

Tanya Sanerib
Phone: (503) 525.2722
tanya@crag.org
Christopher Winter
Phone: (503) 525.2725
chris@crag.org
Crag Law Center
917 SW Oak Street
Suite 417
Portland, OR 97205

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

IN THE MATTER OF:)	OCS Appeal Nos. 10-01, 10-02, 10-03
)	
SHELL GULF OF MEXICO INC. and)	PSD Approval No.
SHELL OFFSHORE INC.)	R10OCS/PSD-AK-09-01
)	

**AEWC AND ICAS'S RESPONSE TO SHELL'S MOTION TO
PARTICIPATE, CONSOLIDATE, AND EXPEDITE RESOLUTION OF THE
PETITIONS FOR REVIEW OF THE CHUKCHI AND BEAUFORT AIR PERMITS**

On May 3, 2010, the Alaska Eskimo Whaling Commission (AEWC) and the Inupiat Community of the Arctic Slope (ICAS) petitioned for review of the outer continental shelf (OCS) prevention of significant deterioration (PSD) permit issued to Shell Gulf of Mexico for operations in the Chukchi Sea. R10OCS/PSD-AK-09-01. The Chukchi air permit is the first major source OCS PSD permit issued for offshore oil and gas activities in the United States and authorizes the emission of air pollutants at literally hundreds of lease blocks in the Chukchi Sea. *Id.* at 1. As a result, and as explained in AEWC and ICAS's petition for review, the Chukchi air permit poses legal and factual questions of first impression that are critical to the Environmental Protection Agency's (EPA) administration of the Clean Air Act in the Arctic and other offshore areas. AEWC and ICAS represent Inupiat people along the North Slope of Alaska whose air quality is at stake as a result of the operations proposed by Shell Offshore, Inc. and who as a people are susceptible to air quality degradation in part because they already suffer higher rates of pulmonary and chronic lung diseases than other U.S. populations. AEWC & ICAS Chukchi Petition for Review at 6-7. The Center for Biological Diversity and a coalition of other petitioners (hereafter NRDC) also petitioned the Environmental Appeals Board (EAB or Board) for review of both the Chukchi and Beaufort OCS air permits.¹

Shell Offshore, Inc. and Shell Gulf of Mexico, Inc. (hereafter Shell) now move the Board for permission to participate in the petitions for review of the Chukchi and Beaufort air permits issued for Shell's proposed operations in the Beaufort and Chukchi seas this summer and for years to come. Petitioners AEWC and ICAS do not object to Shell's participation in this matter in light of the Board's general practice of allowing permittees to participate in EAB appeals. *See e.g., In re Christian County Generation, LLC*, PSD Appeal 07-01, slip op. at 10 (Jan. 28, 2008)

¹ Petitions for review of the Beaufort Air Permit are due next Wednesday, May 12, 2010.

(“CCG also requested and was granted leave to file a response to the Petition”). AEW and ICAS also do not object to consolidated consideration of the Chukchi and Beaufort air permits.

AEW and ICAS’s greatest concern is with Shell’s request for expedited consideration and the schedule the corporation proposes for resolution of this matter. *See* Shell Request to Participate and Motion at 10-15, 16-18. Any schedule that fails to provide a full and fair opportunity for Petitioners to reply to the responses of EPA and Shell is highly prejudicial to Petitioners. Many of the issues Petitioners raised in their comments to EPA and now in their petition for review were not previously commented upon by Shell and EPA’s responses were minimal or in some instances lacking entirely. Therefore, it is critical that Petitioners be provided sufficient time to review and reply to Shell’s and EPA’s responses so the Board will have before it fully developed arguments from all the parties.

Additionally, as previously discussed, this matter presents issues of first impression and issues that are critical to the future regulation of air emissions in the OCS. For this reason as well it is critical that Petitioners are provided an opportunity for reply. Indeed, the issues posed by this matter may also necessitate further briefing from the parties (a potential that Shell did not address in its motion). *See* EAB Handbook at 37 (noting that “the EAB’s order granting review may request further briefing on those issues for which review was granted”). While Petitioners understand Shell’s desire to have this matter resolved before July 1st when its operations are proposed to commence this year, it is critical to recall that the permit at issue in this case allows the emission of air pollutants not just for this year but for many years to come. The important legal and factual issues raised here should not be cut short simply because of Shell’s desire to explore for hydrocarbons starting in July.

Moreover, it bears noting that Shell has no one to blame but itself for the fact that the air permit was issued so close to the date upon which Shell wishes to commence its 2010 operations. As the record demonstrates, and as Petitioners point out in their petition for review, Shell simply refused to follow EPA's recommendations regarding the information that Shell had to submit in support of its permit application. For example, starting in 2006 EPA recommended that Shell collect background monitoring data to support its permit application. Excerpt EPA Chukchi Response to Comments at 88 (“[b]eginning in early 2006, EPA suggested that Shell collect ambient data to support its preparation of an air permit application”) (Attachment 1). While Shell submitted a permit application to EPA in December, 2008, it did not provide any of the “necessary background air quality data” until “July 27, 2009.” Letter from EPA to Shell at 1, 2 (Aug, 20, 2009) (Attachment 2). Even then, EPA continued to express “concern” over the “limited amount of ambient PM_{2.5} data.” *Id.* at 3. As EPA explained to Shell repeatedly, “the final permit issuance date turns on when EPA has received all of the necessary information to make significant progress processing the permit.” Letter from EPA to Shell at 4 (Sept. 4, 2009) (Attachment 3). As these documents from the record demonstrate, it was Shell's failure to provide EPA with the necessary information to process the corporation's permit application that resulted in the permit being issued so close to the date upon which Shell wishes to commence its operations. Therefore, the potential monetary loss Shell describes as the rationale for expediting review of this precedential OCS air permit can only be attributed to Shell itself. Again, Petitioners do not outright oppose expedited consideration of the petition but caution against a process (such as the one Shell's proposes) that fails to provide for a full and fair discussion of the important issues raised by the Chukchi air permit.

Petitioners submit that at this juncture the parties should participate in a telephonic status conference after May 12, 2010, when petitions for review of the Beaufort air permit are due, to establish a reasonable schedule for resolving the pending petitions for review, including reply briefs for Petitioners and an opportunity for oral argument. AEWG and ICAS are willing to expedite the schedule so long as they are provided a full and fair opportunity to reply and the schedule does not unnecessarily truncate consideration of the important issues raised by the Chukchi air permit. AEWG and ICAS propose a status call on Friday, May 14 or Monday May 17 to discuss a reasonable schedule for this matter.

Respectfully submitted,

 s/ Tanya Sanerib
Tanya Sanerib
Crag Law Center
917 SW Oak Street, Suite 417
Portland, OR 97205
(503) 525.2722
tanya@crag.org

 s/ Christopher Winter
Christopher Winter
Crag Law Center
917 SW Oak Street, Suite 417
Portland, OR 97205
(503) 525.2725
chris@crag.org

Dated: May 7, 2010

Attorneys for AEWG & ICAS

CERTIFICATE OF SERVICE

I hereby certify that I sent a copy of AEWG and ICAS's Response to Shell's Request and

Motion and Attachments 1-3 by electronic mail and first class mail to:

Kristi M. Smith
U.S. EPA, Office of General Counsel
Air and Radiation Law office
1200 Pennsylvania Avenue, NY
Washington, DC 20460
Smith.kristi@epamail.epa.gov

Julie Vergeront
Juliane Matthews
Office of Regional Counsel
U.S. EPA, Region 10
1200 Sixth Avenue, SO-155
Seattle, Washington 98101
Telephone: (206) 553-1169
Vergeront.julie@epa.gov
Matthews.juliane@epa.gov

David Hobstetter
Erik Grafe
EarthJustice

441 W 5th Avenue, Suite 301
Anchorage, AK 99501
egrafe@earthjustice.org
akoffice@earthjustice.org

Eric Jorgensen
EarthJustice
325 Fourth Street
Juneau, AK 99801
ejorgensen@earthjustice.org

Duane A. Siler
Susan M. Mathiascheck
Sarah C. Borelon
Crowell & Moring LLP
1001 pennsylvania Ave. N.W.
Washington, DC 20004
dsiler@crowell.com
smathiascheck@crowell.com
sbordelon@crowell.com

____s/ Tanya Sanerib
Tanya Sanerib
Crag Law Center
917 SW Oak Street, Suite 417
Portland, OR 97205
(503) 525.2722
tanya@crag.org

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
SEATTLE, WASHINGTON**

**RESPONSE TO COMMENTS
FOR
OUTER CONTINENTAL SHELF
PREVENTION OF SIGNIFICANT DETERIORATION
PERMIT NO. R10OCS/PSD-AK-09-01**

**SHELL GULF OF MEXICO INC.
FRONTIER DISCOVERER DRILLSHIP
CHUKCHI SEA EXPLORATION DRILLING PROGRAM**

Date of Final Permit: March 31, 2010

assure compliance with currently applicable NAAQS and PSD at the edge of the hull of the vessels.

