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

In re:	)	
	)	
Shell Offshore, Inc.	)	
Conical Drilling Unit *Kulluk*	)	OCS PSD Appeal No. _____
OCS Permit No. R10OCS030000	)	
	)	
	)	

PETITION FOR REVIEW

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INTRODUCTION

Pursuant to 40 C.F.R. §§ 55.6(a)(3), 71.11(l),124.19(a), the Iñupiat Community of the Arctic Slope (ICAS) (hereafter Petitioner or ICAS) petitions for review of the conditions of a synthetic minor source, Title V operating permit No. R10OCS030000 (Exhibit 1) issued to Shell Offshore Shore, Inc. (Permittee or Shell) on October 21, 2011, by Region 10 of the Environmental Protection Agency. The permit authorizes Shell to engage in exploratory oil and gas operations in the Beaufort Sea with the *Kulluk* drillship at over 170 lease blocks. Petitioner contends that certain conditions of this permit are based on clearly erroneous findings of fact and conclusions of law. Comments (Exhibit 2). Specifically, Petitioner challenges the following:

(1) the inadequate public process for the Kulluk permit;

(2) the failure of the permit to impose enforceable emissions limits on Shell‘s emissions of NOx, CO, GHGs , and SO_2 that ensure Shell will remain a minor source;

(2) the EPA‘s failure to require Shell to comply with the increments and visibility requirements;

(3) The Region‘s clearly erroneous environmental justice analysis that:

(a) was developed without sufficient consideration of Ozone and the agency‘s new scientific findings and conclusion that the old 8-hour standard is inadequate;

(c) was developed without adequately considering Shell‘s NO_2 emissions including the emissions from additional sources not addressed in the air modeling and the impacts in subsistence areas; and

(a) resulted from an insufficient public process.[1]

[1] Several of these issues are similar to those ICAS raised in its Petition for Review of the Discoverer air permits. The Kulluk permit at issue here is based on the same definition of OCS

FACTUAL AND STATUTORY BACKGROUND

A. Background On The OCS Permits For Shell's Arctic Operations.

This is the third iteration of a minor source air permit for Shell's *Kulluk* drillship. In 2007, communities along the North Slope successfully sought review of minor source air permits issued to Shell in 2007. *In re Shell Offshore Inc.*, 13 E.A.D. 357 (EAB 2007). In 2008, a second petition for review was filed over the second version of the minor source, Title V air permit issued to Shell. *In re Shell Offshore, Inc.*, OCS Appeal Nos. 08-01; 08-02; and 08-03. That petition was dismissed when Shell withdrew its permit applications. *Id.* (EAB April 30, 2009) (Order Dismissing Petitions for Review).

On February 28, 2011, Shell submitted its third application for a minor source air permit for the *Kulluk.* Statement of Basis (SOB) at 5 (Exhibit 3). On July 19, 2011, Region 10 determined that Shell's application was complete. SOB at 6. The Region held "early information" meetings the week of June 13 in Barrow and Kaktovik in which the agency broadly covered the major source air permits for the *Discoverer* drillship for the Beaufort and Chukchi Seas, the minor source air permit for the *Kulluk*, and the minor source air permit for a jack-up rig in the Chukchi.[2] SOB at 57.

On July 22, 2011, Region 10 issued a draft permit and statement of basis for the *Kulluk* air permit. On that same date, Region 10 also released a draft permit and statement of basis for ConocoPhillips' jack-up rig. The comment period for the *Kulluk* permit closed on September 6, 2011 – just 30 days after the comment period closed for the two major source air permits for

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source upon which the Discoverer air permits are based. If the Board finds that definition to be in error, ICAS respectfully requests that the Board apply that ruling to the Kulluk permit as well.

[2] In Barrow, this meeting also covered the Arctic General Permit, which regulates the discharge of pollution into the ocean from offshore oil and gas activities. EPA Arctic Permits Newsletter Summer 2011 (Exhibit 4).

Shell's *Discoverer* drillship.[3] On October 21, 2011, Region 10 issued the final air permit for the *Kulluk* and set November 28, 2011 at the deadline for administrative appeals.

While the *Kulluk* is classified as a minor source, it will have greater implications for NAAQS compliance and often result in more air pollution than Shell's proposed major source operations with the *Discoverer* drillship in the Beaufort.

Table 1: Comparison of Pollution Generated by the *Kulluk* and the *Discoverer* in the Beaufort in tons per year (tpy) or as a percentage of the NAAQS[4]

	***Kulluk* Permitted PTE**	***Discoverer* Permitted PTE**	***Kulluk* % of the NAAQS including background**	***Discoverer* % of the NAAQS including background**
NOx (1-hour)	240	336	81%	43%
(annual)			15%	4%
$PM_{2.5}$ (24-hour)	29	21	97%	52%
(annual)			33%	23%
PM_{10}	30	22	49%	42%
CO (1-hour)	200	154	8%	6%
(8-hour)			18%	14%
SO_2 (1-hour)	10	1.3	22%	18%
(3-hour)			3%	2%
(24-hour)			7%	3%
(annual)			5%	4%
VOC	40	43		
CO_{2e} / GHG	80,000	70,000[5]	NA	NA

[3] The comment period for ConocoPhillips' permit originally was scheduled to also close on September 6, 2011. Region 10 then agreed to a two-week extension of the comment period to September 21, 2011. On September 26, 2011, ConocoPhillips withdrew its permit application. *See* ConocoPhillips Air Permit – Chukchi Sea (available at: http://yosemite.epa.gov/r10/airpage.nsf/Permits/conocophillips/) (last visited November 26, 2011).

[4] These figures are from Region 10's Technical Support documents. The discrepancies in the NO_2 calculations are explained by the fact that the Region allowed Shell to use different background data for the *Discoverer* and *Kulluk* permits.

[5] The *Discoverer* is a synthetic minor source for greenhouse gases. Its pre-permitted CO_{2e} emissions are 149,794 tons per year.

B. Petitioner's Interests.

Iñupiat have lived along the North Slope of Alaska and relied upon the abundant marine life in this area to feed their people since time immemorial. Their subsistence lifestyle is the basis of their culture and is centered upon bowhead whales and the whale hunt. Marine life such as fish and walrus, as well as migratory waterfowl and other species, are also critical to the Iñupiat diet. With the advent of modern technologies, Iñupiat have learned that operations that pollute the air and water also contaminate their food sources and threaten their health.

Human caused pollution is also changing the climate and these effects are already being felt in the Arctic, where ice once thought to be impermeable is melting. The result of these climatic changes is twofold. First, Iñupiat are experiencing the effects of global climate change well before most other U.S. populations. Second, there is a rush to discover marketable oil and gas resources, develop new shipping routes, and otherwise access this once rarely accessible area. The ramifications of the industrialization of the Arctic will have untold impacts on Iñupiat culture and the fragile environment upon which the culture is based at a time when Iñupiat communities are already struggling to adjust to a changing climate.

The Iñupiat people who will be affected by Shell_s air emissions live in isolated areas and enjoy a lifestyle and diet that is radically different from other populations in the United States. Communities along the North Slope of Alaska have markedly higher rates of pulmonary disease than the general U.S. population, and may have genetic predispositions to diseases that differ from other U.S. populations. *See* Exhibit 5 (statistics and scientific publications). As abundant public health data has demonstrated, Iñupiat are substantially more vulnerable to morbidity and mortality from air pollution than are other Americans. *Id.* For example, rates of chronic lung disease on the North Slope are dramatically higher than in the general U.S. population. *Id.*;

Excerpts MMS, DEIS for the Beaufort Sea and Chukchi Sea Planning Areas, at 3-232 (Exhibit 6). Compared to many areas in the United States, the communities along the North Slope of Alaska have fewer combustion sources. North Slope communities are still relatively pristine and EPA considers them to be in attainment with Clean Air Act standards.

C. Statutory And Regulatory Background.

40 C.F.R. § 71.4(d) makes the Title V program applicable to OCS sources. As the Board has explained:

> Title V of the CAA requires creation and implementation of an operating permit program for major sources of air pollutants. This section of the Act, however, does not itself establish substantive emission reduction requirements. That is, Title V contemplates a permit program that incorporates and ensures compliance with the substantive emission limitations established under other provisions of the Act, but that does not independently establish its own emission standards.

In re Peabody Western Coal Company, 12 E.A.D. 22, 27 (2005) (citing *Ohio Pub. Interest Research Group, Inc. v. Whitman*, 386 F.3d 792, 794 (6th Cir. 2004)). For OCS permits, such as the Kulluk permit, where operations are occurring in both the inner and outer OCS, the permittee is technically receiving three permits. This includes: ~~"a~~n OCS/Title V permit . . . for operations" in the outer OCS; a minor source permit with owner requested limitations under Alaska provisions for operations in the inner OCS; and ~~"a~~ Title V permit" under Alaska's provisions for the inner OCS. SOB at 4. Thus, the Title V permitting process for OCS sources can also ensure compliance with substantive requirements.

