**AK Steel Corporation**
4001 Miller Road
Dearborn, MI 48120-1699

TELEPHONE (313) 317-8955

**LaDale Combs**
*General Manager*
*Dearborn Works*

April 30, 2019

***Via E-Mail***

United States (eescasemanagement.enrd@usdoj.gov)
Louise Gross, EPA (gross.louise@epa.gov)
Daniel Schauefelberger, EPA (schaufelberger.daniel@epa.gov)
Neil Gordon, MDEQ (Gordonn1@michigan.gov)
Michael Kovalchick, MDEQ (kovalchickm@michigan.gov)
Wilhemina McLemore, MDEQ (MclemoreW@michigan.gov)

Subject: AK Steel Dearborn Works – Civil Action No. 15-cv-11804
DJ # 90-5-2-1-10702

In accordance with the Consent Decree in the above-referenced action, attached is the Paragraph 20 report regarding review of Continuous Opacity Monitoring (COM) data for the first quarter of 2019. If you have any questions regarding this report, please contact Jim Earl at 313-845-3217.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

LaDale Combs
General Manager, Dearborn Works

**1st Quarter 2019 Data Overview**

During the first quarter of 2019, AK Steel experienced 532 events (excluding steam events) on which the 6-minute opacity block average exceeded 20%. This represents 2.5% of the number of 6-minute periods in the quarter. The breakdown of opacity events per month showed that January, February, and March experienced 50, 128, and 354 20% opacity events respectively. A general breakdown of these alarms is provided below with a more detailed breakdown provided in the attached report.

Of these alarms, 42 were attributed to isolated cases where either low power levels on a particular field or a field tripping out of service during the heat were primary contributors to the opacity alarms. 109 alarms were attributed to either startups / shutdowns or to periods of abnormal downtime in BOF operation. Alarms of this type have been documented in previous reports and are primarily due to the design of the conditioning system for the ESP off gas. Water sprays that are used to condition the gas are triggered by off gas temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. In the winter months, the condition is amplified as the ESP cools much quicker, and relatively short periods of BOF downtime have the potential to have a larger impact on the overall ESP gas conditioning system.

The majority of alarms occurred due to more general causes associated with the ESP and the gas conditioning system themselves. First of all, an ESP compartment was out of service for the majority of the quarter due to annual maintenance. During the first quarter, annual maintenance was completed on ESP compartments 6 and 7. The ESP typically operates efficiently when 7 of the 8 compartments are online. However, when a compartment is offline for annual maintenance, less flexibility exists to make adjustments while still maintaining optimal draft at the BOF vessels. Adjustments typically consist of balancing flow through each of the ESP compartments by adjusting the outlet louvers to those compartments. To maintain optimal draft, outlet louvers that are closed usually need to be offset by opening other outlet louvers. This balancing is a delicate process and is usually performed after consultation among BOF management as to the pros and cons of making certain adjustments. Because of this, more alarms typically occur when an ESP compartment is offline than when all eight compartments are in service. In addition, it is not feasible to isolate additional compartments to repair grounds in certain fields while a compartment is down for maintenance. These types of repairs have to await the completion of maintenance on the compartment before they can be initiated.

The second primary factor driving the increase in the number of alarms was a high incidence of dust buildup within the compartments. Dust buildup has the potential to ground out fields in the ESP if it reaches high enough within the compartments. In addition, even if the dust buildup does not ground out the field, it still has the potential to dramatically affect power levels within the compartment where the buildup is taking place. Dust buildup is not a new issue, but between February and March, the number of instances greatly increased. The majority of field grounds were due to dust buildup in the compartment that would bridge in the hoppers and accumulate instead of the dust being removed by the screw. Dust has historically been removed through aggressive hammering on the hoppers. However, this was far less effective during the first quarter of 2019. It is believed that the changes to the properties of the dust are primarily related to insufficient gas conditioning.

The third primary factor relates to the gas conditioning itself. The gas conditioning system consists of water sprays to cool the off gas prior to entering the ESP, steam that can be injected into the downcomer, and the ductwork that conveys the gas from the BOF vessels to the ESP. The primary factors that can adversely affect gas conditioning are insufficient water and tramp air in-leakage in the ductwork and the ESP shell itself. The water spray system on each vessel consists of 7 banks of nozzles in the lower portion of the ductwork whose primary function is to cool the offgas. 2 banks of nozzles (known as the 8 and 9 banks) are located further up in the ductwork. The nozzles within these banks are air assisted and provide highly atomized water droplets whose function is to encapsulate particulate, making it easier to collect. Particle resistivity typically increases with water addition which improves ESP collection efficiency. Air in-leakage can lead to excess cooling within the ESP which can cause corrosion and hardening of material, leading to accumulation within the hoppers. The steam injection serves a vital function as a bridge during the time period at the start of the heat when off gas temperature is not high enough to activate the water sprays. During this time period, the steam provides heat to the ESP and also provides moisture until the water sprays have activated. The primary corrective actions taken focused on all three of these factors.

Several containment strategies and corrective actions were employed to minimize the opacity alarms. First of all, in cases where several fields were offline, the ESP annual maintenance was paused so that most grounds could be repaired within the compartments before the resumption of the annual maintenance. Secondly, the water spray nozzles for banks 1-7 on both vessels were all changed out in March. Plans are in place to change out the 8 and 9 bank nozzles. Next, the feed to the 8 and 9 bank nozzles was switched from air to nitrogen to provide greater gas pressure to the nozzles with correspondingly better atomization. This change allowed for the water flow on the 8 and 9 banks to be increased which has greatly improved the gas conditioning. Finally, adjustments were made to the steam programming in the form of increased steam during the charge and blow to provide for better gas conditioning. In addition, during the time frame from mid-February through March, vacuum truck crews were maintained on site for all shifts to assist with cleaning material out of the hoppers. In addition, an ESP consultant was onsite to coordinate the annual maintenance and to direct extensive patching efforts as needed. Through April 22, 41 20% ESP alarms have occurred. It is believed that these efforts as well as warmer weather are primarily responsible for the decrease from March.

Despite all the repairs, air in-leakage remains an issue that is further amplified during the winter months. AK Steel has been receiving bids related to the rebuilding of the ESP and portions of the gas conditioning system. Current plans call for the replacement of the A-Vessel Wye-Section, downcomer, and ESP inlet and outlet manifolds during an extended outage around the October 2019 time frame. These areas are all sources of air in-leakage and it is believed that their replacement will greatly assist with ESP performance. Once this is completed, AK Steel plans to add a 9$^{th}$ compartment to the ESP to provide extra capacity. Once the 9$^{th}$ compartment is online, the general plan is to rebuild the ESP compartment by compartment over a 4-5 year time frame.