V CATEGORY - GENERAL COMMENTS ON AMBIENT AIR QUALITY ANALYSIS AND SUPPORTING DATA

V.1 Comment: One commenter states that the evaluations for the permit (e.g., source emissions, air quality modeling, air quality monitoring data, operating conditions) are primarily based on worst case analyses and encourages EPA to use what the commenter asserts are more realistic evaluations and adaptive management as information is collected during activities.

Response: Beginning in early 2006, EPA suggested that Shell collect ambient data to support its preparation of an air permit application. In late 2008, Shell joined Conoco-Phillips Alaska, Inc (CPAI) in collecting air quality data at Wainwright, Alaska to represent background air quality levels at the drill sites located off-shore in Lease Area 193. There was also no hourly meteorological data that EPA believed to be representative of a marine environment at the time Shell was preparing its OCS/PSD permit application. In the absence of more site-specific data, Shell's only option was to employ an air quality model (i.e., ISC3-PRIME) using screening meteorology to predict the emission impacts from its different operating scenarios. In the implementation of this option, EPA required Shell to employ certain procedures to bias the results to protect the NAAQS because of the over water stationary source location of Shell's proposed operations and because the meteorology over water is different from a terrestrial location.

If Shell had collected hourly meteorological data representative of a marine environment and used that data with an EPA preferred (or guideline) model, the predicted concentrations from this alternative could be less conservative (i.e., lower concentrations) than the predicted concentrations from the option selected by Shell. EPA also notes that the ambient air quality analysis supporting a PSD permit decision must be based on the maximum emissions allowed by the permit and thus, is intended to reflect a reasonable worst case analysis.

Additional details are provided in responses to comments AA.2 and BB.2.

V.2 Comment: One commenter states that the impact modeling was performed using multiple conservative assumptions, none of which the commenter believes are necessary to estimate maximum impacts by EPA procedures. The commenter continues that these assumptions include that 1) there is no EPA recognition of a safety exclusion zone around the Discoverer drill ship; 2) wind speeds used in determining maximum impacts are inconsistent and biased to high-side impacts; and 3) the model only evaluates a maximum impact rather than a 98th percentile impact and the maximum is used to be a conservative representation of the 98th percentile value. The commenter states that the first two conservative assumptions result in impact estimates of about 50% and 33% above maximum realistic estimates of 24-hour PM and annual NO_x, respectively, and the third



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

REGIONAL ADMINISTRATOR

August 20, 2009

Peter E. Slaiby
Shell Alaska General Manager
Shell Exploration & Production, Inc.
3601 C Street, Suite 1000
Anchorage, Alaska 99503

Dear Mr. Slaiby:

This letter is in response to your August 4, 2009, letter to me raising concerns about EPA's processing of Shell's air permits for exploratory drilling in the Chukchi Sea and the Beaufort Sea. EPA recognizes your concerns and I want to reiterate that the Agency is working diligently on the permits. EPA and Shell share the common goal to have in place, as expeditiously as possible, legally defensible Outer Continental Shelf (OSC) / Prevention of Significant Deterioration (PSD) permits. Additionally, I have directed my staff to treat the Shell permitting efforts as the highest priority. Timely permit issuance is dependent upon the permit applicant submitting the necessary information to us in a timely and collaborative manner. As described below, project reconfigurations and late submittals on Shell's part have created a challenge for EPA.

Chukchi Sea Permit Application. Shell submitted its initial permit application for the Chukchi permit in December 2008. EPA sent two incompleteness determinations to Shell, dated January 16, 2009, and March 12, 2009, identifying additional information that was needed to process the permit application. Shell's formal submittal in response to the second incompleteness determination was submitted to EPA on May 18, 2009. Not until this submission did Shell conclusively define the ambient air boundary for the proposed activity. Because the air quality impact analysis is dependent upon the ambient boundary, Shell's timing in deciding the boundary significantly impeded the Agency's permit work. Although the application was still incomplete in other aspects after the May 18 submittal, EPA continued to work on the permit while continuing to reiterate our requests for additional information. After May 18, Shell submitted updated information on emissions to reflect changes in the project configuration and other aspects of the operation in support of requests for additional operational flexibility. Shell finally submitted the necessary background air quality data on July 27, 2009, along with other information requested related to your submittals under the Endangered Species Act. We issued a completeness determination for the Chukchi permit application on July 31, the date I committed to in my July 27, 2009, letter to you. EPA will be issuing a public notice for the proposed Chukchi Sea permit on August 20, 2009.

Beaufort Sea Permit Application. Your letter is not accurate regarding the Agency's response to the Beaufort Sea permit application. EPA issued a partial incompleteness determination letter on July 29, 2009, as I committed to doing in my July 27, 2009, letter to you. The determination was made following ongoing technical discussions with Shell and it specified additional information that was necessary to complete specified sections of the permit. Missing information included key elements such as an updated emission inventory and associated updates to the Best Available Control Technology (BACT) analyses, modeling and a potential to emit inventory for all regulated New Source Review (NSR) pollutants. We also expressed concern about the adequacy of ambient monitoring data. We met again with Shell's consultants on July 29, provided them with a signed copy of the letter, and discussed the permit issues with them at length. The timing for issuance of the Beaufort Sea permit depends on how quickly Shell submits the necessary missing information. We anticipate being able to issue a public notice for the proposed permit within approximately 10 weeks after we receive all of the necessary information from Shell. We continue to work on the project in the meantime and anticipate building on the work carried out for the Chukchi Sea permit, however there are additional requirements in the area of the Beaufort Sea that is subject to onshore area regulations. I look forward to our August 25th meeting to discuss the schedule for public notice of the Beaufort permit.

Permit writing resources and staffing. In an effort to expedite processing of Shell's permit applications, EPA has devoted considerable resources towards the Shell permits at the expense of other high priority Agency work. Although we do have staffing limitations, the permit applications are not processed by a "one person technical expert approach." Rather, there is a designated lead permit writer for each permit, who is supported by a team of Agency technical, legal, managerial and administrative personnel from within Region 10 and at EPA Headquarters. Additionally, EPA staff continue to consult with other federal agencies.

We appreciate your noting that the Alaska Department of Environmental Conservation (ADEC) has offered their assistance, and we do seek their assistance as appropriate. We have, for example, advised Shell that we will accept Shell's regional emissions inventory, derived from State-developed databases for sources they regulate, for the Beaufort Sea application if ADEC approves it. Nonetheless, there are limitations on how much EPA can rely on assistance from the State. The Beaufort Sea Exploration plan includes activity in areas subject to federal jurisdiction both more and less than 25 miles from the state's seaward boundaries. Accordingly, both the corresponding onshore area regulations and the federal regulations apply to the proposed activity. Pursuant to the federal regulation, the State does not have the authority to issue the permits in this instance, and EPA has an independent responsibility to carry out the development of permit terms and conditions.