THRESHOLD PROCEDURAL REQUIREMENTS

Petitioner satisfies the threshold requirements for filing a petition for review under Part 124, to wit:

1. Petitioner has standing to petition for review of the permit decision because ICAS participated in the public comment period on the permit for the *Kulluk*. *See* 40 C.F.R. § 124.19(a); Comments (Exhibit 2).

2. The issues raised by Petitioner in this petition were raised during the public comment period and therefore were preserved for review. Comments at 5-7, 14-18, 21-23, 26-27, 37-39.

ARGUMENT

The Board reviews a permitting authority's final permit decision if the decision is based on "a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review." *In re Northern Michigan University*, PSD Appeal No. 08-02, slip.op. at 10 (EAB Feb. 18, 2009) (citing 40 C.F.R. § 124.19(a)). As part of its review, the Board is to determine "whether the permit issuer 'duly considered' the issues raised in the comments and whether the approach ultimately adopted by the [permit issuer] is rational in light of all the information in the record." *In re Shell,* 13 E.A.D. at 386 (quoting *In Re Gov't of D.C. Mun. Separate Storm Sewer.,* 10 E.A.D. 323, 342 (EAB 2002)). Thus, the rationale for the Region's decision must be "adequately explained and supported in the record." *Id.*

I. REGION 10 FAILED TO PROVIDE THE OPPORTUNITY FOR A MEANINGFUL PUBLIC PROCESS.

Region 10 committed clear legal error by failing to provide the public with an adequate opportunity to comment on and participate in the hearings for the Kulluk permit. Public participation is at the core of the Clean Air Act's PSD program. 42 U.S.C. § 7470(5); *In re Russell City Energy Center*, PSD Appeal No. 08-01, slip.op. at 22 (EAB July 29, 2008); *In re Weber*, 11 E.A.D. 241, 245 (EAB 2003); *In re Rockgen Energy Center,* 8 E.A.D. 536, 557 (EAB

1999). One of the main purposes of the permitting program is to "assure that any decision to permit increased air pollution in any area . . . is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for *informed* public participation in the decisionmaking process." 42 U.S.C. § 7470(5) (emphasis added).

A. The Public Comment Period Was Inadequate.

The Title V permitting regulations provide that "[p]ublic notice of the preparation of a draft permit . . . shall allow ***at least*** 30 days for public comment." 40 C.F.R. § 71.11(d)(2)(i) (emphasis added); *see also id.* §§ 55.6(a)(3), 124.1. The Title V regulations further recognize that "[a] comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this section." *Id.* § 71.11(g). Region 10 failed to comply with these requirements here. Comments at 5-6.

As Petitioner, described in its Petition for Review of the *Discoverer* air permits, the Region provided draft permits, permit records, and held comment periods on four different air permits for offshore oil and gas drilling in the Arctic between July and September, 2011. Due to these overlapping comment periods, the Region failed to provided the 30 days required by its regulations. This was due to the overlapping nature of the comment periods and the fact that Petitioner does not have the resources to comment on more than one air permit at a time.

The *Kulluk* permit was released on July 22, 2011. This was in the middle of the comment period for two major source air permits for Shell's *Discoverer* drillship, which closed on August 5, 2011. Thus, starting on August 6, 2011, Petitioner could devote its attention to the *Kulluk* air permit. However, when the *Kulluk* air permit was issued for comment, Region 10 also issued a draft minor source air permit for ConocoPhillips with the same comment deadline. Thus, ICAS had 16 days to comment on each of these permits to meet the September 6, 2011 comment

deadline. On or about August 24, 2011, Region 10 announced it was extending the comment period for ConocoPhillips' permit to September 21, 2011. Thus, for most of the time ICAS had to comment on the Kulluk permit it was balancing commenting on the Kulluk permit and the ConocoPhillips' permit and therefore, had less than the minimal 30 days required by the Title V regulations.

The short and overlapping comment periods provided by Region 10 also deprived Petitioner of a meaningful opportunity to comment on Shell's new air modeling results. *In re Russell City Energy Center*, slip.op. at 25 ("the essence of the alleged 'harm' from the procedural violation is not simply its potential impact on the final permit decision, but rather the deprivation of the public's opportunity to have its views considered by the permitting agency"). Petitioner was unable to hire an air modeler to help review Shell's new modeling results generated by the AERMOD model within the limited time provided for comment. Comments at 6. In response to this fact, Region 10 explains that the inability to hire someone does not mean the public process was inadequate and that the agency did receive substantive comments on the modeling. Response to Comments (RTC) at 8 (Exhibit 7). The fact that the agency feels it received substantive comments does not negate the fact that Petitioner was deprived of the opportunity to work with an air modeler in developing its comments. Indeed, Petitioner still has unanswered questions about how Shell applied AERMOD in the Arctic and the new algorithms it developed.

Furthermore, Petitioner demonstrated that it needed additional time to prepare its comments on the air permit. The Title V regulations provide that "[a]dditional time shall be granted to the extent that a commenter who requests additional time demonstrates the need for such time." 40 C.F.R. § 71.11(g). ICAS asked Region 10, before any draft permits were released for comment, to hold non-overlapping comment periods on the OCS permits and to

provide 45 days to comment on each permit. Letter from Brower, *et al.* to Hardesty (June 15, 2011) (Exhibit 8); Comments at 5-7. The reason given for this request were that "it is infeasible to provide meaningful written comments on four air permits" at once, that "[e]ach permit application is hundreds of pages long as are the draft permits and statements of basis" and the administrative records are "voluminous." Thus, reading over "processing, and commenting on these permits [] takes a significant amount of time" and is "critical" because new sources of air pollution "will forever alter the air quality" in the region. *Id.* Region 10 denied this request. Letter from Albright to Brower, *et al*. (July 21, 2011) (Exhibit 9). Because this request demonstrated the need for additional time, Region 10 committed a clear legal error in denying the request for additional time to submit written comments.

B. The Public Hearings For The Kulluk Permit Were Inadequate.

Region 10 held one public hearing on the North Slope for the Kulluk permit in Barrow. In an effort to accept public comment from the North Slope Villages (including those that will be most impacted by Shell's air pollution), the Region set up a teleconference using the North Slope call centers. As ICAS explained in its comment letter, "[t]he telephone connection was poor on both ends" and the "residents had difficulty hearing EPA officials in Barrow, and EPA officials in Barrow had difficulty hearing residents who were trying to participate." Comments at 6. Despite this fact, "EPA simply proceeded" with the hearing. *Id.* The hearing did not accomplish the agency's objective of obtaining input from the Villages. In response to these comments, the Region explains through records and transcription it captured many of the comments. RTC at 9. However, this does not change the fact that people were not able to be heard via phone.

Additionally, a significant portion of the hearing was devoted to a powerpoint presentation by EPA officials. This presentation was not "made available to those attending the

meeting at teleconference call centers." Comments at 7. Furthermore, the best recollection of those who attended the public hearing in Barrow was that the only instance in which a translator for the hearing was mentioned was on the sign-in sheet for people from Barrow who were attending the meeting.[6] SOB at 55 (noting that ~~n~~early half the people who reside in the North Slope speak a language other than English at home"). The sign-in sheet said in English that a translator could be available if needed (or something to that effect). Making a translator available in this fashion is akin to not having a translator at all. Thus, the Region's effort to hold a hearing on the North Slope failed to prove inclusive for North Slope communities.

II. THE *KULLUK* AIR PERMIT CONTAINS UNENFORCEABLE PTE LIMITATIONS THAT FAIL TO ENSURE SHELL WILL REMAIN A MINOR SOURCE.

Region 10 committed clear legal error by failing to impose enforceable permit conditions on Shell's emissions of NOx, CO, GHGs, and SO_2 that will ensure that Shell remains a minor source. The *Kulluk* OCS source is a synthetic minor source such that without enforceable limits on certain emissions it will be a major source. *See* Table 2 below.

Table 2: Potential to Emit in Tons Per Year[7]

	NO_2	**CO**	**SO_2**	**CO_{2e}**
***Kulluk* Pre-Permitted Potential To Emit**	2,339	855	833	141,487
***Kulluk* Permitted Potential To Emit**	240	200	10	80,000

As discussed below, the limits that Shell requested on its emissions have not been translated into enforceable permit conditions. The permit is based on blanket emissions limits coupled with

[6] The Region has not made the final administrative record for the Kulluk permits available yet and the information available on the Region's website does not have the sign-in sheet from the Barrow meeting. Thus, the concerns with the availability of a translator are being raised based on recollections of the sign-in sheet.

[7] Figures are from the SOB at 24.

insufficient emission factors and monitoring provisions that fail to ensure that Shell remains a synthetic minor source.

