

Exhibit 17

EPA Region 10, Statement of Basis for Proposed OCS PSD Permit No. R10OCS/PSD-AK-2010-01, Shell Offshore Inc., Frontier Discoverer Drillship, Beaufort Sea Exploration Drilling Program (Feb. 17, 2010)

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

**STATEMENT OF BASIS
FOR PROPOSED
OUTER CONTINENTAL SHELF
PREVENTION OF SIGNIFICANT DETERIORATION
PERMIT NO. R10OCS/PSD-AK-2010-01**

**SHELL OFFSHORE INC.
FRONTIER DISCOVERER DRILLSHIP
BEAUFORT SEA EXPLORATION DRILLING PROGRAM**

Date of Proposed Permit: February 17, 2010

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ambient air quality for that pollutant in the area. In addition, 40 C.F.R. § 52.21(m)(2) authorizes EPA to require post-construction ambient air quality monitoring if EPA determines it is necessary to determine the effect that emissions from the source or modification may have on air quality.

40 C.F.R. § 52.21(o) requires an additional impact analyses, which must include an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the proposed source or modification, or that would occur as a result of any commercial, residential, industrial and other growth associated with the source or modification. Analysis for vegetation having no significant commercial or recreational value is not required.

For sources impacting Federal Class I areas, 40 C.F.R. § 52.21(p) requires EPA to consider any demonstration by the Federal Land Manager that emissions from the proposed source modification would have an adverse impact on air quality related values, including visibility impairment. If EPA concurs with the demonstration, the rules require that EPA shall not issue the PSD permit.

5.2 Class II PSD Increments and NAAQS

5.2.1 PSD Baseline Dates

Figure 2-1 shows the location of the Shell Beaufort Sea lease blocks relative to the northern Alaska coastline. For sources locating on the OCS more than 25 miles from the State’s seaward boundary (the Outer OCS), EPA considers the “baseline area” for purposes of 40 C.F.R. § 52.21 to be the 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 extension of the onshore Air Quality Control Region (AQCR) boundaries (EPA 07/02/09 Baseline Memo). OCS sources within 25 miles from the State’s seaward boundary (the Inner OCS) are subject to the COA PSD regulations, including the minor source baseline dates established for the COA, so defining a “baseline area” for the Inner OCS is unnecessary. Effectively, those portions of the Beaufort Sea encompassing the Inner OCS and the Outer OCS are separate baseline areas with different minor source baseline dates.

The major stationary source baseline date, as defined in 40 C.F.R. § 52.21(b)(14)(i), and the trigger dates for SO₂, NO₂, and PM₁₀ for this baseline area are shown in Table 5.1.

Table 5-1: Major Source Baseline Dates

Air Pollutant	Major Stationary Source	Trigger Date
Sulfur Dioxide	June 5, 1975	August 7, 1977
Nitrogen Dioxide	February 8, 1988	February 8, 2008
Particulate Matter	June 5, 1975	August 7, 1977

The minor source baseline date is established in an area when the first complete PSD application is submitted to EPA after the trigger date. See 40 C.F.R. § 52.21(b)(14)(i). EPA deemed the

Shell OCS/PSD application for exploratory drilling in the Chukchi Sea complete on July 31, 2009 (EPA 07/31/09 Completeness Letter), which effectively establishes July 31, 2009 as the minor source baseline date for SO₂, NO₂, and PM₁₀ in the Chukchi Sea/Beaufort Sea Outer OCS baseline area. As a result, Shell is required to consider increment consuming emissions increases and decreases after July 31, 2009 from other sources in the area in its analysis of compliance with air quality increments. Due to the size of the AQCR and the location of the Shell Chukchi Sea drilling area relative to the Beaufort drilling area, emissions from the Chukchi project are not expected to have a significant impact at the Shell Beaufort Sea drilling area. Since the minor source baseline dates of the corresponding shore area apply in the Inner OCS, additional increment-consuming sources are required to be considered for modeled receptor locations in the Inner OCS. The minor source baseline dates have been triggered in this AQCR as shown in Table 5.2 below (Schuler 07/02/09). Shell disagrees with EPA’s interpretation of this point, but included existing onshore sources within 100 kilometers of Shell’s lease blocks in its PSD increment analysis. (Shell Beaufort Permit Application 01/18/10, Section 3.3.3)

Table 5-2: Minor Baseline Dates

Air Pollutant	Minor Source Baseline Date Beyond 25 Miles from the State Seaward Boundary	Minor Source Baseline Date Onshore and Within 25 Miles from the State Seaward Boundary
Nitrogen Dioxide	July 31, 2009	February 8, 1988
Particulate Matter	July 31, 2009	November 13, 1978
Sulfur Dioxide	July 31, 2009	June 1, 1979

Shell anticipates constructing a warehouse on shore which would have an oil fired heater in the existing Northern Alaska Intrastate AQCR. The PSD analysis of this source would be based on the onshore minor source baseline dates.

