any two drill sites in any one year

In the interest of ensuring that each drill site (the associated activities) remains as a separate and distinct source from other SOI drill sites in the same year, SOI agrees to maintaining a minimum 500 meter distance between well sites in any one year. The conditions related to separate source determination are provided by the January 12, 2007 Wehrum Memo ("Source Determinations for Oil and Gas Industries"). The analytical approach to maintaining separate source status in this memo is related to the degree of source operational dependence and proximity. There will be no operational dependence between drill sites so all drill sites meet this criterion for separation of sources. Regarding proximity, that guidance memo (pages 4 and 5) states:

After identifying the individual surface site, the permitting authority should consider aggregating pollutant-emitting activities at multiple surface sites, when the surface sites are under common control and located in close proximity to each other. A reviewing authority can consider two surface sites to be in close proximity if they are physically adjacent, or if they are separated by no more than a short distance (e.g. across a highway, separated by a city block or some similar distance). 16

Footnote 16. In making major stationary source determinations for this industry, some southern States apply a rule that generally results in separating pollutant-emitting activities located outside a 1/4 mile radius .

SOI commits to a minimum spacing of 500 meters between sites in any one year, which is greater than the suggested quarter mile radius. Furthermore, from an impact analysis perspective, this distance is sufficient even under the worst combinations of source locations and winds to avoid impact aggregation.

SOI Attachment 18

OCS EIS/EA
MMS 2007-009

Environmental Assessment

Shell Offshore Inc. Beaufort Sea Exploration Plan

Beaufort Sea OCS-Y-1743, 1805, 1807, 1808, 1809, 1817, 1828, 1834, 1841, 1842,
1845, and 1849

Prepared by

Office of the Regional Supervisor
Leasing and Environment
Alaska OCS Region

have been demonstrated and CAA's have tended to mitigate on and offshore seasonal oil industry activities.

The multiple-sale EIS defines "significant" effects on sociocultural systems as: "A chronic disruption of sociocultural systems that occurs for a period of 2-5 years, with a tendency toward the displacement of existing social patterns..." The analyses for Sales 186, 195 and 202 use the lower threshold of 2 years. This increment is used because it is believed it would take at least 2 years for such an effect to become evident in the social system. It should be noted that the significance threshold for subsistence-harvest patterns of a subsistence resources becoming unavailable, undesirable for use, or available only in greatly reduced numbers for 1 year (meaning one (1) harvest season) would be reached long before the significance threshold for sociocultural systems could be applied.

Effects on the sociocultural systems of the communities of Barrow, Nuiqsut, and Kaktovik could come from noise disturbance produced by exploration drilling activities. Because activity staging would not be from local communities, stresses to local village infrastructure, health care, and emergency response systems are expected to be minimal. Social systems in these communities would experience little direct disturbance from the staging of people and equipment for exploration.

The long-term deflection of whales from their migratory routes or increased skittishness of whales due to increased exploration activities in the Beaufort Sea would make subsistence harvests more difficult, dangerous, and expensive. To date, no long-term deflections of bowheads have been demonstrated. On the other hand, drilling activity of the magnitude discussed in the scenario for the Shell EP has not been approached since the 1980's, and potential whale deflections are likely.

Required mitigation, monitoring, and conflict avoidance measures under IHA's issued by NMFS and FWS would serve collectively to mitigate disturbance effects on Native lifestyles and subsistence practices and likely would mitigate any consequent impacts on sociocultural systems. With such measures in place, impacts would be minimized.

Conclusion. Before exploratory drilling activities can commence, Shell must have an IHA from the NMFS and a conflict avoidance agreement. In the event there is not an agreement, the MMS must make a final determination on the adequacy of the measures taken to prevent unreasonable conflicts with subsistence harvests following meeting with the parties in accordance with lease stipulation 5. Potential long-term impacts from climate change would be expected to exacerbate overall potential effects on sociocultural systems.