As the Board has explained, ―[i]n order to be cognizable as a PTE limit . . . a capacity restriction must meet certain minimum criteria." *In re Peabody Western Coal Company*, 12 E.A.D. 22, 32 (EAB 2005). The PTE must be: 1) ―federally enforceable;" and 2) ―enforceable as a practical matter." EPA, Limiting Potential to Emit in New Source Permitting at 2 (1989) (1989 PTE Guidance).[8] A range of limitations is possible that meet these criteria including:

> restrictions over a given period of time on the amount of a pollutant which may be emitted from a source into the outside air. Production limits are restrictions on the amount of final product which can be manufactured or otherwise produced at a source. Operational limits are all other restrictions on the manner in which a source is run, including hours of operation, amount of raw material consumed, fuel combusted, or conditions which specify that the source must install and maintain add-on controls that operate at a specified emission rate or efficiency.

Id. at 5; *see also* NSR Manual at H.5 (―Emissions and operational limitations . . . must be clearly expressed, easily measurable, and allow no subjectivity in their compliance determinations . . . Such limits should be of a short term nature, continuous and enforceable. In addition, the limits should be consistent with the averaging times used for dispersion modeling and the averaging times for compliance testing."). Unless the limits on Shell's potential to emit are enforceable, Region 10 cannot ensure that Shell's operations with the *Kulluk* will remain minor.

Region 10 erred in establishing permit conditions that are not practically enforceable because they rely on blanket emissions limits. Comments at 14-18. EPA's guidance provides that to ―appropriately limit potential to emit . . . all permits . . . must contain a production or operational limitation in addition to the emission limitation in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity

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[8] The New Source Review Manual recognizes a third criteria – that the source ―meets the specific criteria in the definition of ‗potential to emit' . . . ." NSR Manual at c.3.

without pollution control equipment." 1989 PTE Guidance at 5-6; *see also* NSR Manual at c.4 ("all permits issued must contain a production or operational limitation in addition to the emissions limitation and emissions averaging time in cases where the emission limitation does not reflect the maximum emissions of the source operating at full design capacity without pollution control equipment"); *United States v. Louisiana-Pacific Corp.*, 682 F. Supp. at 1131-1133 (explaining "not all federally enforceable restrictions are properly considered in the calculation of a source's potential to emit" such as "blanket restrictions on actual emissions").[9]

Region 10 acknowledges "that emission limits alone are not generally sufficiently enforceable as a practical matter so as to limit PTE." RTC at 29 (citing 1989 PTE Guidance). Yet, for NO_2, SO_2, CO, and GHGs, all the pollutants for which Shell is a synthetic minor source, Region 10 determined that "the most effective means to limit Shell's potential to emit was through the application of enforceable source-wide emission limits" for these pollutants." *Id.* at 27; *id.* (the *Kulluk* permit contains only "emissions limits and specified emission factors" accompanied by monitoring and reporting limits). Therefore, on its face the permit conflicts with the agency's guidance. 1989 PTE Guidance; *see also* NSR Manual at c.3–c.5 ("Blanket emissions limits alone (*e.g.*, tons/yr, lb/hr) are virtually impossible to verify or enforce, and are therefore not enforceable as a practical matter").[10]

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[9] The guidance does recognize one exception to the rule against solely using emission limits to control a source's potential to emit. An emission limit alone may be sufficient "only when it reflects the absolute maximum that the source could emit without controls or other operational restrictions." 1989 PTE Guidance at 7. That is not the case here, *see e.g.*, Kulluk Final Permit D.3.

[10] For NOx the permits states: "the Kulluk and Associated Fleet shall not exceed 240 tpy as determined on a rolling 365-day basis by calculating the emissions (tons) for each day and adding the emissions (tons) calculated for the previous 364 days," Permit at D.4.1., and specifies the emissions factors to use and nothing else – *i.e.,* no operational or production limits. *Id.* at D.4.1.1-3. A similar blanket emissions limit is imposed for CO that is calculated on a rolling 365-day basis and the permit specifies the emissions factors to use and nothing else. *Id.* at D.4.2.

To restrict Shell's PTE, the permit needs limits on operation and/or short-term limits on emission rates from each emission unit or category of similar units. If enforceable terms are not workable, as Region 10 implies, RTC at 27, then a major source permit would provide the operational flexibility that the Region is trying to achieve with the currently unenforceable permit conditions.

A. Region 10 Committed Legal and Factual Errors In Accepting The Blanket Emissions Limits For NOx And CO That Fail To Ensure Shell Will Remain A Minor Source.

In responding to Petitioner's objection to the use of blanket emissions limits, the Region addresses NOx and CO together since their blanket limits are both calculated on a rolling 365-day basis. RTC at 28; SOB at 38 (–CO and NOx emissions are limited using emission limits"). These emissions limits are ***not*** practically enforceable and fail to ensure that Shell will remain a synthetic minor source. *See* NSR Manual at c.4 (–Blanket emissions limits alone . . . are therefore not enforceable as a practical matter"); *United States v. Louisiana-Pacific Corp*., 682 F. Supp. at 1131-1133. Region 10 puts forth several justifications for these permit conditions none of which demonstrate these conditions are practically enforceable.

1. Region 10 committed clear error in accepting the monitoring provisions for NOx and CO.

In its effort to justify the blanket NOx and CO emission limits, Region 10 first argues that compliance is calculated –daily," RTC at 28 (citing Permit at E, D.1), and that determining these –emissions for each unit on a daily basis provides a reliable and timely mechanism that will

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The permit has a blanket limit of 10 tpy of SO_2 and 80,000 tpy of GHGs that are subject to rolling 12-month limits. *Id.* at D.4.3, D.4.4. For SO_2, Shell is limited to purchasing ultra low sulfur diesel fuel and burning fuel with a sulfur content of –0.01 percent by weight" or less. *Id.* at D.4.5, D.4.9. The only other restrictions in section D are on the overall amount of fuel that can be burnt and waste that can be incinerated, *id.* at D.4.6-7, and limits on the overall number of days that Shell can operate, the number of hours it can drill, and the number of hours it can construct the mudline cellar (MLC). *Id.* at D.3.

allow Shell to frequently assess compliance" and determine when ~~it~~ is approaching the emission limits . . . ." *Id.* at 29. The permit conditions demonstrate this is in not the case, they provide:

> D.1.1. By Friday of each week, the permittee shall calculate and record the hourly emissions of NOx and the daily emissions of NOX, CO, PM2.5 and PM10 from each emission unit or group of emission units for the previous week.
>
> D.1.2. By Friday of each week, the permittee shall calculate and record the daily rolling 365-day emissions of NOX and CO for each day of the previous week by using the daily emissions calculated for the previous 365 days.

As these conditions illustrate, while Shell may calculate hourly or daily emissions, these calculations are only made once a week. *See* RTC at 29 (~~"~~Shell is required to calculate and record on ***a weekly basis*** the daily emissions of NOx and CO" (emphasis added)).

As the Region's internally inconsistent position illustrates, weekly calculations are a critical flaw to enforceability of the permit because it means that Shell will only know where it stands vis-a-vie its NOx and CO permit limits once a week. If the operations are approaching these limits, it may be days before Shell is aware of that fact. This is critical in the Arctic because a drill ship cannot just immediately halt its operations and leave the site upon reaching an emission limit. The well site must be prepared for the entire winter season. *See infra* at 29.

Moreover, as EPA's guidance makes clear emissions limits must be reviewable and subject to enforcement at any given point in time. Requiring weekly calculations of hourly and daily emission rates allows review of the operations only weekly – not hourly or daily. The Nox and CO permit limits are subject to a 365-day rolling limit, RTC at 26, but again that limit is only calculated weekly. Furthermore, the NSR Manual cautions against such rolling limits explaining that they ~~"~~should be of a short term nature, continuous and enforceable." NSR Manual at H.5. Therefore, the monitoring provisions in the permit fail to provide the practically enforceable mechanisms that the blanket NOx and CO emission limits are lacking.

Furthermore, the NOX PTE limit lacks a sufficient buffer between the "limit" on Shell's operations (240 tpy) and the major source threshold (250 tpy). Permit at D.4.1. As Petitioner pointed out, Region 9 has stressed the use of a 5-10 percent buffer for permit conditions designed to limit the PTE of a source. Region 9 Letter to Nevada Division of Environmental Protection at 2 (March 29, 2011) (Exhibit 10).[11] The Kulluk permit provides less than a 5 percent buffer, which would be 237.5 tons per year. Comments at 17. In response, Region 10 argues a buffer is not a legal requirement and that the monitoring provisions are sufficient to ensure that Shell will not violate the restrictions on its PTE NOx. RTC at 30-31. The Region points to no authority for its position and its reliance on the insufficient monitoring mechanisms just described is unavailing.