Response to Comments. You expressed concern regarding the estimated time for EPA to respond to comments received on the proposed permit and offered to provide support or information necessary to respond to the public comments. As with the previous EPA OCS permits proposed for Shell, we anticipate considerable public interest in these permits and comments that raise technically and legally complex issues. I appreciate your offer to assist us in

responding to the public comments; however, it is EPA's independent responsibility and obligation to consider and respond to the comments received. Throughout the public comment process Shell may certainly provide its own comments and additional information that it believes relevant to the issues that may be raised by other parties. I can assure you that we will respond to the comments and issue the final permit as expeditiously as possible.

PM2.5 issues. Your letter expressed concern about EPA's requirement to address PM2.5 in this application. The National Ambient Air Quality Standards (NAAQS) for PM2.5 were originally promulgated in 1997, and PSD permits issued by EPA or States since that date have been required to address compliance with the PM2.5 NAAQS. Until recently, EPA and States had the discretion to use PM10 as a surrogate for PM2.5 in PSD permitting. However, as of July 2008, EPA rescinded the surrogate policy for the federal PSD permitting programs, such that PSD permit applications needed to fully comply with all requirements for PM2.5 direct emissions and PM2.5 precursors (SO2 and NOx). EPA no longer utilizes the PM10 surrogate policy in any federal permitting action, including when we are implementing federal rules on the OCS that mirror the onshore PSD rules. The PSD permit application for the Chukchi project was initially submitted in December 2008 and the Beaufort application in May 2009, both well after the July 2008 effective date of EPA's PSD rulemaking. Shell's applications do indeed address emissions of PM2.5, as required. The remaining concern is the limited amount of ambient PM2.5 data; however, ambient air quality data is a requirement of PSD applications and this requirement is not unique to Shell.

Endangered Species Act (ESA) consultation. Finally you inquired as to the status of EPA's ESA consultation efforts. We are continuing our efforts related to complying with our obligations under the ESA and want to reassure you that our consultation efforts are proceeding on track. The Mineral Management Service has also consulted on Shell's oil exploration activities and serves as the lead agency for Shell's oil exploration activities and has consulted with the Services regarding the Chukchi and Beaufort Seas. EPA has had discussions with the Services regarding our specific permitting actions and we are currently researching the scientific literature for species impacts due to air quality, which we will use to formulate our determination.

As EPA is currently working on the Clean Air Act permits necessary for Shell to begin its exploratory drilling program in the Chukchi and Beaufort Seas, we also recognize that additional approvals or actions from other federal agencies are also required. For example, the Exploration Plans need to be approved, the letters of authorizations issued and the analysis completed regarding the lease sales as required by the DC Circuit Court of Appeals.

As you know, Shell's proposed exploratory drilling activity is the subject of considerable public interest. The proposed activity potentially affects a number of communities on the Alaska North Slope. We expect the Chukchi and Beaufort permits will receive careful scrutiny from a number of interested parties. EPA is working diligently to enhance coordination with affected communities and to issue technically sound, legally defensible permits as quickly as possible.

As stated above, I understand the urgency associated with these permits and assure you that the Agency is working diligently to issue technically sound, legally defensible permits in time for Shell's 2010 drilling program. We look forward to your cooperation and collaboration in the coming weeks and months as we continue our work.

Please feel free to give me a call if you any further questions.

Sincerely,



Michelle L. Pirzadeh
Acting Regional Administrator

cc: The Honorable Ken Salazar
Secretary, Department of Interior

The Honorable Lisa Murkowski
United States Senator, Alaska

The Honorable Mark Begich
United States Senator, Alaska

The Honorable Don Young
United States Representative, Alaska

The Honorable Sean Parnell
Governor, State of Alaska

Larry Hartig, Commissioner
Alaska Department of Environmental Conservation



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

1200 Sixth Avenue, Suite 900
Seattle, WA 98101-3140

SEP 04 2009

OFFICE OF
AIR, WASTE AND TOXICS

Ms. Susan Childs
Regulatory Affairs Manager, Alaska Venture
Shell Offshore Inc.
3601 C Street, Suite 1314
Anchorage, Alaska 99503

Re: Incompleteness Determination for Outer Continental Shelf Pre-Construction Air Permit Application for the Frontier Discoverer Beaufort Sea Exploration Program.

Dear Ms. Childs:

On May 29, 2009, U.S. Environmental Protection Agency (EPA) Region 10 received Shell Offshore Inc.'s (SOI) Outer Continental Shelf (OCS) Pre-Construction Air Permit Application for the Frontier Discoverer Beaufort Sea Exploration Program in the Beaufort Sea. EPA conducted a partial completeness review of the May 29, 2009 permit application and determined that it was incomplete. EPA's July 29, 2009 partial incompleteness determination was based on a preliminary review of the section 2: Project Description and Emissions and section 3: Regulatory Applicability of the permit application. EPA's partial completeness determination did not include a review of information relating to the air quality modeling, air impact analyses and sections of the application relating to the emission control technology review.

On August 21, 2009 EPA received a fax of SOI's partial incompleteness letter¹ response. We have reviewed the response to determine if SOI has provided all the information requested in our July 29th letter. In addition, regional staff have reviewed the air quality modeling and air impact analyses of the Pre-Construction Air Permit Application for the Frontier Discoverer Beaufort Sea Exploration Program. EPA has not reviewed the emission control technology sections of the permit application. The information and data that SOI submitted to EPA as part of the Chukchi Sea OCS/ Prevention of Significant Deterioration (PSD) permit application that SOI wishes to be considered as part of the Beaufort Sea permit application should be submitted. EPA requests SOI update the Beaufort Sea application with the applicable Best Available Control Technology (BACT) determinations from the Chukchi Sea OCS/PSD permit application. We presume this will complete the emission control technology sections of the Beaufort Sea permit application.

Based on our review of SOI's partial incompleteness letter response and air quality modeling and air impact analyses sections of the permit application, we have determined that SOI's Pre-Construction Air Permit Application for the Frontier Discoverer Beaufort Sea Exploration Program is still incomplete. Pursuant to 40 CFR 124.3(c), we are listing below the information necessary to make these sections of the application complete. In addition,

¹ SOI's Partial Incompleteness Letter Response for the Frontier Discoverer Drill Vessel in the Beaufort Sea is dated August 21, 2009.

Attachment A includes a detailed list of technical comments on the modeling and monitoring sections. Additionally, we understand that SOI will be submitting revised emission data. Accordingly the emission data portion of the submission has not been fully reviewed.

Shell Offshore Inc. Partial Incompleteness Letter Response

1. SOI provided EPA with a list of Chukchi Sea permit application updates since February 23, 2009 that SOI intends to incorporate by reference into the Beaufort Sea permit application. Rather than this incorporation by reference approach, EPA requests that SOI submit a permit application for the Beaufort Sea that that is a standalone document. Incorporating by reference components of the Chukchi Sea permit application in the Beaufort Sea permit application will slow EPA's review of the application, complicate the public review process, and lead to possible errors in what EPA determines to be the full and complete Beaufort Sea permit application.

Please submit a revised application that includes the relevant portions of the information SOI submitted for the Frontier Discoverer Drill Vessel in Chukchi Sea. This includes the updated emission inventory and any associated updates to the BACT, modeling analyses, operation scenarios, requested restrictions, etc.

2. EPA requested SOI to provide an update to Table 2-2 to reflect the correct potential to emit (PTE) (tons per year) of the OCS source for all regulated new source review (NSR) pollutants in order to document which pollutants exceed the significant emission rates for purposes of determining PSD applicability. SOI stated that the emission rates in Table 2-2 of the Beaufort Sea permit application accurately reflect potential emissions from the OCS source however EPA's review of Table 2-2 indicates that it more correctly reflects the requested allowable or permitted emissions and not the PTE as defined in 40 CFR Part 55. The PTE of the OCS source should reflect the effect on emissions of any existing, legally enforceable requirements, but not the effect of the SOI requested restrictions. This is important because SOI has indicated that the requested restrictions are not intended to limit the source's potential to emit and hence are not Owner Requested Limits under 18 AAC 50.

Please update Table 2-2 to provide a correct summary of the PTE (tons per year) for all regulated NSR pollutants in order to document which pollutants exceed the significant emission rates for purposes of PSD applicability.