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/2/19 7:18 AM | 20.9 | Compartment 6 was out of service for maintenance. Field 7A experienced low power levels for the entire heat. | N/A | Power off rapping was performed on field 7A after the completion of the heat. |
| 1/4/19 10:48 AM | 21.9 | Compartment 6 was out of service for maintenance. Field 1-2C tripped out of service mid way through the heat. | N/A | Field 1-2C was reset and returned to service prior to the following heat. |
| 1/13/19 6:54 PM | 24.3 | Compartment 6 was out of service for maintenance. Fields 1A, 2A, 3A, 7A, and 8A all experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, and 4A after the completion of the heat. |
| 1/15/19 5:54 PM | 26.3 | Compartment 6 was out of service for maintenance and fields 2C and 7D were out of service due to grounds. Field 7A experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, 4A, 7A, 1C, and 1-2D after the completion of the heat. |
| 1/15/19 6:54 PM | 20.6 | Compartment 6 was out of service for maintenance and fields 2C and 7D were out of service due to grounds. Field 7A experienced low power levels for the last third of the heat. | N/A | Power off rapping was performed on fields 1A, 3A, 4A, 7A, and 8A after the completion of the heat. |
| 1/15/19 9:36 PM | 23.3 | Compartment 6 was out of service for maintenance and fields 2C and 7D were out of service due to grounds. Field 7A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 1A and 7A after the completion of the heat. |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/22/19 5:00 PM | 22.7 | Compartment 6 was out of service for maintenance and fields 2C and 7D were out of service due to grounds. Field 7A experienced low power levels for the entire heat. | N/A | Power off rapping was performed on fields 2A, 4A, and 7A after the completion of the heat. The compartment 7 outlet louver was closed 2% to direct flow away from that compartment. |
| 2/3/19 12:36 PM | 22.6 | Fields 2C and 7D were out of service due to grounds. Fields 6A and 8A both experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 6A, 7A, and 8A after the completion of the heat. |
| 2/3/19 12:42 PM | 28.3 | | | |
| 2/8/19 11:06 PM | 39.9 | Fields 2C and 7D were out of service due to grounds. Field 7A experienced low power levels for the entire heat. | N/A | Power off rapping was performed on fields 1A-7A after the completion of the heat. |
| 2/9/19 12:06 AM | 20.5 | Fields 2C and 7D were out of service due to grounds. Field 7A experienced low power levels for the final third of the heat. | N/A | Power off rapping was performed on compartments 1-4, 7, and 8 A, C, and D fields after the completion of the heat. |
| 2/11/19 6:42 PM | 30.8 | Compartment 7 was out of service for maintenance and fields 2C, 8D, and 5-6C were out of service due to grounds. Field 6A experienced low power levels at the end of the heat. | N/A | Field 5-6C was returned to service after the completion of the following heat. Power off rapping was performed on fields 5A and 6A after the completion of the heat. |
| 2/11/19 6:48 PM | 30.7 | | | |
| 2/11/19 10:12 PM | 25.1 | Compartment 7 was out of service for maintenance and fields 2C and 8D were out of service due to grounds. Fields 1A and 6A both experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 1C, 5A, 6A, and 5-6C after the completion of the heat. |
| 2/11/19 10:18 PM | 21.1 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/12/19 12:30 AM | 23.7 | Compartment 7 was out of service for maintenance and fields 2C and 8D were out of service due to grounds. Field 6A experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 5A, 6A, and 8C after the completion of the heat. |
| 2/12/19 12:36 AM | 39.1 | | | |
| 2/12/19 12:42 AM | 25.1 | | | |
| 2/18/19 9:36 AM | 21.2 | Compartment 2 was out of service for maintenance and fields 1D, 4C, and 7-8D were out of service due to grounds. Field 6A experienced low power levels for the last third of the heat. | N/A | Power off rapping was performed on fields 1A, 3A, 4A, 6A, and 5-6C after the completion of the heat. |
| 2/18/19 9:42 AM | 24.3 | | | |
| 2/18/19 9:48 AM | 24.9 | | | |
| 2/23/19 3:12 AM | 34.7 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 5-6E tripped out of service early in the heat. | N/A | Field 5E was isolated and field 6E was returned to service prior to the following heat. Power off rapping was performed on fields 1A, 2A, 1-2C, 1-2D, and 6A after the completion of the heat. |
| 2/25/19 12:36 AM | 23.6 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 6A experienced low power levels for the last third of the heat. | N/A | Power off rapping was performed on Compartment 1-4 A, C, and D fields and on field 6A after the completion of the heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/26/19 11:36 AM | 21.2 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 7A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on field 7A after the completion of the heat. |
| 3/1/19 11:24 AM | 33.9 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 2A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 1A and 2A after the completion of the heat. |
| 3/1/19 2:30 PM | 33.9 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 2A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on field 2A after the completion of the heat. |
| 3/3/19 12:42 AM | 27.0 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 3-4C tripped out of service prior to the heat. | N/A | Field 3-4C was returned to service in the middle of the heat. Power off rapping was performed on fields 3A, 4A, 3-4C, and 3-4D after the completion of the heat. |
| 3/3/19 12:48 AM | 47.3 | | | |
| 3/5/19 2:24 AM | 23.2 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 6A experienced low power levels for the entire heat. | N/A | Power off rapping was performed on fields 6A and 6C after the completion of the heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/5/19 8:36 PM | 29.4 | Compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. Field 2A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, and 6A after the completion of the heat. |
| 3/6/19 3:36 PM | 28.0 | Compartment 8 was out of service for maintenance and fields 7D and 5C were out of service due to grounds. Field 2A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, and 3A after the completion of the heat. |
| 3/9/19 9:42 AM | 20.6 | Compartment 8 was out of service for maintenance and fields 2A and 7D were out of service due to grounds. Field 5A experienced low power levels for the entire heat. | N/A | Power off rapping was performed on fields 3A, 5A, 6A, and 5-6C after the completion of the heat. |
| 3/17/19 3:48 PM | 31.8 | Compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. Field 5-6C tripped out of service prior to the heat. | N/A | Power off rapping was performed on fields 1A, 3A, 1-2C, 3-4C, 1-2D, 3-4D, and 7-8C after the completion of the heat. Field 6C was isolated and 5C was returned to service prior to the following heat. |
| 3/17/19 3:54 PM | 32.6 | | | |
| 3/19/19 1:54 PM | 24.6 | Compartment 8 was out of service for maintenance and field 6C was out of service due to a ground. Field 2A experienced low power levels for the final 2/3 of the heat. | N/A | Power off rapping was performed on fields 2A, 3A, and 6A after the completion of the heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/19/19 2:24 PM | 28.5 | Compartment 8 was out of service for maintenance and field 6C was out of service due to a ground. Field 2A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 4A, 5A, 6A, and 3-4C after the completion of the heat. |
| 3/19/19 3:12 PM | 27.5 | Compartment 8 was out of service for maintenance and field 6C was out of service due to a ground. Field 2A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 2A and 3-4C after the completion of the heat. |
| 3/19/19 3:54 PM | 25.0 | Compartment 8 was out of service for maintenance and field 6C was out of service due to a ground. Field 2A experienced low power levels for the final 2/3 of the heat. | N/A | Power off rapping was performed on fields 1A and 2A after the completion of the heat. |
| 3/19/19 4:54 PM | 26.4 | Compartment 8 was out of service for maintenance and field 6C was out of service due to a ground. In addition, field 2A experienced low power levels for the final 2/3 of the heat and field 3-4C tripped out of service just prior to the heat. | N/A | Power off rapping was performed on field 2A after the completion of the heat. Field 4C was isolated and 3C was returned to service during the heat. |
| 3/28/19 4:06 AM | 28.6 | Compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. In addition, fields 1A, 2A, and 3A all experienced low power levels for the final 1/3 of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, and 3A after the completion of the heat. |
| 3/28/19 4:12 AM | 35.2 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances were due either to low power levels on certain fields during the heat or to a field tripping out either during or just prior to a heat. When low power levels on certain fields persist towards the end of a heat, power-off rapping is performed on those fields once the heat is completed. If a C, D, or E field trips out, the field can usually be sectionalized and one of the C, D, or E fields can usually be returned to service. Adjustments to compartment outlet dampers can be made if needed to direct flow away from areas of the ESP that have fields offline.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/31/19 9:06 PM | 27.7 | Field 4C was out of service due to a ground. Field 6A experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 4A, 5A, 6A, 7A, 3-4C, and 5-6C after the completion of the heat. |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/4/19 6:24 AM | 21.1 | Approximately 1 hour 6 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and field 5C experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 5A, 5C, and 5D after the completion of the heat. |
| 1/5/19 12:54 PM | 23.7 | Approximately 1 hour 20 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on fields 1A, 3A, 4A, and 5A after the completion of the heat. |
| 1/5/19 8:42 PM | 23.7 | Approximately 1 hour 23 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on Compartments 1-4, 7, and 8 A, C, and D fields after the completion of the heat. |
| 1/5/19 11:00 PM | 24.1 | Approximately 1 hour 4 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on fields 1A, 2A, 5A, 1-2C, 5C, 1-2D, and 5D after the completion of the heat. |
| 1/6/19 7:36 AM | 29.6 | Approximately 1 hour 25 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on Compartments 1-4 A, C, and D fields after the completion of the heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/6/19 7:36 AM | 21.1 | Approximately 1 hour 18 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on fields 4A, 5A, 6A, 7A, and 8A after the completion of the heat. |
| 1/7/19 10:30 AM | 23.8 | Approximately 1 hour 18 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 1A, 8A, and 5C all experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 3A, 4A, 7A, 8A, 1-2C, and 5-6C after the completion of the heat. |
| 1/7/19 10:36 AM | 26.3 | | | |
| 1/7/19 7:36 PM | 28.1 | Approximately 1 hour 58 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and field 8A experienced low power levels for the second half of the heat. | N/A | No corrective action was taken. |
| 1/7/19 9:24 PM | 49.1 | Approximately 1 hour 29 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 1A, 3A, 8A, and 5-6C all experienced low power levels for the last third of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, and 4A after the completion of the heat. |
| 1/7/19 9:30 PM | 65.1 | | | |
| 1/7/19 10:48 PM | 23.1 | Approximately 56 minutes 20 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on fields 1A, 2A, 4A, 7A, 8A, 1-2C, 3-4C, and 1-2D after the completion of the heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/8/19 1:36 AM | 25.3 | Approximately 39 minutes 7 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, 4A, 5A, 3-4C, and 5C after the completion of the heat. |