2. Region 10's reliance on emissions factors to enforce the PTE limits is in error.

In arguing that the NOx and CO permit conditions are enforceable, Region 10 also relies upon the emissions factors used to calculate compliance with the emissions limits in the permits. RTC at 28-29. Region 10 committed a clear legal error in relying on emissions factors that are inadequate to ensure Shell's emissions will remain below 250 tpy. Comments at 21-23. As the Board has explained "an emission factor is a numerical emissions estimate that represents the anticipated rate of pollutant release from a given type of industrial operation, assuming no emission controls are employed." *In re Peabody Western Coal Company*, 12 E.A.D. at 35 n.31. The emission factors set forth for Shell's NOx and CO PTE limits are in error because they do

[11] This is not the only instance in which Region 9 has taken this position. See EPA Region 9, Electronic Permit Submittal System (available at: http://yosemite.epa.gov/r9/air/epss.nsf/6924c72e5ea10d5e882561b100685e04/2f0c05524836294e882574890055f8bf!OpenDocument) (last visited November 26, 2011).

not represent the anticipated pollution from Shell's operations. They are based on inadequate stack tests or vast underestimates of the amount of pollution that Shell will emit.

a. The Region erred by requiring only one-time stack tests and then relying on that data which has at least a 15 percent uncertainty.

The stack testing that provides the basis for the majority of the emissions factors used to document compliance with the NOx and CO emissions limits, RTC at 32, is inadequate to ensure Shell remains a minor source. Comments at 21-23. The stack tests are conducted once a year for one or two years depending on the source. Permit at E.2.1.1; SOB at 44 ("permittee is required to test many emission units before the first two drilling seasons"). The testing is done by operating the engine or groups of engines at three different loads.

In its comments, Petitioner raised concerns with using NOx emission factors that are based on annual stack tests and do not track the variations in Shell's operations on an hourly basis. Comments at 23. Requiring Shell to calculate its hourly NOx emissions on a weekly basis based on an emission factor generated by an annual stack test fails to provide relevant information to ensure the permit limits are met. As Region 10 explains, "emissions from drilling equipment on the Kulluk will depend on the stage of drilling activity (*e.g.*, drilling mud cellar lines versus other drilling activities), and emissions from the propulsion engines on the icebreakers will depend on the frequency, thickness, and location of ice." RTC at 27. Using a single annual stack test performed at three different loads even when the worst case emissions are used, RTC at 45, fails to account for all of Shell's varying emissions. Permit at E.2.1.5.

There is a disconnect between Shell's actual operations and the emissions factors that will be used to represent those operations. At minimum, the agency needs emission factors that comport with the different phases of Shell's operations. This is critical because for a phase like

MLC construction, one of the most polluting activities, running an engine between 85-95% of its capacity is not an accurate representation of Shell's emissions.[12] For this reason, ICAS requested that continuous emissions monitoring systems (CEMs) be installed. Comments at 27.[13]

Moreover, as ICAS explained in its comments, Shell admitted in its September 17, 2009 comments on the *Discoverer* Chukchi PSD permit at 11 that "the uncertainty in the stack test data is upwards of 15 %." Comments at 26. The Region's primary response to this point is that "several conservative elements" of the permits ensure that the testing will "result in over-prediction of calculated emissions." RTC at 44. As discussed below, *infra* at 18-19, Shell's stack testing of sources on the Discoverer have fallen far short of even the BACT limits set for those emissions sources. Thus, Shell's stack testing is not as conservative as the Region advocates. More importantly, the permit does not account for the 15% variability in Shell's stack tests in establishing the emissions factors that are used to determine whether Shell will meet its PTE limits. Therefore, the emissions factors based on Shell's stack testing are not adequate to ensure Shell remains a minor source.

b. The Region erred in not requiring stack testing for all sources and by relying on stack tests from other sources.

The permit does not require source testing for the boilers, the heaters, the emergency generators, or the seldom-used engines on the *Kulluk* and its associated fleet. Comments at 20-21. Nor is source testing required for the oil spill response workboats. For these sources, the

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[12] The Region provides an inadequate response to this comment. RTC at 50. It claims that because the emission factors are based on the "worst case" or highest stack testing results or rely on conservative emission factors, they are sufficient. *Id.* However, these responses do not address the variability of Shell's operations that the stack testing fails to capture.

[13] The Region does not respond to the request for CEMs to be installed. *See e.g.*, *In re Newmont Nevada Energy Investment, LLC, TS Power Plant,* 12 E.A.D. 429, 474 (2005) (noting that the permit required "install[ation of] a continuous opacity monitoring system ("COMS") and a continuous data collection system" and for the permittee to "calculate hourly [] emission rates").

permit relies solely on the emission factors presented in the tables (D.2.1 and D.2.2). There are several flaws in this approach. First, Shell does not specify equipment make, model, and capacity for some of these sources. As a result, the Region is relying upon generic emissions factors for them.

The emission factors for the emergency generators, seldom-used sources, and oil spill response work boats rely on NOx emission factors based on test data that Shell compiled for its *Discoverer* drillship operations. RTC at 32. Obviously, this is a different facility using different equipment. Nevertheless, these test results were applied to the Kulluk. The emergency generators and seldom-used sources on the Discoverer are subject to BACT and therefore, even using the ~~"~~90th percentile" values of the Discoverer test data is not sufficient to generate the necessary worst case data for the Kulluk sources that are not subject to BACT. Relying upon the Discoverer test data does not translate into realistic emission factors for the Kulluk, which is a minor source. In its draft guidance on developing emissions factors, EPA explains when a source is ~~"s~~electing or developing a controlled emissions factor, [it] must determine ***if the control device reflected in the emissions factor record is comparable*** to the type and configuration of any control device that is applied to the process for which [the source is] developing the emissions estimate." Recommended Procedures for Development of Emissions Factors at 8-3 (emphasis added).[14]

The boilers and heaters are also not being stack tested but for these emission sources the Region is relying on AP-42 emission factors. RTC at 32. The Region expects that the AP-42 emission factors are conservative. *Id.* However, this is not in fact the case. The Kulluk permit relies upon a NOx emission factor for the heaters and boilers of 0.02 lb/gal (or 20 lb/10^3 gal).

[14] Available at: http://www.epa.gov/ttn/chief/efpac/procedures/procedures_draft122010.pdf (Last visited November 26, 2011).

Id.; Permit at 37.[15] The emission factor for NOx used for the heaters and boilers in the Discoverer permit, where BACT was applied, is 0.026 lb/gal (or 26.6 lb/10^3 gal). In other words, the Discoverer emission factor (for operations that are subject to BACT) is higher than the emission factor applied to the Kulluk heaters and boilers, which are not subject to BACT. Comments at 20-21. The Region's response is that one round of stack testing on the Discoverer sources provided a lower emissions factor. RTC at 51. Region 10 concludes that "[t]his data suggests that Shell will actually be emitting less." RTC at 51. Again, the Region is failing to account for the fact that the Discoverer sources are subject to BACT, while the Kulluk is not, making the Discoverer test results inapplicable to Shell's minor source operations. Recommended Procedures for Development of Emissions Factors at 8-3.

This situation is analogous to the one the Board confronted in *Peabody Western Coal Company*, however, there the Region declined to treat the source as a synthetic minor source. This decision was made in part because Peabody's "proposed compliance regimen did not include direct measurement of PM emissions." *In re Peabody Western Coal Company*, 12 E.A.D. at 35. Thus, the Region "concluded that Peabody had not sufficiently demonstrated that it met the central criteria for establishing such limits — technical accuracy and a reliable method of determining compliance." *Id.* at 39. The Board upheld the Region's conclusion. *Id.* at 41 ("we believe that, given the size of the Facility and the nature of its emissions, it was not clearly erroneous for Region IX to conclude that Peabody's proposed PTE limit was not justified, based on the administrative record and in light of the significant uncertainties inherent in Peabody's proposed approach").

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[15] The Region states in other places in its RTC that it revised the NOx emissions factors, RTC at 145, however, presumably those discussions pertain to the sources that are actually being tested because the emissions factors in section D of the permit remain the same.

3. The exception for VOC surface facilities is not applicable here.

Region 10 relies upon the discussion in the 1989 potential to emit guidance pertaining to VOC surface coating operations to justify its permit conditions here. RTC at 30.[16] Again, this discussion is an admission by the agency that is relying upon blanket emissions limits without other enforceable permit conditions. The limited exception for surface coating facilities exists because blanket emissions limits are the only way to control the operations due to their variability. *Id.* While this has a superficial relation to Shell's operations (which are also variable), there are two reasons the surface coating operations are distinct from Shell's operations.

First, the surface coating "emissions are restricted through limiting VOC contents and quantities of coatings used." 1989 PTE Guidance at 8. Here, the blanket permit conditions limiting the type and overall amount of fuel used or the number of days drilling are not analogous because they are not specifically directed at Shell's NOx or CO emissions. Second, in the guidance the VOC "emission limits" are "coupled with a requirement to calculate daily emissions" and the "source must be required to keep the records necessary for this calculation, including daily quantities and the VOC content of each coating used." 1989 PTE Guidance at 8. Here, while Shell computes its daily emissions, it does so only weekly and not daily as the guidance suggests. Moreover, the Kulluk permit does not contain permit conditions anywhere near analogous to the requirement to document "daily quantities" or the pollutant content of the operations. Very few sources (*i.e.*, only those with OxyCat or SCR) are monitored continuously. As just discussed, instead of continuous monitoring, Shell is relying upon emissions factors (not

[16] The Region did not discuss the VOC surface coating guidance in its statement of basis, therefore, petitioner responds to this point raised in the RTC on appeal.

actual emissions). Thus, the guidance for surface coating operations is not applicable to Shell's offshore oil and gas operations.