3. The application does not include a proposed allowable emission inventory for particulate matter (PM), which is also required to determine the BACT requirements for PM.

Please provide EPA with the inventory for PM, including the supporting calculations, in the same format as the other BACT pollutants.

4. SOI stated in their partial incompleteness letter that the Alaska Department of Conservation (ADEC) has the authority to require SOI to obtain a permit to comply with 18 AAC 50.080 – Ice Fog Standards. Given that EPA is implementing ADEC's rules within 25 miles of Alaska's seaward boundary, EPA, and not ADEC will make a determination if an ice fog issue exists. Until we have a complete application, EPA is unable to determine if an ice fog issue would exist and therefore has not made the determination under this rule. No additional information is needed at this time with regard to this provision.

Air Quality Modeling and Air Impact Analyses Incompleteness

5. SOI has stated that they will redo the modeling analysis based on recent discussions with EPA.

Please provide EPA with an updated modeling analysis that reflects the latest information on emissions, operating scenarios, background data, etc.

6. SOI has identified other operating scenarios that need to be analyzed and included in the application. Permit terms and conditions may be included to reflect modeling assumptions including source locations and operating schedules and scenarios. Therefore, the modeling inputs should reflect SOI's operational needs and intentions.

If secondary operating scenarios are envisioned, please submit descriptions and the associated air impact analyses in the application.

7. While the application included PM₁₀ background data, it is not clear whether conservative PM₁₀ measurements were used to determine compliance with the national ambient air quality standards (NAAQS). The location of the monitoring site and the time period of the data were not identified but EPA believes it is data from Badami that was collected in 1999. The application contained no justification that this data is still representative of, or a conservative estimate of, current air quality at the project location.

Please submit PM₁₀ background data that is representative of current air quality at the project location. If using existing data, include a justification that the data is either representative of current air quality or is a conservative estimate of current air quality.

8. The permit application contained PM_{2.5} background data that is not representative of current air quality levels at the project location and failed to meet data quality requirements as well as EPA's Quality Assurance/Quality Control requirements in Appendix A of 40 CFR Part 58. SOI used data from Wainwright which has not been demonstrated to be representative of, or a conservative estimate of, air quality in the Beaufort Sea project area. Wainwright PM_{2.5} measurements from

November, 2008 to February, 2009 were used but this period of data is unacceptable because of data quality issues arising from a problem with the instrumentation, which has since been addressed.

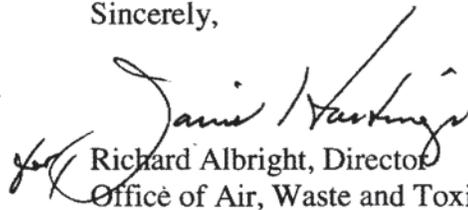
Please submit PM_{2.5} background data that is representative of current air quality at the project location and which satisfies Appendix A requirements. If using existing data, include a justification that the data is either representative of current air quality or is a conservative estimate of current air quality.

- 9 The current application contains PM_{2.5} background air quality data collected at Wainwright prior to the May submittal date. However, we are concerned about the use of this time period because the recent summer months (i.e., July and August) showed higher measured concentrations at Wainwright than earlier months. This is probably due to higher ambient temperatures which changes and/or thaws out any surface cover and the ground. Consequently, PM_{2.5} data collection at a minimum, should represent the SOI drill season months of July to December so that EPA can be reasonably assured there won't be a NAAQS violation.

Please submit background PM_{2.5} data that is representative of air quality concentrations during the SOI drill season of July 1 through December 31.

As we've previously discussed, the final permit issuance date turns on when EPA has received all of the necessary information to make significant progress processing the permit. Accordingly, please submit the missing information at your earliest convenience. If you have any questions, please contact Natasha Greaves at 206-553-7079.

Sincerely,


Richard Albright, Director
Office of Air, Waste and Toxics

Enclosure

cc Eric Hansen, Environ International Corporation
Mark Schindler, Octane, LLC
Jeffrey Walker, MMS-Alaska Region
Kirk Wings, Environ International Corporation

ATTACHMENT A
Air Quality Impact Analysis Comments to
Outer Continental Shelf Pre-Construction Air Permit Application
Frontier Discoverer Beaufort Sea Exploratory Drilling Program
Dated May, 2009

I. General Comments

- A. EPA understands that there are new operating scenarios and revised operating scenarios (e.g., bow ice washing, anchor handling, and ice breaker and oil spill response vessel replenishment). As part of the revised application,
1. Please include a table that lists and briefly summarizes **all** the primary and secondary operating scenarios.
 2. Please provide justification for performing either a quantitative or qualitative analysis of the emissions associated with each primary and secondary operative scenario.
 3. Please assimilate the new and revised analyses in the form of text, tables, figures and references into a revised application.
- B. If new or additional modeling is performed, please provide all input and output files on a CD or DVD as part of a revised application.
- C. EPA understands that SOI Offshore Inc. (SOI) started data collection on 15 August 2009 instead of June 2009 at the Badami monitoring station. The air pollutants being measured at the station include NO₂ and PM_{2.5}. Again, EPA request SOI to also measure PM₁₀ and O₃ at this station. Please note that EPA will adhere to the data representativeness criteria contained in the 1987 Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) and Section 8.2.2.c in Appendix W of 40 CFR Part 51, and the PSD significant monitoring levels specified in 40 CFR Part 52.21(i)(5)(i).
- D. Because of new information provided to EPA, certain sections in the SOI Beaufort Sea outer continental shelf (OCS) PSD application and the CD containing the supporting modeling files were not reviewed.
- E. Please indicate if the National Park Service was provided a copy of the original May, 2009 PSD application. Please include an additional copy of a revised application and EPA will forward that copy to the National Park Service.

Note: Permit conditions may be included to reflect any modeling assumptions such as source location, operating scenarios and schedules to ensure compliance with ambient air quality standards and air quality increments. Therefore, model inputs should reflect SOI's operational needs and intentions.

II. Specific Comments

A. Section 1, Introduction

Page 1 states the Frontier Discoverer will be conducting exploratory drilling operations within and beyond 25-miles from the Alaska seaward boundary of the Beaufort Sea.

1. Please identify the lease sale area(s) where the drilling will occur.
2. Please identify the specific lease blocks within each lease sale area where the drilling may occur. (Page 76 in the OCS PSD application indicates 64 lease blocks are considered for exploratory drilling.)
3. Please redo Figure 1-1 to show both the 3-mile boundary line and the 25-mile line from the seaward boundary.

B. Section 2, Project Description and Emissions

1. Page 5, fourth paragraph conveys that a helicopter will be used to transport workers from Deadhorse or Barrow to the drill ship every three to four weeks.
 - a. How many trips a day will the helicopter transport workers?
 - b. Will the helicopter be used for any other purpose and how frequently? Please be specific.
2. First line on page 14 states that the drill season is 168 days starting in July. Please confirm the beginning and ending dates of the drill season within a calendar year (i.e., 01 July to 31 December).
3. Page 18, second paragraph states that "...the ice management and anchor handling fleet would be either downwind of the Discoverer or beyond the 25-mile radius from the Discoverer..."
 - a. Please explain the downwind operations and duration of the ice management and anchor handling fleet and any changes to the maximum predicted concentrations and its locations that are used

to demonstrate compliance with ambient air quality standards and air quality increments. If these are secondary operating scenarios, please list them in the applicable table (see Comment I.A).

