Petitioner’s Exhibit 1a

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

February 7, 2007

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

Re: Additional Compliance Plan Information - Shell Kulluk and the Frontier Discoverer Minor NSR Permit Applications

Dear Mr. Meyer:

The attached information provides additional detail to the proposed compliance plans for our Beaufort Sea drilling project – with applications submitted December 29, 2006. These plans are a result of numerous informal communications between Shell and EPA to reach a mutually satisfactory method of demonstrating compliance with emission limits. Shell offers a few minor changes to its proposed fuel-based equation owner requested limit (ORL) and a commitment to provide proof of the emission factors used in this equation by stack testing of the larger emitters. For the vessel with a tailpipe emission control, Shell proposes to document the operational status of that device.

At EPA's request, Shell considered the option of continuous emission monitoring (CEMs) of the NOx emissions of the larger diesel engines used for vessel propulsion and drilling. There are several factors related to use of CEMs, any one of which would make continuous monitoring not feasible or impossible. Primarily, the monitoring probes, sample lines and analyzers are not designed for the Beaufort Sea environment of salt spray, continuous motion, wind, and cold temperatures. Thus, CEMs are not proposed for use here.

The fuel-based equation is presented on the first attached spreadsheet, with supporting data and references provided on the next three sheets. These tracking efforts focus on the NOx emissions and keep them under the 250 ton per year minor source limit. Information presented in the application shows that all other criteria pollutants are emitted in lower quantities than NOx. The fuel-based equation addresses the annual NOx emissions, and in the case of the Shell stationary sources which are less than one year in duration, the total stationary source emissions. This equation allows for the tracking of the total NOx emissions as time progresses and allows Shell to predict if (in the unlikely event) that a drilling program would need to be terminated before completion. It also allows Shell the flexibility to emit the NOx from any of its source units and in whatever combination of units that is most efficient for each particular well.

The NOx emissions per unit of fuel consumed (the emission factors) are estimated from manufacturer or generic (AP-42) data by emission unit type. For this equation, the load range of use is also taken into account, as described on the attached spreadsheets. For permitting purposes This is the best information available at this time for estimation of allowable fuel use. Before the first thirty days at the first drilling location, the emissions of the largest sources (noted on the two right-hand columns of the example table on the first spreadsheet and representing over 90 percent of the expected emissions) will be tested. And, before 45 days, the data will be reported to the EPA. Once the stack tests are performed, the actual emission factors will be substituted in the compliance equation. This could result in a decrease or increase in the fuel allowance for the stationary source. The stack tests would be performed once each year at the beginning of the drilling season.

The logic for estimation of actual load range and selection of the most appropriate emission factor is as follows.

- For the boilers, the highest factor is at 100 percent capacity, so the emission factor used herein for boilers is that which represents 100 percent capacity even though the boilers will often operate below 100 percent capacity.
- The diesel engines have emission factors that generally increase below 100 percent capacity, as shown on the third and fourth spreadsheets for the Shell-Kulluk and the Frontier-Discoverer.
- The smaller engines such as those used in the cranes can operate over the range of 25 to 100 percent capacity so the average factor for 25, 50, 75, and 100 percent capacity is used.
- For the vessel propulsion, the operating range is between 50 and 100 percent capacity. Note that there are multiple propulsion engines and only enough engines to provide the desired power are used, rather than running all whenever there is any power demand. The propulsion engine emission factors are developed as the average of the 50, 75, and 100 percent capacity values.

For grouped sources, the highest emission factor of the group is used for that group in the compliance equation. The option to operate one incinerator on each drilling vessel is added in this revision. These incinerators have minor emissions and are inserted with constant emissions (at maximum charge rate) since the emissions are not related to fuel consumption, but to charge rate.

The Tor Viking ice management vessel has SCR tailpipe NOx emission control. The vessel will operate under power only when the SCR is operational and Shell commits to tracking operation of this SCR system. Specifics of the tracking procedure will be provided after Shell has received information from the vessel owner regarding a practical means of providing this assurance.

The minor source threshold is 250 tons per year. With emission factors that are developed from measurement of the actual sources, the calculation of emissions by the compliance equation should be accurate. However, recognizing the existence of some imprecision, the

equation limits emissions to 245 tons per year, which provides a 5 ton "cushion" below the minor source threshold.

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

Sincerely,

Shell Exploration & Production Company

Susan Childs
Regulatory Affairs Coordinator, Alaska

Attachments:

Attachment 1 – Shell-Kulluk Compliance Equation Spreadsheets
Attachment 2 – Frontier-Discoverer Compliance Equation Spreadsheets

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