| 1/13/19 9:12 AM | 58.5 | Approximately 1 hour 42 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and field 8C experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 4A, 1-2C, 3-4C, and 8C after the completion of the heat. |
| 1/13/19 9:18 AM | 60.1 | | | |
| 1/13/19 9:24 AM | 36.2 | | | |
| 1/22/19 5:48 AM | 37.4 | Approximately 1 hour 20 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 2A, 2C, and 7D were out of service due to grounds. | N/A | Power off rapping was performed on field 5C after the completion of the heat. Field 2A was returned to service at the end of the heat. |
| 1/22/19 5:54 AM | 23.0 | | | |
| 1/22/19 8:48 AM | 24.3 | Approximately 2 hour 29 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance, fields 2C and 7D were out of service due to grounds, field 2A tripped out of service at the start of the heat, and field 8A experienced low power levels for the second half of the heat. | N/A | Power off rapping was performed on fields 4A and 8A after the completion of the heat. Field 2A was returned to service prior to the following heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/23/19 3:54 PM | 20.7 | Approximately 1 hour 21 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 2C and 7D were out of service due to grounds. | N/A | Power off rapping was performed on fields 2A and 8A after the completion of the heat. |
| 1/28/19 9:42 AM | 25.7 | Approximately 1 hour 22 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds and fields 6A and 8A experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, 4A, 6A, and 8A after the completion of the heat. |
| 2/2/19 2:24 AM | 24.7 | Approximately 2 hour 28 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds and field 7A experienced low power levels for the last 2/3 of the heat. | N/A | No corrective action was taken. |
| 2/3/19 9:06 AM | 23.7 | Approximately 14 hour 30 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds and fields 6A and 8A both experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on all A and C-fields after the completion of the heat. |
| 2/3/19 2:48 PM | 26.7 | Approximately 1 hour of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | Power off rapping was performed on all A and C-fields after the completion of the heat. |
| 2/3/19 2:54 PM | 41.7 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/3/19 4:18 PM | 23.7 | Approximately 1 hour 9 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, 4A, and 7A after the completion of the heat. |
| 2/3/19 4:24 PM | 23.7 | | | |
| 2/3/19 11:42 PM | 22.4 | Approximately 1 hour 5 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | Power off rapping was performed on compartment 1-4, 7, and 8 A, C, and D fields. |
| 2/5/19 5:30 AM | 20.6 | Approximately 59 minutes 28 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | No corrective action was taken. |
| 2/5/19 1:30 PM | 25.3 | Approximately 1 hour 18 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | Power off rapping was performed on fields 1A, 2A, 7A, and 7-8C after the completion of the heat. |
| 2/27/19 5:06 AM | 22.0 | Approximately 51 minutes 58 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. | N/A | Power off rapping was performed on compartments 3-6 A, C, and D fields after the completion of the heat. |
| 2/27/19 5:12 AM | 23.1 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/5/19 3:42 PM | 26.3 | Approximately 1 hour 53 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds and fields 7A, 8A, and 5-6C experienced low power levels al the end of the heat. | N/A | Power off rapping was performed on fields 1A and 2A after the completion of the heat. |
| 2/5/19 3:48 PM | 36.5 | | | |
| 2/5/19 3:54 PM | 24.7 | | | |
| 2/7/19 10:12 PM | 22.4 | Approximately 1 hour 16 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | No additional corrective action was taken. |
| 2/7/19 10:18 PM | 43.1 | | | |
| 2/8/19 10:00 AM | 43.7 | Approximately 8 hours 57 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, fields 2C and 7D were out of service due to grounds. | N/A | No additional corrective action was taken. |
| 2/20/19 6:06 AM | 33.9 | Approximately 55 minutes 56 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 4 was out of service for maintenance and fields 7-8D were out of service due to grounds. | N/A | No additional corrective action was taken. |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/21/19 9:06 PM | 20.6 | Approximately 2 hours 48 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and fields 7D and 5E were out of service due to grounds. | N/A | Power off rapping was performed on fields 1A, 2A, 3A, 5A, 6A, 7A, and all C-fields after the completion of the heat. |
| 2/28/19 4:12 PM | 29.4 | Approximately 1 hour 59 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, field 7D was out of service due to grounds, and field 5-6C experienced low power levels for the last third of the heat. | N/A | Power off rapping was performed on fields 1A, 3A, 6A, and 5-6C after the completion of the heat. |
| 2/28/19 4:18 PM | 38.1 | | | |
| 2/28/19 4:24 PM | 27.7 | | | |
| 2/28/19 7:06 PM | 27.1 | Approximately 49 minutes 6 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. | N/A | Power off rapping was performed on field 1A after the completion of the heat. |
| 3/1/19 1:24 AM | 21.5 | Approximately 1 hour 1 minute of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. | N/A | No additional corrective action was taken. |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/1/19 8:36 AM | 40.1 | Approximately 2 hours 13 minute of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, field 7D was out of service due to grounds, and fields 2A and 5-6C experienced low power levels for the last half of the heat. | N/A | Power off rapping was performed on fields 2A and 5-6C after the completion of the heat. |
| 3/1/19 8:42 AM | 26.8 | | | |
| 3/1/19 8:48 AM | 31.2 | | | |
| 3/1/19 6:06 PM | 36.0 | Approximately 45 minutes 48 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. | N/A | No additional corrective action was taken. |
| 3/1/19 3:00 AM | 29.1 | Approximately 2 hours 14 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. | N/A | Power off rapping was performed on fields 1A, 2A, 1-2C, 1-2D, 5A, and 6A after the completion of the heat. |
| 3/1/19 6:06 PM | 23.2 | Approximately 50 minutes 1 second of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 7D was out of service due to grounds. | N/A | No additional corrective action was taken. |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/1/19 3:00 AM | 25.7 | Approximately 1 hours 18 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, field 7D was out of service due to grounds, and field 6A tripped out of service halfway through the heat. | N/A | Field 6A was returned to service during the following heat. |
| 3/5/19 12:30 PM | 48.6 | Approximately 1 hour 6 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, field 7D was out of service due to grounds, and fields 2A experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, and 6A after the completion of the heat. |
| 3/5/19 12:36 PM | 34.4 | | | |
| 3/5/19 12:42 PM | 23.6 | | | |
| 3/14/19 9:18 AM | 27.1 | These four alarms occurred during the first heat after the completion of a 48-hour outage. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, field 2C was out of service due to a ground. | N/A | Power off rapping was performed on fields 3A, 4A, 5A, 6A and on all C-fields after the completion of the heat. |
| 3/14/19 9:24 AM | 38.3 | | | |
| 3/14/19 9:30 AM | 69.4 | | | |
| 3/14/19 9:36 AM | 66.5 | | | |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/14/19 11:18 AM | 22.8 | Approximately 1 hour 28 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. | N/A | Power off rapping was performed on fields 1A, 1C, 2A, 3A, 4A, and 5-6C after the completion of the heat. |
| 3/14/19 11:30 AM | 28.2 | | | |
| 3/14/19 12:36 PM | 22.9 | Approximately 50 minutes 48 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. | N/A | Power off rapping was performed on fields 1A-5A and 7-8C after the completion of the heat. |
| 3/14/19 12:48 PM | 24.1 | | | |
| 3/15/19 7:12 PM | 31.3 | Approximately 1 hour 12 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. | N/A | Power off rapping was performed on fields 1A, 2A, 5A, 6A, 1C, and 5-6C after the completion of the heat. |
| 3/15/19 10:36 PM | 49.7 | The alarms occurred during the first heat on B-Vessel following the completion of a 48-hour outage on 3/14. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. | N/A | Power off rapping was performed on fields 2A and 3A after the completion of the heat. |
| 3/15/19 10:42 PM | 42.4 | | | |
| 3/15/19 10:48 PM | 21.0 | | | |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/17/19 2:48 PM | 50.1 | Approximately 50 minutes 7 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. | N/A | Power off rapping was performed on fields 1A-4A and 6A after the completion of the heat. |
| 3/17/19 2:54 PM | 42.1 | | | |
| 3/17/19 3:00 PM | 28.0 | | | |
| 3/18/19 1:54 AM | 82.9 | Approximately 1 hour 14 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, fields 2C and 6C were out of service due to grounds, and field 5C tripped out of service in the middle of the heat. | N/A | Field 5C was returned to service prior to the following heat. |
| 3/18/19 2:00 AM | 82.9 | | | |
| 3/18/19 2:06 AM | 46.0 | | | |
| 3/19/19 12:48 PM | 50.1 | Approximately 59 minutes 46 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 8 was out of service for maintenance, field 6C was out of service due to grounds, and field 2A experienced low power levels for the majority of the heat. | N/A | Power off rapping was performed on fields 1A, 2A, 5A, and 6A after the completion of the heat. |
| 3/19/19 12:54 PM | 34.4 | | | |
| 3/19/19 6:06 PM | 47.4 | Approximately 57 minutes 2 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 4C and 6C were out of service due to grounds. | N/A | No additional corrective actions were taken. |
| 3/19/19 6:12 PM | 49.5 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/21/19 8:24 AM | 26.4 | Approximately 40 minutes 36 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 6C and 7E were out of service due to grounds. | N/A | No additional corrective actions were taken. |
| 3/22/19 10:36 AM | 22.5 | Approximately 51 minutes 7 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 6C and 7E were out of service due to grounds. | N/A | Power off rapping was performed on fields 3A, 4A, 5A, 7A, and 7-8C after the completion of the heat. |
| 3/22/19 4:12 PM | 42.8 | Approximately 2 hours 4 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 6C and 7E were out of service due to grounds. | N/A | Power off rapping was performed on fields 4A, 5A, 6A, 3-4C, and 7-8C after the completion of the heat. |
| 3/22/19 4:18 PM | 41.1 | | | |
| 3/22/19 6:12 PM | 46.9 | Approximately 1 hour 35 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance, fields 6C and 7E were out of service due to grounds, and fields 1A, 3A, and 6A experienced low power levels at the end of the heat. | N/A | Power off rapping was performed on fields 3A-8A after the completion of the heat. |
| 3/22/19 6:18 PM | 66.4 | | | |
| 3/22/19 6:24 PM | 59.8 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/23/19 2:42 PM | 37.4 | Approximately 4 hours 41 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 6C, 6D, and 7E were out of service due to grounds. | N/A | Power off rapping was performed on all A, C, and D fields after the completion of the heat. |
| 3/23/19 2:48 PM | 57.1 | | | |
| 3/23/19 2:54 PM | 41.3 | | | |
| 3/23/19 4:24 PM | 24.5 | Approximately 1 hour 14 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 6C, 6D, and 7E were out of service due to grounds. | N/A | Power off rapping was performed on all A-fields, 3-4C, and 7-8C after the completion of the heat. |
| 3/23/19 6:06 PM | 30.9 | Approximately 1 hour 28 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 2 was out of service for maintenance and fields 6C, 6D, and 7E were out of service due to grounds. | N/A | Power off rapping was performed on fields 1A, 3A, and 7A after the completion of the heat. |
| 3/23/19 6:12 PM | 45.5 | | | |
| 3/23/19 6:18 PM | 45.5 | | | |