- b. Please confirm that there will be no more than the two vessels that compose the ice management and anchor handling fleet.
- c. The third paragraph on page 19 mentions bow ice washing of the Frontier Discoverer by the anchor handler vessel and this particular scenario was not modeled. Please provide a modeling analysis of this bow ice washing scenario.
- d. The first and second paragraphs on page 21 mentions anchor deployment and retrieval. Please provide a modeling analysis of this anchor handling scenario.
- e. SOI has recently conveyed that the ice management and anchor handling fleet, and the oil spill response vessel could have other operating scenarios not defined in the application. SOI is requested to:
 1. Identify and describe these secondary operating scenarios (see Comment I.A).
 2. Quantify the emission rates and list the source parameters of each of these scenarios.
 3. Provide a graphics showing the operating location of these scenarios relative to the Frontier Discoverer and the other vessels.
 4. Conduct a modeling analysis of these other secondary operating scenarios.
- f. Page 22 states that a tanker will be operating 25-miles beyond the Frontier Discoverer. EPA believes the tanker should be part of a growth analysis which warrants an assessment. Please identify the tanker in the operating scenario table (see Comment I.A), quantify the emissions of the tanker, and show the rates in the appropriate table. In addition, please conduct a quantitative or qualitative analysis of the tanker and provide justification for the selected analysis type.

C. Section 5, Ambient Impact Modeling

1. 40 CFR Part 50 does not list an annual standard for PM₁₀. SOI is requested to add a footnote at the bottom of Table 5-1 to reflect that there is no annual federal PM₁₀ standard.
2. In the first paragraph on page 62, SOI states that the ISC-Prime model is a U.S. EPA approved, steady-state, multiple-source Gaussian plume mode. In actuality, the ISC-Prime model is a non-guideline model requiring EPA approval prior to its use in air permit applications. SOI is requested to correct this erroneous statement in its revised application.
3. Third paragraph on page 64 indicates that the anchor handler/ice management will operate at virtual idle. Please explain what is meant by “described distance” and “virtual idle.”
4. Last sentence, second paragraph on page 65 implies that there is not a minimum distance from the Frontier Discoverer to the anchor handler/ice management and ice breaker vessels during ice breaking activities. Please discuss the consistency of this sentence with the first sentence in the same paragraph and how it affects the modeling results.
5. The oil spill response fleets consist of an offshore management/skimmer, three 34-foot work boats and one 47-foot Rozema skimmer (page 21). Further, it is mentioned on page 66, first paragraph that the Nanuq could be in the vicinity and will provide berthing for the oil spill response crew.
 - a. Please confirm that the emissions and stack parameters have been provided for these particular sources and these sources have been modeled as part of the compliance demonstration with ambient air quality standards and air quality increments.
 - b. If the Nanuq is not available, please discuss the berthing options and associated air quality impacts.
6. Page 69 provides a description of how the oil spill response fleet will be characterized for modeling purposes. EPA recommends that each vessel composing the oil spill response fleet have its own distinct volume source length rather than an average length of 50-meters.
7. Graphics of the modeling domain are provided in Figures 5-3 to 5-5.
 - a. Figures 5-3 to 5-5 are provided but not mentioned in the Section 5.5. Please clarify.

- b. Figure 5-5 shows a rectangle south of the Frontier Discoverer. Please identify this rectangle.
 - c. If additional modeling scenarios are analyzed such as those identified in Section II.B, please provide graphics of those domains if different from Figures 5-3 to 5-5.
8. Third paragraph on page 74 describes the locations of the associated fleets relative to the Frontier Discoverer for modeling purposes. Because the modeling is based on this operating configuration of the vessels, permit terms and conditions may be included to reflect modeling assumptions including source locations and operating schedules and scenarios. If this is unacceptable to SOI, please provide justification and any supporting modeling analyses demonstrating a permit condition is unnecessary.
9. Page 74, third paragraph states that the supply ship will be located 50-feet astern of the Frontier Discoverer. Please identify the method used to transfer supplies and fuel to the Frontier Discoverer.
10. EPA Region 10 issued a memorandum dated 02 July 2009 which discusses "Implementing PSD Baseline Dates, Baseline Areas, and Baseline Concentrations on the Outer Continental Shelf in Alaska." SOI is requested to address baseline dates, baseline areas, trigger dates, and baseline concentrations as it relates to the proposed project in a revised application that is consistent with the memorandum. A copy of the 02 July 2009 memorandum is attached.
11. Pages 76 to 80 (and Section 7) provide a discussion of the allowable and actual emission inventories used to address compliance with ambient air quality standards and air quality increments. Alan Schuler at the State of Alaska has provided EPA and ENVIRON (SOI's contractor) with his comments regarding the adequacy of the two inventories in a 26 August 2009 email (see attached email).
 - a. Please respond to Comment #1 in the email and identify and include emission rates from any major or minor source applications that have been deemed complete but a permit has not been issued by the State of Alaska in the two inventories.
 - b. Please identify and include any fugitive and area sources in the two inventories.
 - c. For Comment #4, EPA agrees with the State of Alaska that there is no justification to double annual impacts to obtain short term impacts. EPA requests SOI to redo the modeling for **all** air pollutants using the maximum hourly emission rates. Furthermore,

the assumptions and methodologies used in developing the hourly emission rates for each air pollutant should be documented and incorporated in a revised application. If short term emission rates are not available, please contact EPA and the State of Alaska to discuss possible options.

- d. Related to Comment #5, please describe how long term and short actual emission rates for each applicable air pollutant were derived in a revised application.
- e. As part of Comment #6, please discuss the source of the stack parameters if either the stack height, stack gas exit temperature, stack gas exit velocity, inside stack diameter and/or stack location were not available. This comment also applies to area and volume sources and their modeling parameters.
- f. Per Comment #8, please provide a description of the assumptions, methods and references used to develop the two inventories in the revised application.

D. Section 6, Background Concentrations

- 1. EPA agreed that SOI could use conservative background measurements to represent ambient air quality levels in the Beaufort Sea.
 - a. Please provide the source of the gaseous data and the period of record of the data as footnotes to Table 6-1.
 - b. Please provide verification and text that the BP Exploration Alaska, Inc. Liberty Development Project collected SO₂, NO₂ and CO data from 2007 and 2008 satisfy PSD data collection requirements including data quality.
 - c. Please discuss the representativeness of the BP Exploration Alaska, Inc. Liberty Development Project measurements in terms of conservatism and if there are any nearby sources that could contribute to the measurement levels.
- 2. The fourth paragraph on page 81 discusses PM₁₀ measurements from BPX in Prudhoe Bay with 24-hour concentrations as high as 55 micrograms per cubic meters. In the same paragraph, it states but fails to explain why this high 24-hour concentration was not used with SOI predicted impacts since the total impact is not expected to exceed the ambient air quality standards.

- a. Please explain why the 24-hour and annual PM₁₀ data from Prudhoe Bay are not used as background since the data would be conservative.
- b. Please identify the source of the PM₁₀ numbers appearing in Table 6-1.

(It should be noted that EPA has expressed concerns that the 1999 Badami PM₁₀ data is unrepresentative because it is not current.)

3. The PSD preconstruction monitoring level for PM₁₀ is 10 microgram per cubic meter for a 24-hour average. From Table 5-7 on page 75, the maximum predicted PM₁₀ 24-hour concentration is 27.4 micrograms per cubic meter. This maximum predicted concentration exceeds the monitoring level and consequently, SOI should initiate PM₁₀ data collection at the Badami monitoring station which restarted on 15 August 2009 to measure NO₂ and PM_{2.5} background.
4. As early as April, 2008, EPA recommended that SOI start a preconstruction ambient air quality monitoring program for all criteria air pollutants consistent with the PSD regulation and guidance if they intended to propose projects in the Beaufort Sea OCS in the near future. EPA made the recommendation to SOI because of the lack of any current ambient air quality data including PM_{2.5} that would be representative of the OCS and without knowing if a proposed project predicted concentrations would exceed PSD ambient monitoring thresholds. In addition, EPA informed SOI about our concerns that the 1999 measurements at Badami were not representative because they are not current.

SOI started a PM_{2.5} (and NO₂) data collection program on 15 August 2009 (delayed from June, 2009) at the refurbished Badami monitoring station to represent air quality levels in the Beaufort Sea OCS. However, the minimum required four months of data will not be available until 15 December 2009. In lieu of waiting four months, SOI proposed the use of four months of PM_{2.5} collected at the Wainwright monitoring station from November, 2008 to February, 2009. Nevertheless, EPA has determined this period of PM_{2.5} data collected at Wainwright to be unacceptable because certain data quality requirements were not satisfied, arising from a problem with the instrumentation, which has since been fixed. PM_{2.5} data collected after 5 March 2009 at Wainwright is meeting the data quality requirements.