B. Region 10 Committed Clear Error In Developing The Limitations For Shell's GHG Emissions.

The permit contains a blanket limit on the amount of greenhouse gases (as carbon dioxide equivalent (CO2e)) that can be emitted during a rolling 12-month period. Permit at D.4.4. In arguing that the blanket emissions limit for GHGs is enforceable, the Region relies on the purported "operational limit[s]" on the overall amount of fuel that can be combusted "over a 12-month rolling period" and on "the amount of waste combusted each day." RTC at 28. In other words, the blanket emissions limitation is accompanied by blanket limits on the amount of fuel that can be burned and on the amount of waste that can be incinerated. These permit conditions collectively do not improve the day-to-day enforceability of the permit conditions designed to restrict Shell's greenhouse gas emissions.

Moreover, the "total fuel usage" and incinerator operation calculations for Shell's GHGs emissions are only made on a monthly basis. RTC at 28; Permit at D.1.3 ("By the tenth of each month, the permittee shall calculate and record the monthly emissions of GHGs from each emission unit or group of emission units for the preceding month.").[17] Thus, while Shell is monitoring its fuel consumption it need only calculate how that fuel use translates into greenhouse gases emissions once a month. *See* Permit at D.4.4. EPA's guidance is clear that a source needs to be able to document its emissions in a given moment, not just monthly. *See* NSR Manual at c.3 ("[c]ompliance with any limitation must be able to be established at any given time"); *In re Shell Offshore, Inc.*, 13 E.A.D. at 394 n.54 ("the permit must include conditions

[17] To be clear, the fuel use is calculated more frequently for determining emissions of other pollutants, Permit at F.2.2, but not for GHGs.

allowing the applicable enforcement authority to show continual compliance (or non-compliance) such as adequate testing, monitoring, and record keeping requirements"); NSR Manual at c.5 ("An inspector, for example, could not verify compliance for an emissions unit with only monthly and annual production, operational or emission limits if the inspection occurred anytime except at the end of a month.").

Contributing to these problems is the fact that the blanket emissions limit on GHGs is subject to a rolling 12-month limit. RTC at 26.[18] The New Source Review Manual explains that emission and operational limits "must be clearly expressed, easily measurable, and allow no subjectivity" and "should be of a short term nature, continuous and enforceable." NSR Manual at H.5. A 12-month rolling emission limit fails to comport with these enforcement measures.

1. The provisions in the permit pertaining to methane emissions further demonstrate that the GHG PTE limit is practically unenforceable.

Region 10 committed clear legal error in accepting an owner requested restriction for methane from mud-off gassing that is not enforceable.[19] The permit provides that "to account for mud off-gassing from the drilling mud system (Unit K-10), monthly CH4 emissions from the drilling mud shall be assumed to be the emission rate specified in Table D.2.1," which is "1596" pounds per month. Permit at D.4.4.2, Table D.2.1; RTC at 34. This is not a limitation on Shell's operations or an enforceable permit provision.

The Region's first response is internally inconsistent. It discusses the use of "inherent physical limitations" which can be factored "into estimates of stationary source potential

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[18] There is an inherent tension between the rolling 12-month limits and the permit condition limiting operations between July and November of each year. The Region has attempted to address this inconsistency, RTC at 148.

[19] Petitioner raised concerns in its comments with Shell's greenhouse gas "owner requested limitations" as a whole. Comments at 14-18. Other commenters raised in more detail concerns over the methane permit condition. *See* Comments of AWL, *et al*. at 4-5 (Exhibit 11).

emissions." RTC at 34 (citing Seitz, Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act (January 25, 1995) (1995 Options for Limiting PTE)). But then the Region claims that Shell's methane emissions are subject to an "operational restriction," namely that Shell's operations are limited "to 120 days between July and November" and that drilling is limited to "1,632 hours." RTC at 34.[20] Taking these two points together, the Region states that the methane emissions "from the drilling mud system [are] based upon the maximum expected capacity over the five-month period of operation taking into consideration inherent physical limitations and actual well data" and that "where inherent physical limitations exist, it may be appropriate to rely on a reasonable and realistic 'upper-limit' projection in identifying the 'maximum capacity' of a source for the purpose of estimating their PTE." *Id.*

There are several errors in these statements. First, the Region offers no support for its conclusion in response to comments that the revised methane estimate is the "maximum expected capacity." As explained below, the information provided by ConocoPhillips to Region 10 shows that in fact the actual drilling of wells results in much higher maximum methane emissions. Nor can the agency equate Shell's requested permit limitations on the number of days of operations and hours spent drilling to "inherent physical limitations." The guidance on limiting PTE equates inherent limits to a paint spray booth relying on the "physical limitations on the number of cars that can be painted, " 1995 Options for Limiting PTE at 8, and a grain

[20] Petitioner disagrees that this is an operational restriction in the true sense of the term because without some other parameter, there is no real restriction on methane emissions. The permits still assume only a certain amount of methane will be emitted each month and that assumption is limited to 120 days or 1,632 hours. There is no monitoring of the methane emissions to serve as a check on the assumed amount of methane that will be emitted. There is no production limit on the amount of mud that will be processed. Without more, the methane "limitation" in each permit is not an enforceable owner requested limit.

terminal servicing ―from year to year" ―a limited geographic area from which a finite amount of grain can be grown and harvested." Calculating Potential to Emit (PTE) and Other Guidance for Grain Handling Facilities at 4 (November 14, 1995) (1995 Grain Terminal Guidance). A permit limitation on the days or hours of operation that is designed to help control emissions from the operations (such as the limits the Region cites) is not an inherent limit that encapsulates only what could physically happen on the ground. Because the Region has failed to identify such an inherent limit, its conclusions are in error. Moreover, the Options for Limiting PTE guidance to which the Region cites discusses using inherent limits for ―small source categories" and ―single-emission unit type operations," 1995 Option for Limiting PTE at 8, which are not categories that Shell's operations fall into given their size and varying emissions units.

The Region further argues that its methane calculations add a ―measure of safety" because they include ―fugitive emissions" that do not have to be ―counted for this source category." RTC at 34 (citing 40 C.F.R. § 52.21(b)(1)(iii)). However, the Title V permitting requirements make it clear that ―[]ugitive emissions from a part 71 source shall be included in the permit application and the part 71 permit in the same manner as stack emissions, regardless of whether the source category in question is included in the list of sources contained in the definition of major source." 40 C.F.R. § 71.3(d). Therefore, the Region had to include these emissions in Shell's Title V permit and they do not add a measure of safety.

The Region next explains that it requested and received additional information from Shell regarding its methane emissions. RTC at 34. After explaining a mistake that was made in the initial permit regarding Shell's methane emissions, the Region explains that it believes Shell's methane emissions are a ―reasonable, upper-bound projection[]." RTC at 35. As such, the Region argues the guidance for grain terminals is applicable. *Id.* This is in error because Shell's

methane emissions are not reasonable, upper bound projections (or as conservative as the agency argues) when compared to ConocoPhillips' projections. ConocoPhillips estimated ―183 tons per month of CO2e " or ―8.7 tons per month of methane" for its operations. Excerpt SOB for ConocoPhillips Jack-up Rig at 35 (Exhibit 12).[21] Shell estimated 17 tons per month of CO_{2e} or 0.798 tons per month of methane. RTC at 34 (noting that the Kulluk estimates are ―consistent with the Discoverer permits").[22]

The grain terminal guidance upon which the Region is relying hinges on the fact it ―address[es] facilities for which ***the theoretical use of equipment is much higher than could ever actually occur in practice***." 1995 Grain Terminal Guidance at 3 (emphasis added).[23] In the analogy that the Region is trying to draw to this guidance, the estimate of 17 tons of CO_{2e} per month must be ―higher than could ever actually occur in practice." *Id.* ConocoPhillips' methane data proves this is not in fact the case. Therefore, Region 10 cannot analogize to the

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[21] ConocoPhillips' estimate is based on data from the actual drilling of wells compiled by an industry trade group. Email from ConocoPhillips' consultant to Doug Hardesty, Region 10 (Exhibit 13). Thus, like Shell's data is it based on ―actual well data," RTC at 34, but from many more wells than Shell's estimate.

[22] When faced with two very different estimates of monthly methane emissions – one estimating 17 tons per month of CO_{2e}, RTC at 29, and the other estimating ―183 tons per month CO2e emissions," SOB for ConocoPhillips at 35, the Region simply accepted each permittee's own estimates. Instead, Region 10 needed to conduct its own independent assessment of these estimates and arrive at a consistent approach to calculating methane to show it exercised the kind of considered judgment necessary to uphold the permit. *See e.g., In re GSX Servs. of S.C., Inc.*, 4 E.A.D. 451, 454 (EAB 1992) (administrative record must reflect ―considered judgment" necessary to support region's permit determination).