| 3/23/19 6:24 PM | 21.6 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/25/19 9:06 AM | 37.5 | Approximately 1 hour 2 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 5C, 7C, and 7E were out of service due to grounds. | N/A | Power off rapping was performed on compartments 1 and 2 A, C, and D fields after the completion of the heat. |
| 3/25/19 12:36 PM | 41.3 | Approximately 2 hours 49 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 5C, 7C, and 7E were out of service due to grounds. | N/A | Power off rapping was performed on compartments 1-4 A, C, and D fields after the completion of the heat. |
| 3/25/19 12:42 PM | 28.6 | | | |
| 3/27/19 12:36 PM | 29.9 | Approximately 57 minutes 40 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. | N/A | Power off rapping was performed on fields 1A, 2A, 4A, 5A, 7A, and 8A after the completion of the heat. |
| 3/28/19 11:48 AM | 23.3 | Approximately 1 hour 5 minutes of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. | N/A | Power off rapping was performed on all A and C-fields after the completion of the heat. |
| 3/28/19 11:54 AM | 49.1 | | | |
| 3/28/19 12:00 PM | 66.4 | | | |
| 3/28/19 12:06 PM | 37.5 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred following longer than normal periods of BOF downtime. When the BOF melting operations are resumed after an extended downtime period, opacity spikes are likely until steady state conditions are reached. Water sprays to condition the gas sample are triggered by temperature. The ESP is cold after a period of BOF downtime which results in additional condensation within the ESP when the sprays are activated. The ESP is typically reconditioned after one heat.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/28/19 1:06 PM | 20.6 | Approximately 56 minutes 4 seconds of downtime occurred between heats. The ESP temperature cooled which has an effect on gas conditioning. In addition, compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. | N/A | Power off rapping was performed on fields 5A and 7A after the completion of the heat. |
| 3/28/19 1:12 PM | 55.4 | | | |
| 3/28/19 1:18 PM | 53.8 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred either during a startup or a shutdown of the BOF and ESP or during the startup or shutdown on an ESP ID Fan. Procedures for startup and shutdown are in place to minimize instances of elevated opacity. If a pattern of events leading to an elevated opacity is identified, a startup or shutdown procedure can be revised to minimize emissions.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/12/19 9:24 AM | 39.9 | The ESP and associated ID Fans were shut down in preparation for a 48-hour outage. The ESP shutdown procedure was not completely followed. | N/A | The procedure for ESP shutdowns was modified to add some clarity to when certain steps are to be taken. |
| 3/12/19 9:30 AM | 37.9 | | | |
| 3/12/19 9:36 AM | 34.2 | | | |
| 3/12/19 9:42 AM | 27.8 | | | |
| 3/14/19 4:30 AM | 30.9 | The ESP and associated ID Fans were restarted after the completion of a 48-hour outage. The startup procedure was verified to have been followed. Steam interference could not be verified due to steam from other sources obscuring the stack. | N/A | No additional corrective action was taken. |
| 3/14/19 4:36 AM | 41.3 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/8/19 12:30 PM | 23.2 | A hole in the inlet duct to the No. 2 ID Fan was causing extra disturbance within the compartments directly over that ID Fan (compartments 3 and 4). | N/A | Power off rapping was performed as needed between heats. The hole was patched during the day shift on 1/9. |
| 1/9/19 7:12 PM | 28.7 | | | |
| 1/13/19 3:36 AM | 21.6 | Dust density probes indicated that compartments 2 and 3 were experiencing heavy particulate loading towards the end of heats. | N/A | Power off rapping was performed as needed between heats. The outlet damper for compartment 3 was closed 10% to direct flow away from that compartment. Finally, the end of heat draft ramp down was increased to decrease the load on the ESP at the end of the heat. |
| 1/13/19 7:06 AM | 21.9 | | | |
| 1/13/19 10:06 AM | 28.7 | | | |
| 1/13/19 11:00 AM | 29.4 | | | |
| 1/13/19 11:48 AM | 21.8 | | | |
| 1/13/19 12:36 PM | 20.8 | | | |
| 1/28/19 10:30 AM | 21.7 | A large opacity spike occurred during a reblow on B-Vessel. In addition, fields 2C and 7D were out of service due to grounds. | | Power off rapping was performed on fields 1A, 2A, 3A, 4A, and 7A after the completion of the heat. |
| | | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/30/19 5:54 AM | 33.7 | Water flow to the 8 and 9 spray banks was lost due to extreme cold temperatures. | N/A | Power off rapping was performed as needed between heats. The water lines feeding bank 9 were thawed out and bank 9 was returned to service by ~1:00 PM on 1/30. Adjustments were made to the No. 2 spray bank to increase water flow to compensate for the lack of water from the 8 and 9 banks. Bank 8 was returned to service around 3:00 PM on 1/31. |
| 1/30/19 6:24 AM | 22.5 | | | |
| 1/30/19 7:12 AM | 25.3 | | | |
| 1/30/19 8:00 AM | 26.9 | | | |
| 1/30/19 8:12 AM | 25.4 | | | |
| 1/30/19 8:54 AM | 23.6 | | | |
| 1/30/19 10:18 AM | 31.6 | | | |
| 1/31/19 1:36 AM | 52.1 | | | |
| 1/31/19 5:18 AM | 22.8 | | | |
| 1/31/19 7:18 AM | 31.8 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/31/19 7:24 AM | 22.9 | Water flow to the 8 and 9 spray banks was lost due to extreme cold temperatures. | N/A | Power off rapping was performed as needed between heats. The water lines feeding bank 9 were thawed out and bank 9 was returned to service by ~1:00 PM on 1/30. Adjustments were made to the No. 2 spray bank to increase water flow to compensate for the lack of water from the 8 and 9 banks. Bank 8 was returned to service around 3:00 PM on 1/31. |
| 1/31/19 7:30 AM | 38.2 | | | |
| 1/31/19 7:36 AM | 34.9 | | | |
| 2/1/19 1:36 AM | 25.3 | Material buildup in compartment 7 was causing power problems with field 7A. In addition, fields 2C and 7D were out of service due to grounds. | N/A | Power off rapping was performed as needed between heats with the focus being on field 7A. A contractor was called in to assist with cleaning the buildup out of compartment 7. |
| 2/1/19 2:36 AM | 28.6 | | | |
| 2/1/19 2:42 AM | 25.6 | | | |
| 2/1/19 4:36 AM | 25.1 | | | |
| 2/3/19 1:30 PM | 34.0 | The root cause could not be determined. Fields 2C and 7D were out of service due to grounds. | See Attachment 1 | Power off rapping was performed on all A and C-fields after the completion of the heat. |
| 2/6/19 1:24 AM | 27.2 | A/V had completed its burn-in process after being relined. Previously, A-Vessel had been offline for over 1 month. Conditioning problems were experienced for the first 2 heats after coming online as the conditioning equipment had also not been extensively used during the previous month. Fields 2C and 7D were also out of service due to grounds. | N/A | A draft ramp-down was implemented to reduce the loading to the ESP at the end of the heat. Adjustments were also made to the water sprays to allow for more water flow. |
| 2/6/19 2:24 AM | 23.2 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/6/19 2:30 AM | 27.2 | A/V had completed its burn-in process after being relined. Previously, A-Vessel had been offline for over 1 month. Conditioning problems were experienced for the first 2 heats after coming online as the conditioning equipment had also not been extensively used during the previous month. Fields 2C and 7D were also out of service due to grounds. | N/A | A draft ramp-down was implemented to reduce the loading to the ESP at the end of the heat. Adjustments were also made to the water sprays to allow for more water flow. |
| 2/6/19 6:00 AM | 21.3 | The root cause could not be determined. Fields 2C and 7D were out of service due to grounds. | See Attachment 2 | No corrective action was taken. |
| 2/7/19 3:06 PM | 30.0 | A reaction in the vessel lead to a spike in the off gas temperature and a lance pull. This is not a common occurrence. | N/A | No corrective action was taken. |
| 2/7/19 3:12 PM | 25.3 | | | |
| 2/7/19 11:12 PM | 23.0 | Compartment 6 and 7 both had levels of dust buildup that was affecting the power levels within those compartments. In addition, fields 2C and 7D were out of service due to grounds. | N/A | A contractor was called in to assist with cleaning the buildup out of compartments 6 and 7. |
| 2/8/19 4:36 AM | 46.8 | Heavy emissions were observed at the A-Vessel lance hole during this heat indicating that the heat was very reactive. | N/A | Power off rapping was performed on Compartments 1,2,7, and 8 A,C, and D fields and on fields 3A, 4A, 5A, and 6A after the completion of the heat. |
| 2/8/19 4:42 AM | 26.5 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/7/19 9:42 AM | 20.8 | It is believed that a combination of large ambient temperature swings and wet ambient conditions were the primary contributors to these alarms. The ESP spray water banks and steam program have different set points for warmer weather and cooler weather that are designed to provide for optimum gas conditioning while also minimizing extra moisture introduction. With temperature changes this drastic, it is difficult to select the appropriate set points to use. Fields 2C and 7D were also out of service as this time due to grounds. | N/A | Power off rapping was performed as needed between heats. The No. 5 compartment outlet louver was closed 2% during the day to direct flow away from that compartment. Extra nozzles on some of the spray banks were also opened to increase the amount of moisture to improve the gas conditioning. |
| 2/7/19 2:06 PM | 21.4 | | | |
| 2/7/19 2:12 PM | 23.6 | | | |
| 2/7/19 3:54 PM | 28.2 | | | |
| 2/7/19 4:00 PM | 39.4 | | | |
| 2/7/19 5:00 PM | 27.4 | | | |
| 2/7/19 5:06 PM | 28.4 | | | |
| 2/7/19 6:00 PM | 27.1 | | | |
| 2/7/19 6:06 PM | 24.7 | | | |
| 2/7/19 6:54 PM | 21.8 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/9/19 1:00 AM | 32.0 | Fields 2C and 7D were both out of service due to grounds. Due to dust buildup in compartment 7, field 7A was experiencing low power levels. | N/A | Power off rapping was performed as needed between heats with the focus being on compartment 7 fields. A contractor was called in to assist with cleaning the buildup out of compartment 7. The buildup was removed and field 7A power levels returned to normal levels. |
| 2/9/19 1:06 AM | 39.0 | | | |
| 2/9/19 1:48 AM | 21.0 | | | |
| 2/9/19 1:54 AM | 23.8 | | | |
| 2/9/19 2:12 AM | 22.7 | | | |
| 2/9/19 2:18 AM | 20.8 | | | |
| 2/9/19 2:24 AM | 40.2 | | | |
| 2/9/19 2:30 AM | 50.8 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/9/19 5:30 PM | 38.2 | Fields 2C and 7D were out of service due to grounds. Compartment 7 again experienced significant dust buildup that caused low power on field 7A for the majority of the heats. | N/A | Power off rapping was performed as needed between heats with the focus being on compartment 7 fields. A contractor was called in to assist with cleaning the buildup out of compartment 7. The buildup was removed but 7A power levels continued to struggle. Compartment 7 was taken out of service for annual maintenance on the morning of 2/11. |
| 2/9/19 8:48 PM | 24.8 | | | |
| 2/9/19 9:36 PM | 25.6 | | | |
| 2/9/19 11:30 PM | 20.6 | | | |
| 2/10/19 12:36 AM | 55.4 | | | |
| 2/10/19 12:42 AM | 66.4 | | | |
| 2/10/19 2:24 AM | 24.2 | | | |
| 2/10/19 2:30 AM | 23.7 | | | |
| 2/10/19 4:12 AM | 28.8 | | | |
| 2/10/19 4:18 AM | 25.0 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/10/19 6:12 AM | 33.1 | Fields 2C and 7D were out of service due to grounds. Compartment 7 again experienced significant dust buildup that caused low power on field 7A for the majority of the heats. | N/A | Power off rapping was performed as needed between heats with the focus being on compartment 7 fields. A contractor was called in to assist with cleaning the buildup out of compartment 7. The buildup was removed but 7A power levels continued to struggle. Compartment 7 was taken out of service for annual maintenance on the morning of 2/11. |
| 2/10/19 6:18 AM | 23.5 | | | |
| 2/10/19 7:42 AM | 27.1 | | | |
| 2/10/19 7:48 AM | 32.6 | | | |
| 2/10/19 7:54 AM | 22.9 | | | |
| 2/10/19 9:06 PM | 24.1 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

