TOKAI CARBON CB
Building a Future of Technology and Trust

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Re: Follow up to Malfunction Notification – Tokai Carbon CB Borger Facility

As a supplement to the Malfunction Event Notice submitted on October 28, 2021, the following is an additional discussion of the events surrounding the October 2, 2021 malfunction of the South Flue Gas Fan.

On the morning of Saturday, October 2, 2021, the South Flue Gas Fan ("Fan") at Tokai's Borger Facility experienced a catastrophic failure. The Fan is one of two fans installed as a part of the Wet Sulfuric Acid ("WSA") scrubber system at the Borger Facility. These two fans move flue gas from the boilers into the WSA scrubber. A more detailed chronology of the events on October 2, 2021 is below:

- At 6 AM, a shift change occurred without issue, and acid had been introduced into the concentrator.
- At approximately 7AM, the process team reviewed operational data including on the two fans. Bearing temperatures and vibrations on both fans were minimal.
- At 7:47 AM, a large boom was heard throughout the plant. Emergency procedures were activated and nonessential personnel proceeded to emergency evacuation points. The plant accounted for all employees and contractors in the plant at the time. Tokai's operations department immediately began the shutdown procedures.

- At 7:53 AM, Tokai personnel observed that the Fan had broken apart and ruptured the south side of the fan housing and the fan shaft was still rotating. The on-site CEMS technician immediately pressed the emergency stop device to shut down the operation of the fan. At this time, the plant determined that the outlet guillotine valve for the south flue gas blower was unable to close due to damage sustained when the Fan broke apart. The plant began a manual shutdown of the WSA system.
- By 9:23 AM, Tokai had accounted for all debris from the fan and had identified all damage.
- By 2:30 PM the outside boiler operator completed the lockout/tagout procedures to allow personnel to enter and inspect both flue gas boilers and all damaged conduits.

During this time the plant continued to operate certain blowers and other fans to facilitate cooling to allow for further investigation of the incident. At approximately 6 AM on October 3, temperatures had dropped sufficiently to open manway doors to access the duct burner, flue gas blowers and fan area to allow for additional inspections.

In the subsequent days, Tokai continued its investigation into the cause of the Fan failure and whether the other fan, the North Flue Gas Fan, was safe to operate. Because both fans were made by the same manufacturer in the same time period, Tokai needed to make a careful evaluation to ensure the safety of plant personnel before restarting the North Flue Gas Fan. Tokai's investigation has included internal company personnel, Clarage (the fan manufacturer) and Payton Fan (a local contractor who assists the facility with its fans). As Tokai was conducting its investigation, Tokai operated the flare for approximately 7 days (October 6 to October 13) under Paragraphs 37 and 77 of the Consent Decree allowing for operations of the flare during a malfunction; during this time the plant was at reduced production.

In anticipation of restarting the North Flue Gas Fan and thus being able to restart the WSA, Tokai undertook several key steps. These included magnetic particle tests and dye penetrant tests performed on the fan, and high vibration trips and high bearing trips were set as part of fan operation. As an additional safety measure, Tokai added additional shielding to the fan housing for the North Flue Gas Fan.

On October 11, 2021, Tokai restarted the North Flue Gas Fan and conducted two days of monitoring its operations for any indication of unsafe conditions. On October 13, the plant production shut down and prepared to restart the WSA. Production restarted on October 14, 2021 at a reduced capacity with the North Flue Gas Fan and the WSA in operation.

Tokai continues its investigation into the cause of the Fan incident. Preliminary results to date indicate a metallurgy issue/welding issue within the fan, but results are not final at this time. While the investigation continues, the investigation has not identified any foreseeable or avoidable activity by Tokai causing the incident. Further, the investigation has not identified any failure to properly operate or maintain the equipment by Tokai or the failure to observe good engineering or maintenance practices by Tokai.

As indicated above, the Borger facility has been at reduced production (about 60% of plant capacity) since the October 2 incident and anticipates that it will remain at reduced production until the end of January 2022 based on the manufacturer's current estimate, until another fan can be obtained. The was a 14-foot diameter fan, and a replacement fan has to be customed made.

Tokai has met the Section 77 criteria to establish an affirmative defense with respect to the Fan Incident.

Under Section 77 of the CD, Tokai must demonstrate certain factors set out below. Tokai would show the following:

Consent Decree Section 77 Provision	Discussion
a. The excess emissions were caused by a sudden, unavoidable breakdown of technology, beyond Defendant's control;	The Fan incident was a sudden problem that Tokai could not have avoided. Tokai had no warning that the Fan was about to suffer a catastrophic failure and there are no indications that any actions on the part of Tokai contributed to the failure.
b. The excess emissions did not stem from any activity or event that was foreseeable and avoidable, nor could have been avoided by operation and maintenance practices in accordance with manufacturers' specifications and good engineering and maintenance practices;	The Fan incident was not anticipated. It was a sudden occurrence. A review of the past fan operations did not identify any deficiencies in Tokai's operations and maintenance practices. This situation was unavoidable on the part of Tokai.
c. The air pollution control equipment and processes were maintained and operated in a manner consistent with good practice for minimizing emissions;	The Fan had been operated in a manner consistent with good practices.
d. Repairs were made as expeditiously as practical when Defendant knew or should have known that the applicable 3-hour Average Emissions Limit, or a 7-day Rolling Average Emissions Limit was being or would be exceeded;	As discussed above, Tokai made every effort to restart the operations of the WSA as soon as possible consistent with the safety of plant personnel.
e. Defendant took measures to limit the amount and duration of the excess emissions (including any bypass) in a manner consistent with good practice for minimizing emissions;	Tokai took measure to minimize the emissions by reducing production and as of the date of this letter continues to operate at reduced production.
f. All practical steps were taken to minimize the impact of the excess emissions on ambient air quality;	Tokai took measure to minimize the emissions by reducing production and as of the date of this letter continues to operate at reduced production.

g. Relevant emission monitoring systems were kept in operation to the extent practical;	NA
h. Defendant's actions in response to the excess emissions were documented by properly signed or otherwise validated contemporaneous operating logs, if applicable, or other relevant evidence;	The plant keeps various operational logs and these logs are maintained at the facility.
i. The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance; and	The Fan incident was an unanticipated catastrophic event and is not part of a pattern of inadequate performance.
j. Defendant properly and promptly notified Plaintiffs as required by this Consent Decree.	Tokai maintained regular contact with DOJ throughout the event and discussed the issues and measures being taken to address them.

As previously set out in our October 28, 2021, Tokai Carbon CB considers the Fan incident to be a malfunction with the meaning of the Consent Decree and asserts an affirmative defense with respect to this matter.

We appreciate your consideration of our request. As always, we are available to answer any questions or provide additional information if needed.

Sincerely,

Long B. Nguyen