[23] The agency's guidance for grain terminals should not be extended to Shell's offshore operations, because the grain terminal guidance is based on many years of data that enabled EPA to make at least educated assumptions about the projected emissions from the facilities. 1995 Grain Terminal Guidance at 5 (explaining that the ―highest amount of grain received during the previous 5 years, multiplied times an adjustment factor of 1.2, will constitute a realistic upper bound on the amount of grain a country elevator could receive"). In contrast, EPA lacks even close to comparable data for Arctic offshore operations and certainly does not have five previous years worth of data. Thus, if it were appropriate to apply this guidance to other facilities, which Petitioner submits it is not, it would not be appropriate to do so here.

grain terminal guidance to argue that Shell's methane emissions are somehow enforceable. *In re Peabody Western Coal Company*, 12 E.A.D. at 32 (a PTE limit must be —a technically-accurate limitation'" (internal citation omitted)).

This point is critical, because in the event that Shell's estimates are off, the current permit conditions would never reveal that fact. Without monitoring of the actual methane emissions or testing of those emissions, there is no way to determine that the estimate of monthly methane emissions in the permit is accurate. Moreover, without a monitoring mechanism neither EPA, nor the public can ensure that Shell abides by its owner requested limits for greenhouse gases, including methane.

In *Peabody Western Coal Company*, the Region declined to treat the source as a synthetic minor source in part because its PM emissions were —primarily fugitive," and Peabody could not —conduct emission testing to directly measure its PM emissions rate." *In re Peabody Western Coal Company*, 12 E.A.D. at 34. As a result, the facility —relied on a quantitative estimate of the Facility's capacity to emit PM_{10}" that included —emission factors and assumed emission control efficiencies." *Id.* at 34-35. Peabody used —AP-42 emission factors" and —estimated the net emissions from these units by applying assumed control efficiencies, and requested that Region IX establish a PTE limit for the Facility based on the cumulative total estimated net emissions." *Id.* The Region took the position that —emission factors do not necessarily reflect the level of emission appropriate for calculating PTE." *Id.* at 37. The Region should have adopted the same position here and denied Shell's request to operate as a minor source.

C. The SO_2 PTE Permit Conditions Are Not Practically Enforceable.

The Region justifies the blanket SO_2 emissions limits by arguing it is —supported by operational limits on both the type and amount of fuel combusted . . . ." RTC at 28. However,

the purported ~~"o~~perational limits" to which the Region refers are not unit specific restrictions but blanket restrictions on the amount of fuel as a whole that can be used, Final Permit at D.4.6., and the type of fuel that can be bought and the type that can be burned. *Id.* at D.4.5, D.4.9. The lack of limits for any given engine makes practical enforcement difficult. *See* NSR Manual at c.3. (~~"s~~hort-term averaging times on limitations are essential"). Again, the overall limit is subject to a 12-month rolling limit, which as previously discussed also diminishes the enforceability of the permit as well. *See supra* at 14, 22.

The key to these provisions is monitoring. Generally, the permit requires the installation and use of fuel flow meters, however, there are engines which are not subject to continuous monitoring. The emergency generator, seldom used sources and oil spill response work boats are among these sources. RTC at 28. The Region's response to comments states that these sources are monitored on ~~"a~~n hourly, daily, and monthly basis," *id.*, but that is not in fact the case. Instead, the permit reads ~~"t~~he permittee shall measure continuously and record the hourly, daily and monthly total fuel combusted by each emission unit or group of emission units on the Kulluk and Associated Fleet that combusts fuel, ***except for*** the Kulluk emergency generator, seldom used sources and OSRV work boats . . . ." Final Permit at F.2.2 (emphasis added). Instead, these emissions sources are subject to the requirement that Shell ~~"m~~easure and record the fuel combusted by the Kulluk emergency generator, each seldom used source and OSRV work boat before and after each use." *Id.* at F.2.2.2. Shell need only ~~"c~~alculate and record the total gallons of fuel burned each month and each rolling 12-month period . . . ." *Id.* at F.2.2.5. Only requiring calculation of these emissions on a monthly basis or for however long they are used does not ensure the enforceability of the SO_2 blanket emission limit. As the New Source Review

Manual explains ―[c]ompliance with any limitation must be able to be established at any given time." NSR Manual at c.3.[24]

D. Region 10 Erred In Not Adequately Responding To Petitioner's Concern That The Minor Source Air Permit Is A Sham.

In order to classify the *Kulluk* operations as a minor source, Shell has agreed to limitations on the number of days and/or hours that it can operate and engage in certain drilling activities that are not represented in Shell's other authorizations or requests for permits for the same operations. Comments at 16. The Region has not adequately responded to Petitioner's concern that Shell's air permit and Shell's planned operations are not congruent.

First, Region 10 disputes that Shell is applying for a sham minor source permit because the company has never indicated an intent to obtain a major source permit down the road. RTC at 22. However, this is not the proper test. As the New Source Review Manual explains, ―[p]ermits with conditions that do not reflect a source's ***planned*** mode of operation may be considered void and cannot shield the source from the requirement to undergo major source preconstruction review." NSR Manual at c.6. Here, for example, Shell's planned operations in its Incidental Harassment Authorization (IHA) under the Marine Mammal Protection Act includes 78 days of drilling. Comments at 16. However, the Kulluk permit only authorizes ―1,632 hours" or 68 days of drilling. Permit at D.3.3. Therefore, Shell is submitting permit

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[24] The Region argues that the SO_2 emissions are so low after factoring the use of low sulfur diesel that they these emissions should not be a concern. Whether this is true or not does not absolve the agency of putting sufficient reporting mechanisms in place. *See In re ConocoPhillips*, 13 E.A.D. 768, 797 (EAB 2008) (―In other words, explaining that minimizing flaring is the objective and that ―very low level[s] of flaring" are expected, does not relieve IEPA of ensuring that accurate and reliable reporting mechanisms are in place to determine whether in fact flaring is being minimized . . . .").

applications and seeking authorizations from other agencies with different plans than are provided for in its air permit.[25]

The Region dismisses ICAS's concerns saying Shell will stop its operations once it reaches the permit limits or face a potential enforcement action. RTC at 22. Obviously, the agency will exercise its enforcement discretion as it chooses, but to assume Shell can simply immediately shut down and walk away from a partially drilled well is impractical. To the contrary, preparing a partially drilled well for winter season in the Arctic is not something that can be done immediately.

As Shell describes in its Beaufort exploration plan at 9-3, "[o]ne method of suspending the well could include running casing, cementing it in the hole, setting a mechanical plug near the top of the well and capping the well. The proposed suspension procedure on any unfinished, or partial well, will be provided via submission of an APM for BOEMRE approval."[26] Region 10 has provided no assurance that the reporting mechanisms in the permit will provide sufficient time for Shell to halt drilling with enough of an emissions buffer remaining to secure a partially drilled well for the entire winter season in an area that is covered with ice and subject to significant ice scouring. The Region's failure to conduct this analysis only contributes to Petitioner's concern that the minor source permit is a sham.

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[25] The 1989 PTE Guidance at 15, specifies that "statements of authorized representatives of the source regarding plans for operation" are an acceptable form of evidence to show a permit is sham.

[26] Available at: http://www.alaska.boemre.gov/ref/ProjectHistory/2012Shell_BF/2012x.HTM (last visited November 26, 2011).

III. REGION 10 COMMITTED CLEAR LEGAL ERROR IN PREPARING ITS ENVIRONMENTAL JUSTICE ANALYSIS.

The Executive Order on Environmental Justice provides that ~~"e~~ach Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Exec. Order 12,898, 59 Fed. Reg. 7629, 7629 (Feb. 11, 1994). The Board has held that ~~"a~~ permit issuer should exercise its discretion to examine any ‗superficially plausible' claim that a minority or low-income population may be disproportionately affected by a particular facility that is the subject of a PSD permit proceeding." *In re Avenal Power Center, LLC*, PSD Appeal Nos. 11-02-05, slip.op. at 20 (EAB Aug. 18, 2011) (hereafter *Avenal*) (internal citations omitted).

The local communities who will be affected by Shell's operations contain a high number of Alaskan Natives who are a minority under the Executive Order. SOB at 53. The record establishes that Iñupiat have higher rates of pulmonary disease than the general U.S. population, may have genetic predispositions to diseases that differ from other U.S. populations, and are substantially more vulnerable to morbidity and mortality from air pollution than are other Americans. *Supra* at 4; SOB at 55-57. Region 10 has committed clear error in conducting its environmental justice analysis as described below. Comments at 37-39.