For the following instances, either a root cause could not be identified or the root cause is different than what is discussed elsewhere.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/7/19 6:42 AM | 22.1 | Spray water cut back late in the heat as the temperature of the vessel off gas dipped. The lack of conditioning led to an opacity spike. | N/A | This type of opacity spike continues to be investigated. It is believed that ESP collecting plates are getting coated early in the heat which is affecting ESP performance towards the end of the heat. The adjustments to increase water flow on the 8 and 9 banks as well as increasing steam output during charging and blowing have lead to a significant reduction in these type of alarms since the end of the first quarter. |
| 2/8/19 9:48 AM | 22.3 | | | |
| 2/17/19 7:12 PM | 32.3 | | | |
| 2/17/19 7:18 PM | 22.0 | | | |
| 2/18/19 8:36 AM | 34.0 | | | |
| 2/20/19 7:00 AM | 27.1 | | | |
| 2/27/19 3:06 AM | 27.3 | | | |
| 2/27/19 3:12 AM | 20.6 | | | |
| 2/28/19 3:42 AM | 25.2 | | | |
| 2/27/19 3:54 AM | 21.5 | | | |
| 2/27/19 4:00 AM | 20.6 | | | |
| 2/28/19 2:48 AM | 21.6 | | | |
| 2/28/19 5:30 AM | 22.4 | | | |
| 3/1/19 1:00 PM | 23.2 | | | |
| 3/1/19 4:12 PM | 22.9 | | | |
| 3/1/19 7:00 PM | 28.5 | | | |
| 3/1/19 7:54 PM | 24.0 | | | |
| 3/1/19 10:42 PM | 23.8 | | | |
| 3/11/19 2:48 PM | 20.9 | | | |
| 3/16/19 2:36 AM | 29.0 | | | |
| 3/16/19 3:54 AM | 32.1 | | | |
| 3/17/19 9:24 PM | 28.2 | | | |
| 3/18/19 2:36 AM | 26.3 | | | |
| 3/18/19 8:42 AM | 25.6 | | | |
| 3/18/19 8:48 AM | 25.2 | | | |
| 3/28/19 3:18 AM | 22.9 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