Recently provided data from Wainwright shows nine 24-hour periods of PM_{2.5} measurements equal to or greater than the 8.0 micrograms per cubic meter during the months of July and August, 2009, with the highest

measured concentration at 14.42 micrograms per cubic meter. The 8.0 micrograms per cubic meter for a 24-hour average was measured in June, 2009. After its initial review and consideration of all the PM_{2.5} 24-hour measurements from 06 March 2009 to 31 August 2009 at Wainwright, EPA now believes it is prudent to extend the PM_{2.5} data collection at Wainwright and Badami such that the measurements include the months that SOI intends to conduct exploratory drilling operations. This would be the months of July to December for the SOI Beaufort Sea OCS PSD permit application.

In addition, Appendix A in 40 CFR Part 58 requires collocated PM_{2.5} sampling at the monitoring station or at one of the PSD network monitoring stations. The monitoring stations at Wainwright and Badami currently are not operating a collocated sampler.

In summary, SOI is requested to submit PM_{2.5} measurements representative of the months of July to December which meets the requirements contained in paragraph (m)(3) in 40 CFR Part 52.21 and Appendix A of 40 CFR Part 58. For the SOI Beaufort Sea OCS PSD application, EPA recommends measurements that are collected at Badami.

E. Section 7, Impact Modeling Results

Specific comments are not provided since SOI has proposed to redo the modeling analysis.

F. Section 8 Additional Impact Analyses

Data and information that SOI provided as part of its Chukchi OCS/PSD permits application that it wishes to be considered as part of the Beaufort Sea OCS/PSD permit application should be submitted as part of a revise application.

G. Air Quality Modeling Files, SOI OCS Beaufort Sea Permit Application CD

Specific comments are not provided since SOI has proposed to redo the modeling analysis.

Attachments



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10**

1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

July 2, 2009

Reply To: AWT-107

MEMORANDUM

SUBJECT: Implementing PSD Baseline Dates, Baseline Areas, and
Baseline Concentrations on the Outer Continental Shelf in Alaska

FROM: David C. Bray
Senior Policy Advisor

TO: Rick Albright, Director
Office of Air, Waste, and Toxics

Janis Hastings, Associate Director
Office of Air, Waste, and Toxics

Introduction

The purpose of this memorandum is to clarify how EPA Region 10 intends to implement the PSD increments on the OCS in Alaska the absence of formal area designations under section 107(d).

Background

Pursuant to Section 328 of the Clean Air Act (Act) EPA has promulgated regulations to control air pollution from Outer Continental Shelf (OCS) sources to attain and maintain Federal and State ambient air quality standards and to comply with the provisions of Part C of title I (prevention of significant deterioration of air quality or PSD). See 40 CFR Part 55.

In Part C of Title I of the Act, Congress sets forth a program for preventing significant deterioration of air quality in areas that have air quality better than the National Ambient Air Quality Standards (NAAQS). Specifically, Congress established an approach for defining "significant deterioration" that relies upon changes in air quality concentrations from a baseline. The "baseline concentration" is defined in section 169(4) of the Act and the acceptable changes in concentration, called "increments," are defined in sections 163 (for Congressionally-established increments) and 166 (for EPA-established increments) of the Act.

Under Section 169(4) of the Act, the term "baseline concentration" means, "with respect to a pollutant, the ambient concentration levels which exist *at the time of the first application for a permit in an area subject to this part*, based on air quality data available in the Environmental Protection Agency or a State air pollution control agency and on such monitoring data as the permit applicant is required to submit. Such ambient concentration levels shall take into account

all projected emissions in, or which may affect, such area from any major emitting facility on which construction commenced prior to January 6, 1975, but which has not begun operation by the date of the baseline air quality concentrations determination. Emissions of sulfur oxides and particulate matter from any major emitting facility on which construction commenced after January 6, 1975, shall not be included in the baseline and shall be counted against the maximum allowable increases in pollutant concentrations established under this part.” (emphasis added). EPA has promulgated regulatory definitions for the phrases “the time of the first application for a permit” (known as the “minor source baseline date”) and “in an area subject to this part” (known as the “baseline area”). These definitions are found in 40 CFR 52.21(b) of EPA’s regulations and incorporated into the OCS regulations at 40 CFR 55.13.

The requirements to which OCS sources are subject depend on the distance of the source from shore. From the State’s seaward boundary (typically 3 miles from shore) and extending out 25 miles, the requirements for the Corresponding Onshore Area (COA), as well as federal requirements, apply to OCS sources; beyond 25 miles from the State’s seaward boundary, only federal requirements apply. See 40 CFR 55.3(b) and (c). Because of these different regulatory requirements, the implementation of PSD increments is different in these two portions of the OCS.

Sources located less than 25 miles from the State’s seaward boundary

In accordance with section 328 of the Act and EPA’s implementing regulations at 40 CFR Part 55, an OCS source located less than 25 miles from the State’s seaward boundary is subject to the same requirements as would be applicable if the source were located within the COA. Section 328(a) of the Act; 40 CFR 55.3(b). As a result, EPA incorporates by reference the air quality regulations, including the major source permitting programs, that are in effect in the COA and applies them to OCS sources inside this 25 miles limit. See 40 CFR 55.12. The OCS rules define the term “onshore area” in terms of the section 107(d) area designations. 40 CFR 55.2. Hence the COA is generally synonymous with a section 107(d) area and, if designated attainment or unclassifiable, with a PSD baseline area.

Since the COA PSD rules look to the designation of the COA for determining baseline dates, applying the COA PSD rule to an OCS source includes using the COA minor source baseline dates. Importantly, the minor source baseline dates for a section 107(d) area are not established in regulation, but rather they are determined through the implementation of the PSD regulations. See 40 CFR 52.21(b)(definition of “minor source baseline date”). Where the COA PSD rules apply on the OCS, the baseline date that has already been determined under the COA rule is the baseline date that applies for the permitting of the OCS source. This baseline date is then used to determine the baseline concentration in the area of the OCS source in accordance with the COA PSD rules.

When using the onshore minor source baseline date for OCS sources located less than 25 miles from the State’s seaward boundary, there is no need to define separate baseline areas (and hence section 107 area designations) for the OCS source. In fact, establishing this portion of the OCS as a separate baseline area, or extending the onshore baseline area onto the OCS, would be contrary to the current Part 55 rules which require a case-by-case determination of the COA for the purpose of determining the applicable onshore rules. See 40 CFR 55.5. Since the COA may be different than the nearest onshore area (NOA), and can actually differ from permit to permit,

the applicable permitting rules, and hence the baseline date, could be different than that of the NOA. As such, a fixed baseline area for the OCS within 25 miles of the State's seaward boundary could potentially prevent the utilization of the COA minor source baseline date, contrary to the intent of Congress that such sources be subject to the same requirements as would be applicable if the sources were located within the COA.

Sources located more than 25 miles beyond the State's seaward boundary

For sources locating on the OCS more than 25 miles from the State's seaward boundary, the EPA PSD rules at 40 CFR 52.21 apply. The definition of "baseline area" in the federal PSD rules relies on the existence of intrastate areas designated as attainment or unclassifiable under section 107(d) of the Act. See 40 CFR 52.21(b). Until EPA either designates section 107(d) areas on the OCS and/or promulgates revisions to the definition of "baseline area" in 40 CFR Part 55, it is appropriate to implement the term "baseline area" in 40 CFR 52.21(b), for OCS areas more than 25 miles from the State's seaward boundary by using the boundaries of the coastal Air Quality Control Regions on shore as a guide. Accordingly, the following areas will be considered as separate "baseline areas" for purposes of 40 CFR 52.21:

Each area bounded on the shoreward side by a parallel line 25 miles from the State's seaward boundary; on the seaward side by the boundary of U.S. territorial waters; and on the other two sides by the seaward extensions of the onshore Air Quality Control Region boundaries.