5.2.2 PSD Significant Impact Analysis

The PSD air quality analysis for Shell’s exploratory drilling program was conducted in two basic stages. First, Shell conducted a screening analysis to determine the pollutants for which the project exceeded the significant impact levels and for which a more robust air quality demonstration would be required. Second, where the predicted maximum concentration of the specific air pollutant was greater than the applicable significant impact level, a full PSD increment and NAAQS analysis was performed for the pollutant. EPA guidance calls for a more detailed air quality analysis if the emission rate of a pollutant is significant, and if the predicted maximum ambient air concentration of the specific air pollutant is greater than the applicable significant impact level. (See e.g. EPA 10/90 Draft NSR Manual) As shown in Table 5-3, the highest concentration impact from the Discoverer and the Associated Fleet predicted by the screening analysis for the applicable averaging time exceeded the significant impact levels for NO₂ and PM₁₀. As a result, a detailed ambient air quality impact analysis is required for these air

Emission Units or Sources	Source Type	Location ^a		Stack Parameters			
		x (m)	y (m)	Height (m)	Temperature (K)	Velocity (m/sec)	Diameter (m)
Oil Spill ResponseK a,c,g,h	Volume	f	f	3.38	5.4	1.42	
Oil Spill ResponseN a,c,h,i	Volume	g	g	17.55	42.3	6.38	
Kilabuk in transit	Volume	j	j	15.24	29.1	6.38	

Reference: Shell Beaufort Permit Application 01/18/10

- a. Origin of coordinate system is the drill hole location below the Discoverer.
- b. Discoverer emission units. Single locations are used to represent similar emission units (i.e., six generator engines, three MLC compressor engines, two HPU engines, two cementing engine units, two heat boilers and two logging winch engines).
- c. Stack height or release height is given as height above the surface or water line.
- d. The receptor grid and coordinate system used to model the onshore warehouse heater is different from that used by the over water emission sources. The origin is at the stack location.
- e. Ice Breaker #1 is located approximately 5000 meters upwind of the drill hole location. Ice Breaker #1 is represented by 96 volume sources.
- f. Ice Breaker #2 is located approximately 1000 meters upwind of the drill hole location. Ice Breaker #2 is represented by 48 volume sources.
- g. Oil Spill ResponseK is located about 2000 meters downwind of the drill hole location. This source represents the work boats.
- h. Oil Spill ResponseK is 172 volumes and Oil Spill ResponseN is 22 volumes.
- i. Oil Spill ResponseN is located about 2000 meters downwind of the drill hole location. This source represents the Nanuq, the Arctic Endeavor Barge and the Point Barrow Tug.
- j. The Kilabuk transit path is split into 80 volumes, about 70 meters from the ship’s side.

5.2.15 Full Impact Analysis

A full impact analysis, addressing both the PSD increments and the NAAQS, was performed for NO₂ and PM₁₀. A NAAQS analysis was performed for PM_{2.5}. The Shell project’s modeled SO₂ and CO impacts were below significant impact levels; therefore a full impact analysis is not required.

5.2.16 Other Emission Sources

There are a number of facilities onshore within 100 kilometers of Shell’s Beaufort Sea lease blocks. Most are further than 50 kilometers from the nearest lease block. The onshore sources which were evaluated for the full impact analysis are listed in Table 5-8, and depicted by the red dots in Figure 5-3. These facilities were modeled in a separate analysis and its results were combined with the results of the Shell offshore project’s modeling. See Section 5.2.20.