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| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 2/13/19 7:54 AM | 21.9 | Compartment 7 was out of service for maintenance and fields 2C and 8D were out of service due to grounds. Field 1A tripped out of service earlier in the morning. | N/A | Power off rapping was performed as needed between heats. Field 1A was returned to service at 12:36. Louver adjustments were made during the course of the day to increase draft at the A-Vessel lance hole and additional louver adjustments were made as needed to tune the ESP. |
| 2/13/19 8:06 AM | 28.1 | | | |
| 2/13/19 9:36 AM | 31.5 | | | |
| 2/13/19 10:24 AM | 43.8 | | | |
| 2/13/19 11:24 AM | 23.8 | | | |
| 2/13/19 11:30 AM | 25.3 | | | |
| 2/13/19 12:36 PM | 27.2 | | | |
| 2/13/19 12:42 PM | 39.0 | | | |
| 2/13/19 1:54 PM | 25.3 | | | |
| 2/13/19 2:00 PM | 42.9 | | | |
| 2/13/19 2:06 PM | 40.5 | | | |
| 2/13/19 3:00 PM | 30.9 | | | |
| 2/13/19 3:18 PM | 22.4 | | | |
| 2/14/19 6:48 AM | 31.0 | Compartment 7 was out of service and fields 2C and 8D were out of service due to grounds. Field 1-2D tripped out of service during the 6:48 heat. | N/A | Power off rapping was performed as needed between heats. The decision was made to pause the maintenance in compartment 7 and to resume it only after the grounds in the other fields had been cleared. Compartment 7 was returned to service on the afternoon of 2/15 and Compartment 2 was taken out of service soon afterwards. |
| 2/14/19 9:54 AM | 22.4 | | | |
| 2/15/19 1:06 AM | 23.7 | | | |
| 2/15/19 6:42 AM | 25.7 | | | |
| 2/15/19 9:36 AM | 33.1 | | | |
| 2/22/19 6:00 AM | 24.6 | Compartment 8 was out of service for maintenance and fields 7D and 5E were out of service due to grounds. Dust density levels for compartments 2 and 5 indicated that these 2 compartments were receiving more PM loading than the other compartments. | N/A | Power off rapping was performed as needed between heats. During the day, the outlet louver for compartment 2 was closed 5% to direct flow away from that compartment. The outlet louver on compartment 7 was opened 5% to maintain the necessary levels of draft at the lance holes. |
| 2/22/19 8:42 AM | 22.6 | | | |
| 2/22/19 10:30 AM | 21.5 | | | |
| 2/22/19 11:36 AM | 21.0 | | | |
| 2/22/19 12:48 PM | 31.4 | | | |
| 2/23/19 6:18 AM | 22.5 | Compartment 8 was out of service for maintenance and fields 7D and 5E were out of service due to grounds. Dust density levels indicated that compartment 5 was the source of the opacity. | N/A | Power off rapping was performed as needed between heats. A contractor was called in to assist with cleaning the 5E field. The dust buildup in the 5E field was removed and the field was returned to service at approximately 20:30. |
| 2/23/19 6:24 AM | 33.6 | | | |
| 2/23/19 3:06 PM | 25.8 | | | |
| 2/23/19 5:06 PM | 20.8 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