A. Region 10 Has Ignored Petitioner's Comments And EPA's Scientific Findings On The Need For A New Ozone Standard.

Region 10 committed clear legal error in preparing its environmental justice analysis by relying upon compliance with the existing 8-hour Ozone NAAQS. The environmental justice analysis makes one reference to Ozone on its last page, stating that ~~"th~~e [permitted] activities . . . will not cause or contribute to air quality levels in excess of health-based standards for . . .

Ozone" and ~~"t~~hat there will not be disproportionately high and adverse human health or environmental effects with respect to" Ozone. EJ Analysis at 15 (Exhibit 14). In reaching this conclusion, the Region fails to address adequately the potential impacts to local communities from Ozone formation and EPA's latest scientific findings regarding Ozone. Comments at 38-39.

Ozone is a regional pollutant so the EJ analysis needed to consider impacts to North Slope communities beyond just those ~~"c~~losest to the proposed operations." EJ Analysis at 15. Additionally, EPA itself has determined that the 8-hour Ozone NAAQS is inadequate to protect human health and the environment. 75 Fed. Reg. 2,938 (Jan. 19, 2010). Specifically, EPA found that ~~"c~~hildren and adults with asthma and other preexisting pulmonary diseases are at increased risk to the effects of O3 exposures." Draft Final Decision at 45[27]; 75 Fed. Reg. at 2,946. As a result, EPA proposed to revise the Ozone standard to limit the 8-hour NAAQS to between 0.060 and 0.070 ppm.[28] The Region fails to address its own recent scientific findings on Ozone in its EJ analysis despite the fact that these findings support the need for further consideration of these impacts on Iñupiat communities on the North Slope.

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[27] Available at: http://www.epa.gov/glo/pdfs/201107_OMBdraft-OzoneNAAQSpreamble.pdf

[28] After EPA set the 8-hour NAAQS at 0.075 ppm, ~~"C~~ASAC took the unusual step of sending EPA a letter expressing strong, unanimous disagreement with EPA's decisions on both the primary and secondary standards (Henderson, 2008). The CASAC explained that it did not endorse the revised primary O3 standard as being sufficiently protective of public health because it failed to satisfy the explicit stipulation of the Act to provide an adequate margin of safety." 75 Fed. Reg. at 2,943; *see also* CASAC, Review of the Agency's Final Ozone Staff Paper (March 26, 2007) (~~"O~~*zone Panel members were unanimous in recommending that the level of the current primary ozone standard should be lowered from 0.08 ppm to no greater than 0.070 ppm.*" (emphasis in original)).

The Obama administration delayed adoption of a new 8-hour Ozone NAAQS due to economics and not health concerns. The draft final rule is posted on EPA's website: http://www.epa.gov/air/ozonepollution/pdfs/201107_OMBdraft-OzoneNAAQSpreamble.pdf

This is analogous to Region 10's failure to address the updated science and standard for NO_2 for the Discoverer air permits. In *Shell Gulf of Mexico and Shell Offshore Inc.*, the Board found that "the Region relied on compliance with the outdated science, embodied in the then-current NO_2 NAAQS, at the time the Permits were finalized to support its determination that the Alaska Native population would not experience disproportionately high and adverse human health or environmental effects and conducted no further environmental justice analysis." OCS Appeal Nos. 10-01-04, slip.op. at 82 (EAB Dec. 30, 2010) (hereafter *Shell II*). The Board decided that it "cannot condone the Region's failure to account for the updated scientific and technical reviews that accompanied the publication of the proposed and final 1-hour NO_2 NAAQS." *Id.*

Likewise, here, Region 10 has ignored the agency's new scientific findings (made by the CASCA and otherwise) that the existing 8-hour NAAQS for Ozone was adequate to protect public health. *See supra* at 30-31. These findings are not discussed in the EJ analysis nor does the region justify its reliance on the outdated 8-hour Ozone NAAQS to demonstrate the Kulluk permit will not result in a disproportionate impact to health or the environment. Thus, the EJ analysis should be remanded to the agency to address its own scientific findings and offer a rational conclusion for its environmental justice findings that are supported by the record. *In re Shell*, 13 E.A.D. at 386; *Shell II*, slip.op. at 74-75 ("Compliance with a NAAQS standard that the Agency has already deemed inadequate to protect the public health cannot by itself satisfy a permit issuer's responsibility to comply with the Executive Order"); *id.* at 78 (agency should explain "why it reached a determination about [Ozone] health effects that is inconsistent with the Administrator's findings").

In responding to comments on this point, the Region states that ―current ozone levels in the area are well below even the low end of the range that had been proposed by EPA" and that it ―does not believe modeling is required to conclude that emissions of ozone precursors from Shell's operations will cause or contribute to ozone levels that would exceed the low range of the proposed NAAQS." RTC at 120; *id.* at 98.[29] There is no modeling to back this statement up. *Id.* The limited background data that exists does not support that the current levels are ―well below" what the new NAAQs would have been. The Region recognizes the limited background data shows Ozone at 0.40 ppm. RTC at 119. This data does not account for Shell's emissions from its *Kulluk* and *Discoverer* operations, ConocoPhillips' proposed emissions from its jack-up rig, or any other new sources on the North Slope, which are all relevant because Ozone is a regional pollutant.

Nor does this response address the agency's new scientific findings that people ―with asthma and other preexisting pulmonary diseases are at increased risk" from Ozone exposure, Draft Final Ozone Decision at 45, which us particularly relevant to North Slope communities where asthma and other pulmonary diseases are common, EJ analysis at 8-9. *Shell II*, slip.op. at 41 (―the Board looks at . . . whether the Region articulated with reasonable clarity the reasons for its conclusions and the significance of the principal facts it relied upon in reaching those conclusions"). There is no State Implementation Plan (SIP) or the equivalent for the OCS and the Region has never conducted a regional Ozone analysis, therefore, beyond the limited Ozone

[29] While the Regions of EPA have the opportunity to respond to comments on new source review air permits as a function of the agency's permitting regulations, neither the Executive Order on environmental justice, nor the agency's regulations provide such opportunities for the agency to amend its environmental justice analysis by way of a response to comments. Therefore, if the analysis itself is insufficient it should be remanded to the agency instead of the agency piecing together backing for its analysis (or lack thereof) from the rest of the permitting record. Nevertheless, Petitioner addresses the agency's responses to its comments on EJ issues.

data the Region presents, there is little information on Ozone formation on North Slope communities. Something more than an assumed compliance with the NAAQS is required in this situation. Region 10 has repeated the mistakes it made with NO_2 in the 2010 permits for the *Discoverer* by failing to address adequately the impacts from Ozone formation on local communities in its environmental justice analysis.

B. Region 10's Consideration Of NO_2 In The Environmental Justice Analysis Also Ignores Salient Evidence In The Record.

Region 10's reliance upon the NO_2 NAAQS in the environmental justice analysis is also flawed in that it is insufficient and ignores salient record evidence. As an initial matter, ICAS and other North Slope petitioners have previously stressed that allowing EPA to simply equate NAAQS compliance with an environmental justice analysis vitiates the intent and effectiveness of the Executive Order, because every new source permit decision made by EPA must be accompanied by a finding that the emissions will not result in a violation of the NAAQS. 42 U.S.C. §§ 7475(a)(3), (a)(7).

This is particularly a concern for the operations that Shell has proposed in the Arctic that include a host of emissions that are never counted toward Shell's PTE or otherwise accounted for in the Region's EJ analysis or Shell's air modeling.[30] Comments at 37. North Slope petitioners have long been concerned about the collective impact of these emissions on air quality and the health of local residents as evidenced by Petitioner's efforts to have Region 10 consider these emissions as those of the OCS source in prior EAB appeals. As a result, Petitioner asked Region 10 to address these emissions in determining whether the permits will have a disproportionate

[30] These emissions include those from the Associated Fleet when outside the 25-mile radius of the drillship, the rest of the vessels associated with Shell's operations that are not included in the Associated Fleet, and the propulsion engines from the vessel used to move the Kulluk to the drill site.

adverse health impacts on their communities. Comments at 38. Region 10 did not analyze these emissions choosing instead to rely on air modeling that only accounts for some of the emissions but that nevertheless shows that Shell's operations plus background are at 81 percent of the one-hour NO_2 NAAQS.[31] The Region justifies this approach by arguing that it: 1) does not have sufficient information to estimate the ―mobile source emissions" that are ―not subject to regulation under these permits;" and 2) ―does not expect these additional emissions" to cause or contribute to a violation of the NAAQS, RTC at 115, despite its lack of information. Both points are in error.

First, Shell has submitted an emissions inventory for the additional emissions to the Department of Interior's BOEM along with its exploration plan for the Chukchi. Exhibit 15.[32] This submissions shows that the additional emissions estimates are not as hard to obtain as Region 10 implies. Indeed, in light of this information, the EJ analysis should be remanded to Region 10 so it can assess the accuracy of this inventory (and require it to be updated if necessary) and then use the information to conduct an EJ analysis that accounts ***for all*** of Shell's emissions. The agency has considered mobile emissions previously in its EJ analyses and should be required to do so here as well. *See e.g.*, *In re Avenal*, slip.op. at 21-22 (the region addressed mobile sources in its environmental justice analysis discussing the fact that ―motor vehicle emissions are by far the greatest concern").

