



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

1200 Sixth Avenue, Suite 155  
Seattle, WA 98101

AIR & RADIATION  
DIVISION

July 10, 2023

Mr. Klinton T. VanWingerden  
Pipeline/Valdez Director  
Alyeska Pipeline Service Company  
P.O. Box 196660  
Anchorage, Alaska 99519

Re: Force Majeure Event at Rolls Royce Turbine

Dear Mr. VanWingerden:

This letter is in response to your letter on behalf of Alyeska Pipeline Service Company to the U.S. Environmental Protection Agency, Region 10 dated September 20, 2022, and additional materials submitted to the EPA on January 12, 24, and 25, and February 16, 2023, informing the EPA, as required by 40 CFR 60.8(a)(1), that Alyeska intended to assert a claim of *force majeure* for an equipment failure resulting in the delay of a compliance test required by 40 CFR part 60, subpart KKKK: *Standards of Performance for Stationary Combustion Turbines* (NSPS KKKK). As allowed by 40 CFR 60.8(a)(3), we are granting an extension to the performance test deadline subject to the conditions below.

### **Background**

Alyeska owns and operates the Trans Alaska Pipeline System, which pumps oil across the State of Alaska from North Slope Borough to the Valdez Marine Terminal on Prince William Sound. To maintain pressure in the TAPS, Alyeska operates a series of pump stations, the northernmost of which is pump station number 1 (PS1), located in Deadhorse, Alaska.

As a major source of air pollution, PS1 is regulated by a title V operating permit (AQ0072TVP04) issued by the Alaska Department of Environmental Conservation (ADEC). According to AQ0072TVP04, emission unit (EU) 25a is a natural gas-fired Rolls Royce 501-KB7 combustion turbine generator set rated at 5.2 kWe. EU25a is a backup unit, supplementing electric power for PS1 when the primary combustion turbine generator set is offline.

On September 20, 2022, Alyeska provided letters to the EPA and ADEC asserting that a force majeure had occurred that delayed the August 9, 2022, test required for EU25a by NSPS KKKK. Initially, Alyeska believed that the turbine was having startup problems that could be addressed by a changeout of the variable frequency drive. After the repair was unsuccessful, Alyeska reported that the star and ring gears on the epicyclic Allen Gearbox were significantly damaged and required replacement.

On January 12, 2023, Alyeska provided the EPA with a report from Simon Forensic, LLC, titled "Planet Gear Failure/Ring Gear Examination" (the "report"). The report examined and tested the failed planet

gear and related ring gear through scanning electron microscopy (to examine the gear's physical structure) and energy dispersive spectroscopy (to determine the gear's chemical composition). According to the report, the gearbox, which was manufactured in 2012, installed in 2015, and operated for a total of 4,776.2 hours, failed because of a fracture to a single tooth of the planetary gear. The report concluded that damage to the planetary gear was caused by fatigue failure of a single tooth originating in subsurface, aluminum based, non-metallic inclusions in the metal.

Thus, given the gearbox's few hours of operation and the presence of non-metallic inclusions in the failed gear tooth, Alyeska claimed a manufacturing defect in the planetary gear system was the most likely cause of the breakdown.

## **Regulatory Basis**

Pursuant to NSPS KKKK, to assure continuous compliance with the NO<sub>x</sub> limit in table 1 of the subpart, the owner or operator of an affected turbine that does not use water or steam injection to control NO<sub>x</sub> emissions must conduct an initial performance test, as required by 40 CFR 60.8, followed by ongoing tests annually (within 14 months of the previous performance test) or every two years (no more than 26 calendar months following the previous performance test) if the result from the performance test is less than or equal to 75 percent of the NO<sub>x</sub> emission limit. *See* 40 CFR 60.4340(a) and 60.4400(a).

If the owner or operator of an affected facility is unable to conduct a performance test required by a standard in part 60, the owner or operator may request an extension of the test deadline on the grounds of a force majeure having occurred, as described in 40 CFR 60.8(a). The decision to grant an extension to the performance test deadline is solely within the discretion of the Administrator.

A force majeure is defined in 40 CFR 60.2 as:

*[A]n event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents the owner or operator from complying with the regulatory requirement to conduct performance tests within the specified timeframe despite the affected facility's best efforts to fulfill the obligation. Examples of such events are acts of nature, acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility.*

## **Determination**

Based on the information provided by Alyeska, the EPA grants an extension to the August 9, 2022, performance test required by 40 CFR 60.4340(a) and 60.4400(a) that had been scheduled for August of 2022, for the Rolls Royce turbine identified as EU 25a in ADEC permit AQ0072TVP04. Alyeska shall conduct its next performance test for EU 25a within 90 days after the successful installation and demonstration of the gear box. Ongoing compliance testing shall be performed according to the timelines specified in 40 CFR 40.4340(a).


The EPA's decision to grant an extension of a performance test does not waive or alter any other requirement that applies to the turbine.

If you have any questions about this matter, please contact Mr. Geoffrey Glass of my staff at (206) 553-1847 or [glass.geoffrey@epa.gov](mailto:glass.geoffrey@epa.gov).

Sincerely,

KARL

PEPPL

 Digitally signed by KARL  
PEPPL  
Date: 2023.07.11  
09:16:29 -07'00'

Karl Pepple, Manager  
Air Permits and Toxics Branch

cc:

Mr. James Plosay

Alaska Department of Environmental Conservation

Mr. Dave Jones

ADEC

Mr. Aaron Simpson

ADEC

Mr. Don Mark Anthony

Alaska Pipeline Service Company

Ms. Hilary Garney

Alaska Pipeline Service Company