IV.B.3 Effects on Other Resources

IV.B.3.a. Effects on Other Coastal and Marine Birds

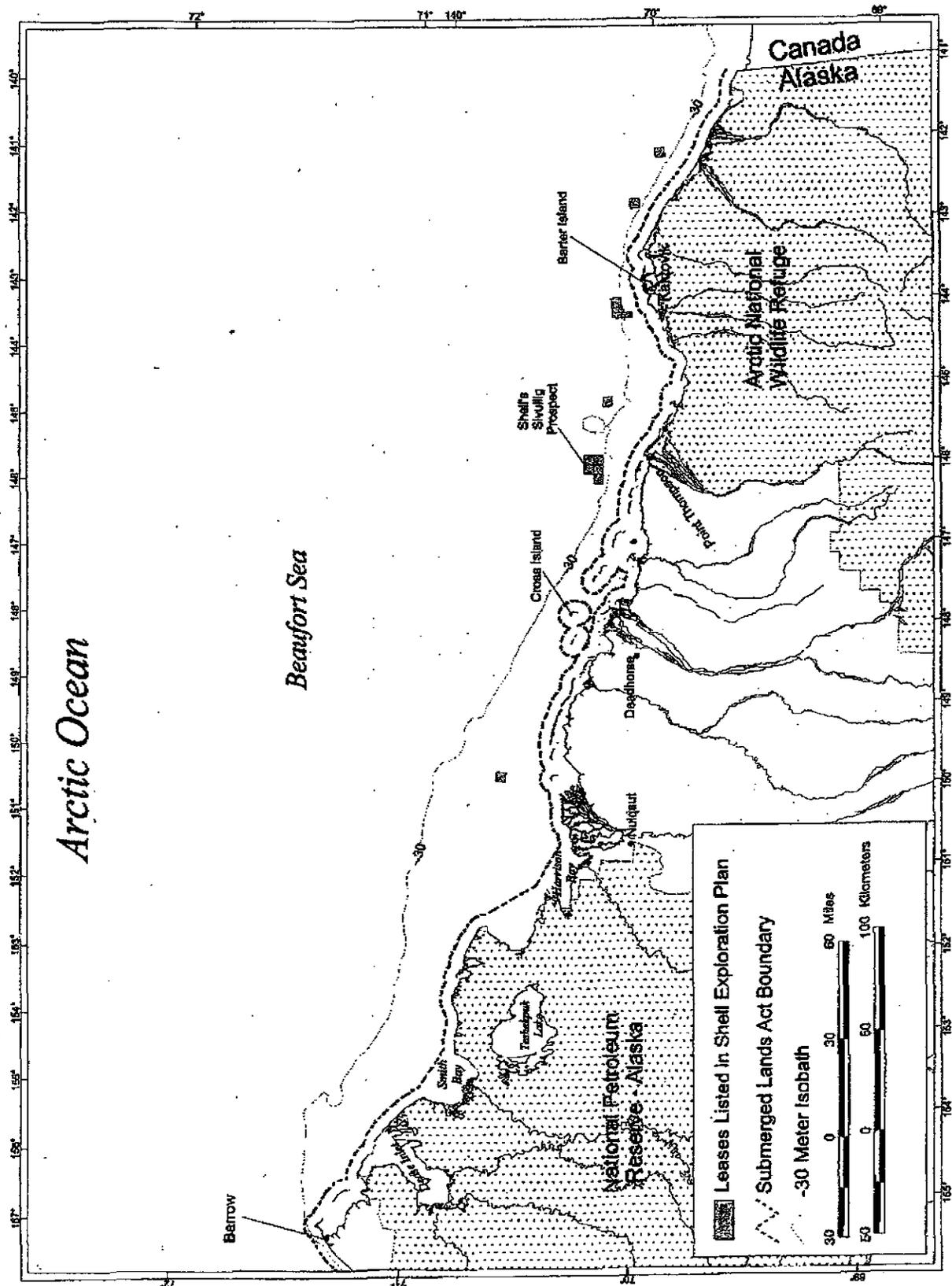


Figure 1. Beaufort Sea area showing the -30 meter isobath and the leases listed in Shell Oil's exploration plan, and Shell's Sivulig Prospect.