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|---|---|---|---|---|
| 3/3/19 8:18 PM | 22.2 | Compartment 8 was out of service for maintenance and field 7D was out of service due to a ground. Dust density levels indicated that compartment 5 was the source of the opacity. This was due to dust buildup within the compartment. | N/A | Power off rapping was performed between heats as needed. A contractor was called in to assist with cleaning the dust buildup in compartment 5. The job was completed at approximately 11:00 AM and compartment 5 dust density levels returned to normal. |
| 3/3/19 9:48 PM | 23.6 | | | |
| 3/3/19 11:12 PM | 30.0 | | | |
| 3/3/19 11:18 PM | 24.7 | | | |
| 3/4/19 12:36 AM | 20.8 | | | |
| 3/4/19 5:00 AM | 25.3 | | | |
| 3/4/19 6:06 AM | 24.1 | | | |
| 3/4/19 9:06 AM | 23.4 | | | |
| 3/5/19 11:12 AM | 21.8 | Compartment 8 was out of service for maintenance and field 7D was out of service due to a ground. Field 2A started to experience power problems at various points within the heats. | N/A | The compartment 2 outlet louver was closed approximately 20% at approximately 15:00 and the other compartment outlet louvers were opened to compensate. |
| 3/5/19 1:24 PM | 25.3 | | | |
| 3/5/19 2:42 PM | 22.0 | | | |
| 3/5/19 10:36 PM | 27.9 | Compartment 8 was out of service for maintenance and field 7D was out of service due to a ground. Field 5-6C tripped out of service at approximately 22:18 due to a full hopper. | N/A | Power off rapping was performed between heats as needed. Field 5C was isolated at approximately 22:55 and field 6C was returned to service. A contractor was called in to assist with cleaning the dust buildup in compartment 5. The buildup in the compartment was removed but the field would not energize. The compartment 5 outlet louver was closed 10% at approximately 12:00 to direct flow away from that compartment. |
| 3/5/19 10:54 PM | 27.3 | | | |
| 3/6/19 12:00 AM | 23.5 | | | |
| 3/6/19 12:12 AM | 22.1 | | | |
| 3/6/19 1:12 AM | 27.8 | | | |
| 3/6/19 1:30 AM | 49.2 | | | |
| 3/6/19 2:12 AM | 31.0 | | | |
| 3/6/19 2:30 AM | 26.5 | | | |
| 3/6/19 3:24 AM | 22.5 | | | |
| 3/6/19 7:54 AM | 21.3 | | | |
| 3/6/19 11:24 AM | 40.2 | | | |
| 3/6/19 11:42 AM | 25.2 | | | |
| 3/7/19 12:48 AM | 25.6 | Compartment 8 was out of service for maintenance and fields 2A, 5C, and 7D were out of service due to grounds. The ground in field 2A was due to dust buildup in the compartment. | N/A | Power off rapping was performed between heats as needed. A contractor was called in to assist with cleaning the dust buildup in compartment 2. The job was completed at approximately 10:00 AM and field 2A was returned to service. |
| 3/7/19 12:54 AM | 35.2 | | | |
| 3/7/19 4:48 AM | 37.7 | | | |
| 3/7/19 4:54 AM | 34.9 | | | |
| 3/7/19 5:12 PM | 23.1 | Compartment 8 was out of service for maintenance and field 7D was out of service due to a ground. Field 1A began to experience low power levels due to dust buildup in the compartment and subsequently tripped out of service at approximately 9:22 PM. | N/A | Power off rapping was performed between heats as needed. The dust buildup in compartment 1 was removed and field 1A was returned to service at 1:54 AM on 3/8. |
| 3/7/19 5:18 PM | 29.8 | | | |
| 3/7/19 8:06 PM | 25.4 | | | |
| 3/7/19 8:48 PM | 26.5 | | | |
| 3/7/19 11:00 PM | 23.2 | | | |
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ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