This approach is consistent with the approach of the Clean Air Act and EPA's implementing regulations for defining baseline areas on shore. Section 107 of the Act sets forth the criteria and processes for defining Air Quality Control Regions (AQCR's) and attainment/nonattainment designations. AQCR's for all States have been promulgated by EPA in 40 CFR Part 81, Subpart B. States are required, under section 107(d) to submit to the Administrator recommendations for attainment/nonattainment designations for (air quality control) regions or portions thereof. The final attainment/nonattainment designations for each State have been promulgated by EPA in 40 CFR Part 81, Subpart C. Under this statutory scheme, the largest possible onshore PSD baseline area is an AQCR. See Section 107(d) of the Act and 40 CFR 52.21(b)(definition of "baseline area"). The approach set forth in this memo essentially mirrors the onshore AQCR's for purposes of establishing separate offshore baseline areas in order to implement the PSD increments on the OCS for the areas more than 25 miles from the State's seaward boundary.

Once the "baseline area" is determined according to the above approach, the "minor source baseline date" and the "baseline concentration" are determined in accordance with the rules at 40 CFR 52.21.

cc: Herman Wong, OEA
Pat Nair, OAWT,
Doug Hardesty, OAWT
Natasha Greaves, OAWT



"Schuler, Alan E (DEC)"
<alan.schuler@alaska.gov>

08/26/2009 04:01 PM

To Herman Wong/R10/USEPA/US@EPA

cc Alan Schuler <alan.schuler@alaska.gov>, Kirk Winges
<kwinges@Environcorp.com>, Scott Winges
<swinges@Environcorp.com>

bcc

Subject ADEC Verification of Shell Regional Inventory

History:

 This message has been replied to and forwarded.

Herman,

I conducted a cursory review of Shell's North Slope regional inventory. I've also corresponded with Shell's consultant regarding the inventory (see attached e-mail).

It is very evident that Shell put lot of work into developing this inventory. Most aspects are acceptable. However, I have several comments and/or recommendations, which are provided below.

Stationary Source List/Location

1. Shell's off-site stationary source list is extensive and appears to be fairly complete. I only noticed one missing item – the drill rig and turbine associated with BPXA's Liberty development project (which is a component of the Endicott stationary source inventory). These emission units have been permitted, but may not be fully operational yet. However, since they could be operating concurrently with Shell's operation, ***Shell should include the Liberty rig/turbine in the off-site assessment*** .
2. The off-site inventory covers multiple UTM zones. Shell therefore established a consistent coordinate system (UTM Zone 6) for the modeling analysis. I viewed the resulting source locations using a proprietary ISC/AERMOD Graphical User Interface. (Shell provided the PM-10 input files so that I could do this – see attached email.) I also imported quad-maps from the USGS to provide a visual reference. While I did not take the time to confirm the accuracy of each stationary source location, the general layout matches the layout shown on industry maps.
3. It appears that Shell is using the very conservative approach of assessing the *combined* impact from the off-site stationary sources. This is conservative since many of the stationary sources could likely be culled from the inventory per Section 8.2.3 of the Guideline on Air Quality Models, due to non-overlapping significant impacts (with Shell's project).

Short-term Emission Rates

4. Shell modeled the annual emissions and then estimated the short-term impacts by doubling the annual concentration. I have no ready means for assessing the *general* accuracy of the 2-fold assumption. However, I did find that in the case of BPXA's Central

Compressor Plant and BPXA's Central Gas Facility (which are currently going through the PSD permit process for SO₂ emission increases), the maximum short-term emission rates can be *much greater* than Shell's 2-fold assumption. (I also found *limited* cases where Shell's emission rates are greater than the previously accepted emission rates – for an unknown reason.) Since Shell has access to the previously accepted maximum short-term emission rates for some of the stationary sources (especially the SO₂ emission rates), ***I recommend that they remodel the short-term SO₂ impacts using the highest available emission rate for a given emission unit*** . This approach should provide a more accurate assessment of the short-term impacts than use of the 2-fold factor.

Annual Emission Rates

5. I spot-checked Shell's potential NO_x emissions and found the values to be consistent with my records. I did not check any of Shell's actual annual emissions since that would take more work to confirm than what I could commit to this project (note: our applicants generally do not use actual emissions in their modeling assessments so the actual emission inventory is not readily accessible.)

Stack Parameters

6. I spot-checked Shell's stack parameters with the parameters used in the most recent modeling submittals by other applicants. Most of the values matched. Where differences were found, the values used by Shell are acceptable for an off-site inventory (i.e., they would likely result in a slightly more buoyant plume that would increase the potential for an overlapping impact with Shell's operations).

Additional Comments

7. Shell did *not* include downwash in their off-site analysis. This is appropriate given the large distances between Shell's project area and the off-site sources. However, this approach may need to be re-evaluated if this data set is used by future applicants with tighter source-source distances.

8. The only documentation I saw regarding the regional (off-site) inventory is the attached e-mail. ***Shell should provide in their application (if they haven't already) a short description of the general method used to develop the regional inventory*** .

9. My review was extremely cursory – which is adequate given: a) the large source-to-source distances; b) the resulting expectation that the off-site impact constitutes a small fraction of the total impact (which Shell's consultant verbally confirmed); and c) Shell's very conservative approach of combining the off-site impact. However, a more thorough review may be warranted if this data set is used by future applicants with tighter source-source distances.

Please contact me if you have any questions.

Alan

Alan Schuler, P.E.
Environmental Engineer
Alaska Department of Environmental Conservation
Voice: (907) 465-5112
FAX: (907) 465-5129

From: Wong.Herman@epamail.epa.gov [mailto:Wong.Herman@epamail.epa.gov]
Sent: Monday, August 17, 2009 9:25 AM
To: Schuler, Alan E (DEC)
Subject: Fw: ADEC Verification

Alan:

EPA met and discussed with Shell's consultants, ENVIRON, about the air quality impact analysis requirements for a proposed PSD source in the Beaufort Sea. As part of the PSD requirements, they have developed a nearby allowable and actual emissions inventory (including stack parameters) based on information and data from ADEC's web site and files. We have informed Shell that we would accept the emissions inventories and stack parameters if ADEC determines them to be adequate.

I understand that Shell's consultant has already contacted you about this review. From my perspective, it would be most efficient for you to work directly with Shell and their consultant, since they will be able to answer any questions you may have about their emission calculations and assumptions, and the stack parameters when they are missing.

EPA request ADEC's assistance in reviewing the Shell's project emission inventories and stack parameters. Once you have completed the review, please provide your conclusions directly to me, along with any supporting documentation.

Thanks,

Herman

----- Message from "Schuler, Alan E (DEC)" <alan.schuler@alaska.gov> on Fri, 21 Aug 2009 11:43:05 -0800 -----

To: Scott Winges <swinges@Environcorp.com>
cc: Kirk Winges <kwinges@Environcorp.com>, "Schuler, Alan E (DEC)" <alan.schuler@alaska.gov>
Subject: RE: Regional Emission Inventory

Scott,

I got waylaid on another project, so just got to your 8/20/09 e-mail now. Your write-up is *very* helpful.

Your explanation for item 4 has triggered some thoughts which I should have recalled and shared with you when you were in our office. Applicants frequently modeled the unrestricted SO₂/PM-10 emissions in order to demonstrate compliance with the short-term standards/increments. For convenience, they used the same unrestricted SO₂/PM-10 emissions for demonstrating compliance with the annual SO₂/PM-10 standards/increments. This approach would be used even if there was an annual operating restriction imposed on the unit/source for NO_x reduction purposes (either to protect the NO₂ std/inc, or to avoid PSD-major classification). This is probably why the modeled SO₂/PM-10 emissions are inconsistent with the Title V emissions summary (which would reflect the SO₂/PM-10 emissions as restricted by the annual limit).

I'm going to look at a couple of other items and then get back with you and Kirk.