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[31] The Kulluk permit, and Shell's Arctic operations in general, present the unique situation where significant questions have been raised regarding Shell's compliance with the new 1-hour NO2 NAAQS especially when Shell's operations are viewed as a whole. Comments at 28-33. Region 10 has failed to set forth a rational response to this evidence in the record in preparing its environmental justice analysis and determining that local North Slope minority communities will not be disproportionately impacted by NO_2 pollution. SOB at 67-68.

[32] While the Kulluk operations will take place under Shell's Beaufort exploration plan, the two plans are similar. ICAS takes no position on whether this inventory is complete or accurate.

Even if this information were not available, Region 10 could readily compile rough estimates of the "mobile source" emissions. All the vessels in the Associated Fleet have been modeled to some extent or another, Technical Review Document at 8-12 (Exhibit 16), such that the Region could *estimate* the emissions from these vessels outside the 25-mile radius of the drillship. As for the rest of the vessels, they are listed in Shell's exploration plan, including descriptions of the make and model of most of the vessels. Comments at 2-3. Looking up the horsepower of the typical engines on board these vessels and either comparing them to similar engines (for which Shell did modeling) or making rough estimates of their emissions are also feasible and reasonable steps for the agency to take to ensure against adverse health and environmental impacts. Some additional steps are particularly necessary here where the impacted minority population already suffers higher rates of pulmonary diseases and respiratory problems than other U.S. populations, is more susceptible to and at risk from NO_2 concentrations, *supra* at 4; SOB at 55-57, and spends significant amounts of time engaged in subsistence activities offshore – *i.e.*, closer to the emissions sources than Shell's onshore modeling reveals. Tetra Tech, Literature Review of North Slope Marine Traditional Knowledge (June 4, 2010).

The Region also argues that many of the mobile source emissions can be discounted because they will dissipate while the vessels are in transit. RTC at 115. This argument discounts the cumulative effect these emissions have on air quality and the fact that the local populations spend significant amounts of time offshore. Indeed, a fatal flaw of the environmental justice analysis is its failure to *analyze* the impacts of Shell's emissions on subsistence hunters and fishers while offshore. Region 10 discusses Shell's modeled impacts at the ambient air boundary and at two local communities, EJ Analysis at 12-13, but never explains what the impacts are in

key subsistence areas. The Region acknowledges that subsistence hunters travel as far as 60 miles in pursuit of traditional foods. EJ Analysis at 6. However, nowhere does the agency account for this information in its analysis. Instead, the agency simply concludes that the NAAQS will be complied with at the 500-meter boundary. *Id.*[33]

Second, these ―mobile emissions" could collectively cause or contribute to a NAAQS violation. The record reflects that compliance with the 1-hour NO_2 NAAQS is a concern even when the ―mobile source emissions" are not accounted for in the modeling. Significant concerns exist with the functioning of OxyCat and SCR (that control NO_2 emissions among other things) in Arctic temperatures, Comments at 23, the use of generic NOx/NO_2 ratios in lieu of actual source tests, *id.* at 28, the use of ―diurnal pairing" of NO_2 data, *id.* at 29-30, and the use of only one stack test per year to provide data to demonstrate compliance with the hourly NO_2 standard where Shell's emissions vary hour by hour. *Id.* at 22-23. Petitioner also discussed the ―need for additional tracer experiments" to supply data for the AERMOD model to ensure that it provides more accurate results for the Arctic. *Id.* at 27. Indeed, in light of all these concerns, Petitioner requested that Region 10 require the installation of continuous emissions monitors (CEMs) for demonstrating NO_2 compliance.[34] *Id.* at 23. As Petitioner's comments demonstrate, Shell's

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[33] The record contains detailed information about subsistence use of the areas where drilling will occur. Tetra Tech, Literature Review of North Slope Marine Traditional Knowledge (June 4, 2010). Region 10 discloses at least some of this information in its EJ analysis. However, the agency never connects the pollution that will be emitted with subsistence use areas and never discusses whether subsistence hunters and fishers could be adversely impacted by this pollution.

[34] Self-monitoring provisions in draft air permits for the OCS have long been a concern for local communities who have consistently asked Region 10 to require independent monitoring. For example, in their latest comments, Petitioner requested monitoring at the 500-meter mark to ensure that the NAAQS are complied with at the ambient air boundary and they also requested CEMs for NO_2. Comments at 8, 23. If the Region is not going to estimate the total impacts of all of Shell's emissions on air quality and the health of local communities, then at least the agency should put in place stringent monitoring provisions so that if more pollution is emitted

operations pose a risk of a 1-hour NO_2 NAAQS violation. When Shell's mobile source emissions are added into this equation and Shell's emissions are looked at in their entirety, as requested by Petitioner, it is clear the Region failed in its environmental justice analysis.

With a pollutant like NOx where short-term exposures are linked to respiratory illnesses and hospitalization particularly in sensitive populations such as those present on the North Slope, EJ Analysis at 8-9, the Region cannot ignore these facts in its environmental justice analysis. Nor can the Region ignore what the Board has previously recognized that because Iñupiats use the Beaufort Sea for subsistence activities – including hunting and fishing – and spend extended periods of time offshore in closer proximity to Shell's operations, this raises a "potential environmental justice consideration that may be unique to the OCS PSD permitting . . . ." *Shell II*, slip.op. at 72. Thus, the Region failed to address adequately hourly NO_2 emissions in its environmental justice analysis.

C. Region 10 Did Not Engage In An Adequate Public Process In Undertaking Its Environmental Justice Analysis.

As with the public process surrounding these air permits, the public process for the environmental justice analysis was also woefully inadequate. The Region claims that "the primary means of addressing environmental justice issues in the Title V program is through increased public participation," RTC at 114, however, the record here belies this claim. As discussed previously, the Region failed to provide even 30 days to comment on the permit that did not overlap with a comment deadline for another new source review air permit. *Supra* at 7-8. The comment period was insufficient for Petitioner to hire an air modeler to help review the modeling performed for Shell's operations. *Supra* at 8.

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than was predicted EPA can take rapid action to protect against adverse health and environmental impacts.

The Region‘s communications protocol for the North Slope recommends, but does not make mandatory, planning –for a 60-day window for public comment opportunity.” North Slope Communications Protocol at 4 (Exhibit 17).[35] The Region did not abide by this recommendation, nor it grant Petitioner‘s request for a 45-day comment period that does not overlap with other OCS air permits. Letter from Albright to Brower, *et al*. (July 21, 2011). Therefore, this comment period did not provide a meaningful opportunity for local communities to engage on the permits.

Second, the agency did not travel to the North Slope communities that will be most affected by Shell‘s emissions Kaktovik and Nuiqsut. EJ Analysis at 12.[36] Region 10 only held one public hearing and that was in Barrow, and held early informational meetings on all four proposed air permits in Barrow and Kaktovik. *See supra* at 3. The public hearing in Barrow was riddled with problems. The teleconference line did not provide for meaningful participation, materials from the Region‘s presentation were not provided to the call centers at the other Villages, and the only opportunity for a translator was announced in English on the sign-in sheet for the Barrow hearing, *see supra* at 9-10.

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[35] Presumably, one reason a 60-day window is recommended is because North Slope communities are engaged in a constant process of gathering subsistence foods, which can take them far from their homes and communities sometimes for extended periods of time. Therefore, to provide sufficient time for these communities to comment on agency proposals more than 30 days is necessary.

[36] The environmental justice analysis generally only discusses incorporated Villages on the North Slope. EJ Analysis at 5. However, the Region added in Deadhorse to the analysis because of proximity to Shell‘s operations. Although Deadhorse is generally considered to be a populated area, because of the oil and gas related facilities that exist there is not usually considered among the North Slope villages.

By excluding unincorporated areas (aside from Deadhorse), the analysis excludes the North Slope villages of Kivalina, Little Diomede, Wales, Gambell, and Savoonga.

CONCLUSION

For the foregoing reasons, ICAS respectfully request that the Board remand the Kulluk permit to Region 10 because of the clear errors of law and fact described in this Petition.

Respectfully submitted,

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Dated: November 28, 2011

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WORD CERTIFICATION

Petitioner Iñupiat Community of the Arctic Slope hereby certifies that this Petition for Review of Permit No R10OCS030000 is less than 14,000 words. EAB, Order Governing Petitions for Review of Clean Air Act New Source Review Permits at 2, ¶ 1. Petitioner certifies that its Petition contains 13,288 words and is within the Board's word limitation for new source review petitions.

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CERTIFICATE OF SERVICE

I hereby certify that copies of ICAS's Petition for Review and the exhibits thereto were served by electronic mail upon the following entities:

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