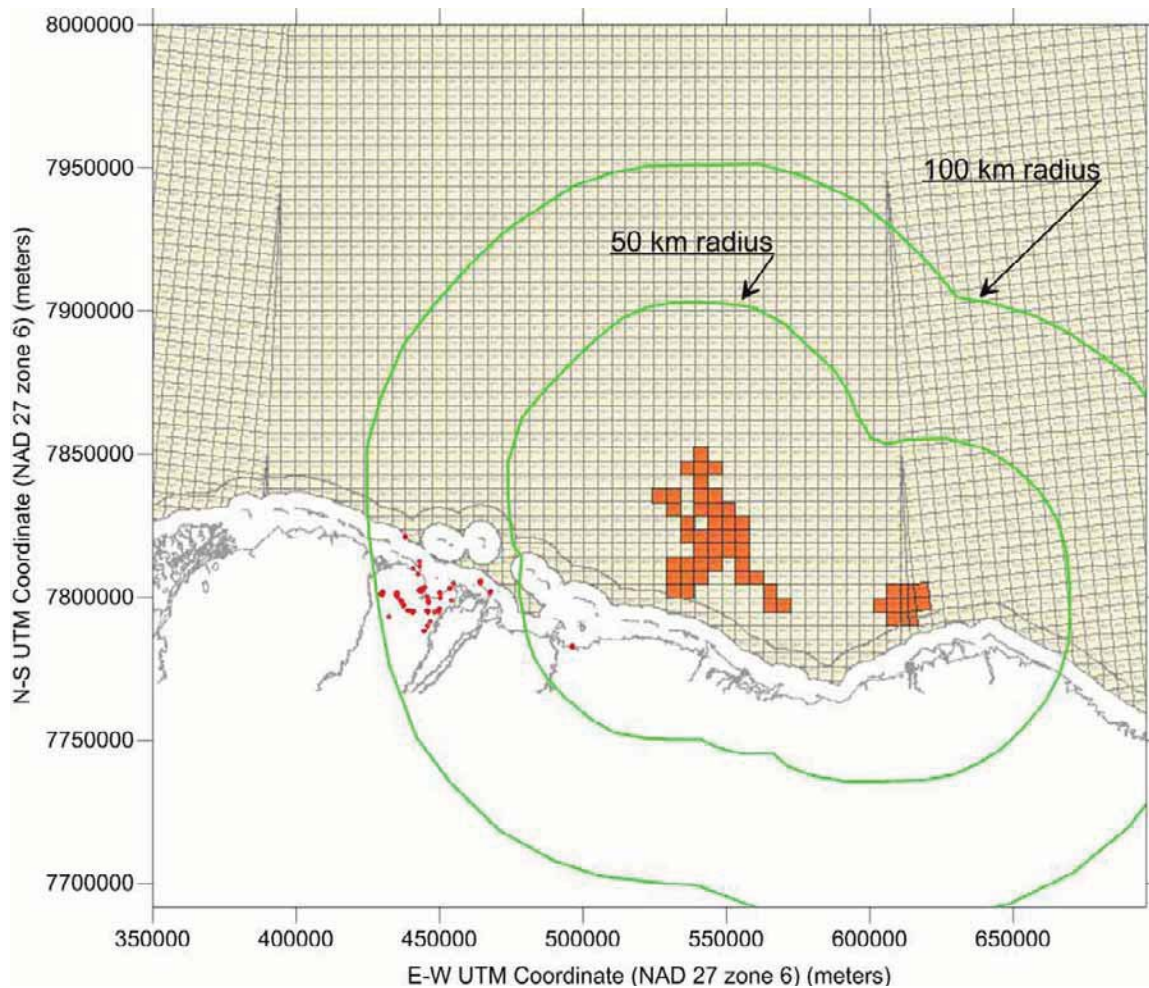
Table 5-8: Onshore Facilities

Company	Facility	Facility Wide Emissions (tpy)		
		NO _x	SO ₂	PM ₁₀
BP	Badami	277.9	66.6	11.6
BP	Base Operations Center	1165.0	171.0	37.0
BP	Central Compression Plant	14238.0	147.0	347.0
BP	Central Gas Facility	10968.0	125.0	305.0
BP	Endicott Production Facility ¹	3594.0	539.0	63.0
BP	Flow Station #1	2872.0	35.0	84.0
BP	Flow Station #2	3663.0	83.0	91.0
BP	Flow Station #3	4235.0	42.0	100.0
BP	Gathering Center #1	4912.0	48.0	107.0
BP	Gathering Center #2	2370.0	38.0	84.0
BP	Gathering Center #3	2873.0	33.0	69.0
BP	Lisburne Production Center	2241.0	263.0	57.0
BP	Northstar Production Facility	562.0	56.5	331.0
BP	PBU Central Power Station	6110.0	63.0	150.0
BP	Prudhoe Bay Operations Center	231.0	51.5	45.8
BP	Seawater Injection Plant East	2175.0	20.0	42.0
BP	Seawater Treatment Plant	395.0	28.0	35.0
BP	Transportable Drilling Rigs	1386.7	145.6	56.7
Alyeska	TAPS Pump Station 001	773.0	39.0	122.0
Alaska Interstate	Deadhorse Soil Remediation Unit	107.0	162.8	13.5
Haliburton	Deadhorse Facility	249.0	1.5	2.3
TDX	Deadhorse Power Plant	246.0	9.0	17.0
Total		65644.0	21683.0	2171.0

Reference: Shell Beaufort Permit Application 01/18/10

¹ Endicott Production Facility emissions include the Liberty Expansion

Figure 5-3: Beaufort Sea OCS Lease Blocks and Other Onshore Facilities



5.2.17 Onshore Meteorological Data

For the onshore source modeling, Shell used five years of representative local onshore meteorological data from Badami, Alaska, dated 1991-1995.

5.2.18 Onshore Modeling Receptors

In addition to its original receptor grids, Shell modeled a set of receptors covering a region 50 kilometers from the center of each lease block. These receptors were one kilometer apart. Model results for the onshore sources only included receptors where the lease block grid overlapped with receptors within a 50 kilometer radius of each of the onshore sources. ISC3-PRIME model predictions are generally not used beyond 50 kilometers. Beyond that distance, the model's predictions are likely to be too conservative for regulatory use. Figure 5-3 above shows the 50 kilometers radius around Shell's lease blocks.