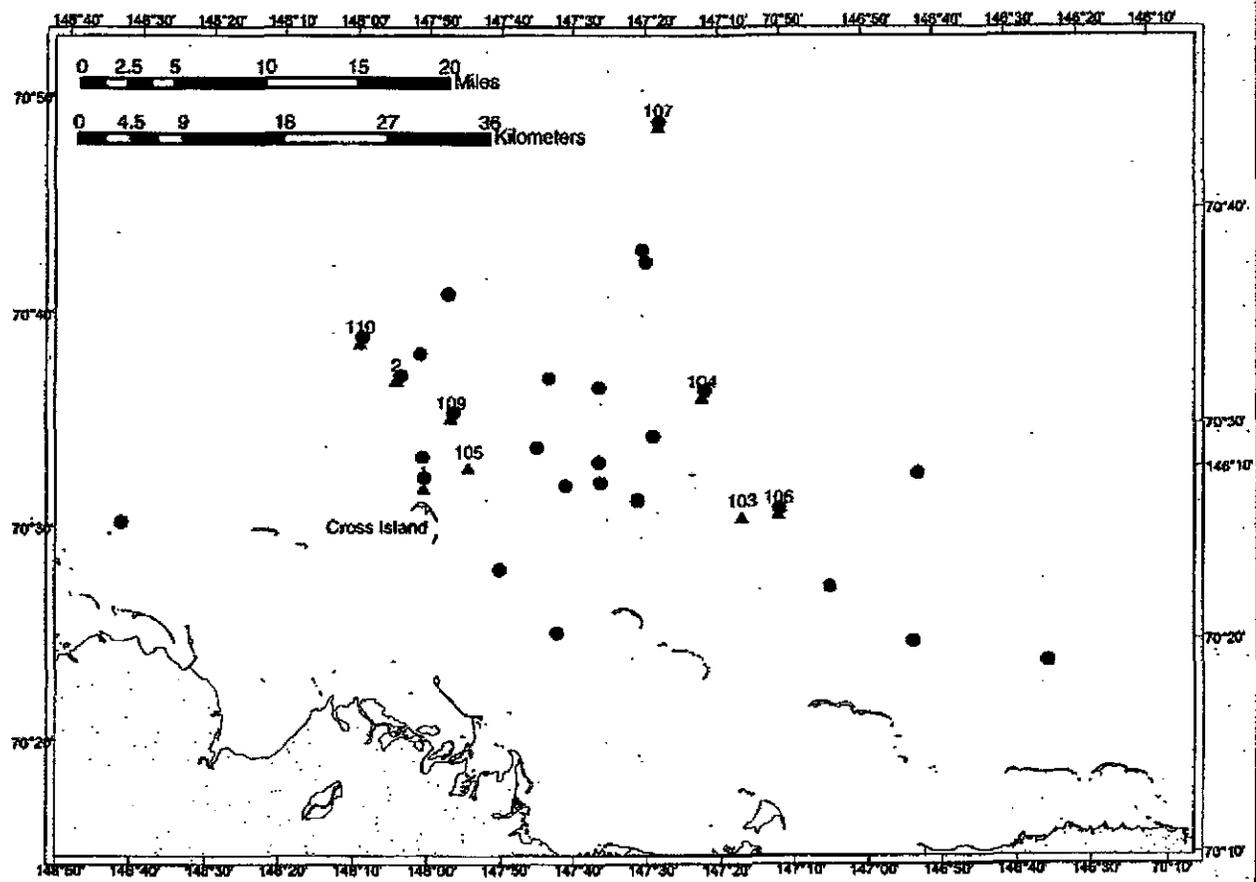
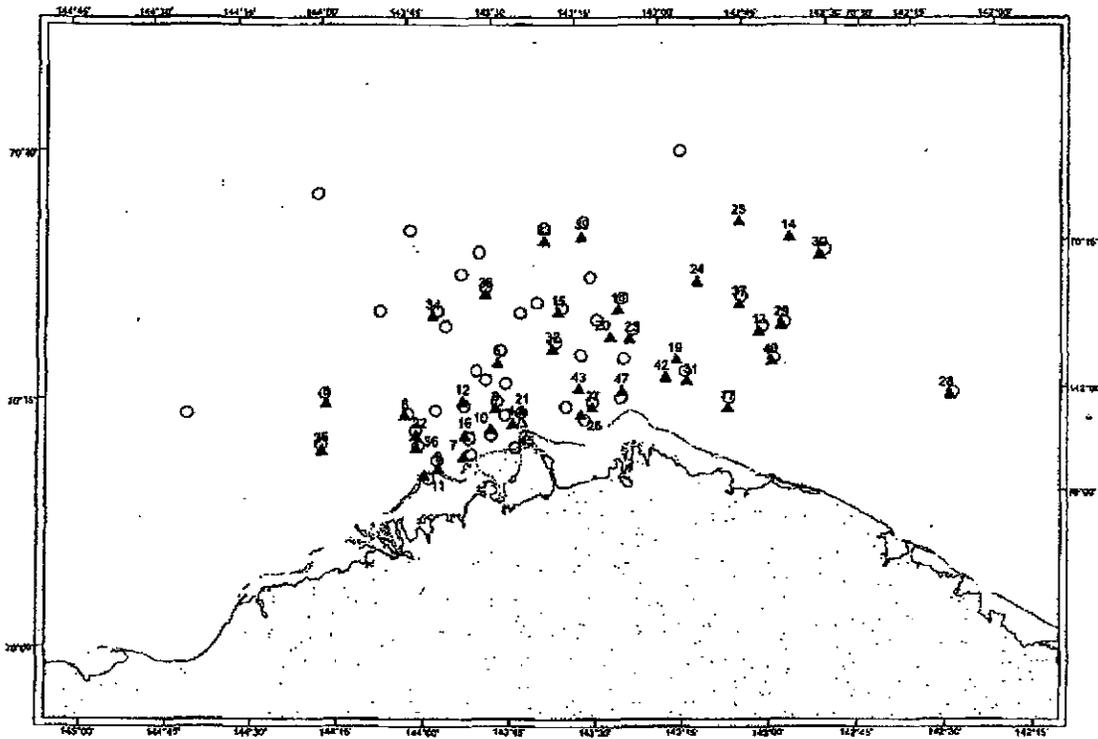