Alan

From: Scott Winges [mailto:swinges@Environcorp.com]
Sent: Thursday, August 20, 2009 2:51 PM
To: Schuler, Alan E (DEC)
Cc: Kirk Winges
Subject: RE: Regional Emission Inventory

Hi Alan,

The regional emissions inventory has evolved into an extraordinarily complex series of spreadsheets. I will do my best to answer your questions here, but this is very complicated, so please feel free to call me to discuss any further questions or concerns about the regional emissions inventory.

#1

I may not have read this right, but I believe what you're looking for is a key to link sources taken from ADEC files (for potential emissions) to sources that were taken from the ADEC emission inventory (for actual emissions). For the sources that we took from the emission inventory, the tables (usually) give a description of the emission source. Unfortunately, the only key I have for the modeling files I received from you is the one I received from you when I came up to grab the files. The key is very old, and more often than not it is unhelpful for determining what these model ID's represent. Instead of analyzing these on a source by source basis, I typically analyzed the facility as a whole – looking specifically at facility wide potentials to emit.

#4

The answer your question #4 is extremely complicated, but I will do my best to explain the steps taken...

When I grabbed modeling files from ADEC I QA/QC'd them quite a bit since there were many discrepancies on how facilities were modeled (it was very common to find multiple modeling files in which a facility was modeled in several completely different manners - with different total emissions). One method I used to resolve this was to compare title 5 permit conditions with these modeling files – specifically their potentials to emit. If I could find that the sum of all emissions (for a given pollutant) was close to their potential to emit I would assume that these modeling files were accurate and up to date and would use them to represent the facility. Unfortunately, many times I could only find up to date modeling files for 1 pollutant – typically NO_x. Since I primarily focused on NO_x emissions when I came up there, most of our NO_x files were complete and up to date. The PM10 files were a little less accurate, and the

SO2 files were even worse.

Many times the PM10 and especially the SO2 modeling files retrieved from ADEC represented a sum of emissions very different than the title 5 potential to emit. For instance, for the Central Compressor Plant example you brought up - if you were to add all the emissions up from the modeling files it would total (assuming we're looking at the same file) ~472 tons per year of SO2. The title 5 permit claims that the Central Compressor Plant has a maximum potential to emit of 147 tpy of SO2. Also, there were additional Central Compressor Plant sources modeled for NOx that were not included in these SO2 files. To deal with this issue, I first calculated the ratio of the facility's potential to emit for NOx to the facility's potential to emit for SO2. I then divided the potential NOx emissions (from the ADEC files that matched the title 5 permit) by the ratio of PTE NOx to SO2 to achieve potential SO2 emissions for each source - the sum of which is equal to the Title 5 permit potential to emit for SO2. I believe I did this for several facilities to achieve accurate emission totals.

I do not have a neat spreadsheet that documents all of these calculations. I have a couple "lovely" spreadsheets that document many calculations done for actual and potential emissions that we calculated, but this does not include the calculations done on ADEC files. If a spreadsheet documenting all of those calculations is needed I can provide it (with a little bit of time).

I uploaded reduced versions of the "lovely" spreadsheets to our ftp server so you can check them out. The two spreadsheets contain tons of calculations for each facility - so it might not be particularly easy to navigate, but it could be of use. You may access these on our ftp server at:
<ftp://ftp.environ.org/pub/webaccess/Shell/>

Again, this is a complicated emission inventory - so please do not hesitate to call me (or email me) with any questions.

Cheers,
-Scott

Scott Winges | Associate
ENVIRON International Corporation
Direct: 425.412.1821 | Fax: 425.412.1840
swinges@environcorp.com

From: Kirk Winges
Sent: Thursday, August 20, 2009 1:02 PM
To: Schuler, Alan E (DEC)
Cc: Eric Hansen; Mark Schindler; Scott Winges
Subject: RE: Regional Emission Inventory

Answers below in red

Kirk Winges | Principal Consultant
ENVIRON International Corporation
19020 33rd Avenue W, Suite 310
Lynnwood, WA 98036
V: 425.412.1813 | F: 425.412.1840

From: Schuler, Alan E (DEC) [<mailto:alan.schuler@alaska.gov>]
Sent: Thursday, August 20, 2009 12:50 PM
To: Kirk Winges
Cc: Eric Hansen; Mark Schindler; Alan Schuler

Subject: RE: Regional Emission Inventory

Kirk,

I have a couple of questions/requests regarding Shell's Regional Inventory.

1. Contrary to what I said yesterday on the phone, I do need a key that links the various sets of model IDs used in Shell's spreadsheet. For example, there are two sets of Model IDs (along with different inventory counts) for the BP Central Compressor Plant. Please provide a key to reconcile the Model ID numbers.

I'll get Scott to put together a key for you. I'll try to have that to you later today.

2. Did Shell use annual emissions to model the *short-term* averaging periods, or did they use unrestricted emissions (which would be the proper way – unless there's a short-term operating limit)?

No, we used 2X times annual for short term. We literally had nothing to go on for short term, so that's best we could come up with.

3. Was BP's "Liberty" project included in the regional modeling analysis? I didn't see it, but given the size of the inventory, I may have overlooked it. (The Liberty project is a massive drill rig and turbine that will be located at Endicott).

No, it was not in there. We had no actuals for that source, only potentials.

4. I'm coming up with very different annual SO₂ emissions in many of my spot-checks (and in some cases, slightly different PM-10 emissions). For example, for model ID 801P (BP CCP) I'm coming up with an SO₂ PTE of 32 tpy based on BP's recently modeled emission rate of 0.92 g/s. Shell had 10 tpy (9.89 tpy to be exact). Please provide sample emission calculations, or the spreadsheets used to derive the emissions.

I will send you the ugly spreadsheet with all the calculations. Some of these discrepancies may result from access you have to modeling files and/or information we didn't have. Sometimes, we had conflicting info as well, and had to make a judgment call.

Thanks.

Alan

From: Kirk Winges [mailto:kwinges@Environcorp.com]

Sent: Friday, August 14, 2009 1:07 PM

To: Schuler, Alan E (DEC)

Cc: Eric Hansen; Mark Schindler

Subject: Regional Emission Inventory

Hi Alan:

As I indicated, I am providing our regional emission inventory for the Prudhoe Bay area. I have a much uglier spreadsheet that has all the calculations fed into it. It's barely small enough for email (about 9MB), but the main reason I haven't sent it is that it's very mess, with lots of notes and other stuff that might be confusing. If at some point you get involved and would like to see all the background details, I am happy to provide that.

Kirk

Kirk D. Wings | Principal Consultant

ENVIRON | www.vironcorp.com

19020 33rd Avenue W, Suite 310 | Lynnwood, WA 98036 USA

V: 425.412.1813 | M: 206.794.6010 | F: 425.412.1840 kwinges@vironcorp.com

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----- Message from Kirk Wings <kwinges@Environcorp.com> on Fri, 14 Aug 2009 13:07:17 -0800

To: "Schuler, Alan E (DEC)" <alan.schuler@alaska.gov>

cc: Eric Hansen <ehansen@Environcorp.com>, Mark Schindler <mark.octane@me.com>

Subject: Regional Emission Inventory

Hi Alan:

As I indicated, I am providing our regional emission inventory for the Prudhoe Bay area. I have a much uglier spreadsheet that has all the calculations fed into it. It's barely small enough for email (about 9MB), but the main reason I haven't sent it is that it's very mess, with lots of notes and other stuff that might be confusing. If at some point you get involved and would like to see all the background details, I am happy to provide that.

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delete all copies of the message. TableOnly.xls

----- Message from Kirk Winges <kwinges@Environcorp.com> on Wed, 19 Aug 2009 15:56:11 -0800

To: "Schuler, Alan E (DEC)"
<alan.schuler@alaska.gov>

Subject: Input files

Here's a couple of model input files. One for PM10 actual emission and one for PM10 potential emissions.

Kirk Winges | Principal Consultant

ENVIRON International Corporation
19020 33rd Avenue W, Suite 310
Lynnwood, WA 98036
V: 425.412.1813 | F: 425.412.1840

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