Figure 12 Bowhead Whale Harvest Locations Near Cross Island. Sources: Long (1996); North Slope Borough Planning Dept. (1993); Bowhead Strikes 1937-2001



- ▲ Bowhead Strikes 1968-1995
- North Slope Borough Bowhead Strikes 1989-2001

1	9-11-1988
2	10-02-1988
3	10-02-1988
4	10-02-1988
5	10-02-1988
6	9-27-1989
7	9-28-1991
8	10-02-1991
9	10-04-1991
10	9-21-1992
11	9-1-1992
12	9-2-1992
13	9-1-1992
14	9-1-1992
15	9-3-1992
16	9-2-1992
17	9-17-1992
18	9-9-1992
19	9-23-1992
20	9-29-1992
21	9-26-1992

22	9-26-1992
23	10-9-1992
24	10-9-1992
25	10-7-1992
26	10-13-1993
27	10-18-1993
28	10-19-1993
29	10-20-1993
30	10-13-1993
31	10-1-1994
32	9-5-1995
33	9-6-1995
34	9-11-1995
35	9-16-1995
36	9-16-1995
37	9-18-1995
38	9-20-1995
39	9-20-1995
40	10-16-1995
41	10-17-1995
42	10-17-1995

Sources: Kafeak (1996); North Slope Borough Planning Dept. (1993); North Slope Borough (2001).

Figure 13. Bowhead Whale Harvest Locations near Kaktovik

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By Hand

Hon. Kathie Stein
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U.S. Environmental Protection Agency
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Re: In re Shell Offshore Inc, OCS Appeal Nos. 07-01 & 07-02

Dear Judge Stein:

We are writing to provide additional information about the current status of Shell Offshore Inc.'s acquisition of permits for the 2007 drilling season and related proceedings in the U.S. Court of Appeals for the Ninth Circuit.

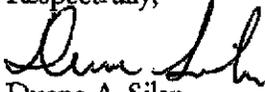
On August 17, 2007, SOI filed with the Ninth Circuit a petition for reconsideration or rehearing en banc of the court's August 15, 2007 order staying the effect of the MMS' approval of SOI's exploration plan. Yesterday the Ninth Circuit ordered petitioners in that case to file a response to SOI's petition within seven days, noting in the order that SOI's petition "warrants a response." A copy of the order is enclosed.

SOI continues to actively seek and obtain final permits/administrative approvals for exploration drilling in the Beaufort Sea during what will remain of the 2007 open water season after whale hunting is concluded in mid- to late-September. This week SOI received its Letter of Authorization from the U.S. Fish and Wildlife Service under the Marine Mammal Protection Act authorizing the "incidental take" of polar bears.

August 22, 2007
Page 2

Accordingly, SOI reiterates its request that the Environmental Appeals Board determine the referenced appeals as expeditiously as possible. Should the Ninth Circuit lift the current stay, SOI would hope to be able to move forward immediately with its search for critical petroleum resources on its Beaufort Sea leases. We will continue to advise Your Honor promptly of relevant developments. Please do not hesitate to contact me if the Board wishes more information.

Respectfully,



Duane A. Siler
Counsel for Shell Offshore Inc.

Cc: with enclosures

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