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|---|---|---|---|---|
| 3/9/19 11:12 PM | 40.9 | Compartment 8 was out of service for maintenance and field 7D was out of service due to a ground. Field 5A experienced consistently low power levels and field 5-6E tripped out midway through the heat starting at 11:06 PM on 3/9. | N/A | Power off rapping was performed as needed between heats. It was initially suspected that compartment 5 was experiencing dust buildup which was causing the problems with field 5A power levels. The compartment was cleaned but the power problems continued. Field 5E was isolated and field 6E was returned to service at 23:48 on 3/9. The compartment 5 outlet louver was closed during the course of the day by 10% to direct flow away from that compartment. |
| 3/9/19 11:18 PM | 49.0 | | | |
| 3/9/19 11:24 PM | 70.5 | | | |
| 3/9/19 11:30 PM | 40.2 | | | |
| 3/9/19 11:42 PM | 43.0 | | | |
| 3/10/19 12:24 AM | 33.8 | | | |
| 3/10/19 3:18 AM | 28.0 | | | |
| 3/10/19 4:12 AM | 31.4 | | | |
| 3/10/19 4:54 AM | 26.3 | | | |
| 3/10/19 5:00 AM | 36.3 | | | |
| 3/10/19 5:06 AM | 41.3 | | | |
| 3/10/19 5:54 AM | 36.3 | | | |
| 3/10/19 6:00 AM | 55.0 | | | |
| 3/10/19 6:06 AM | 49.1 | | | |
| 3/10/19 6:54 AM | 33.0 | | | |
| 3/10/19 7:00 AM | 65.2 | | | |
| 3/10/19 7:06 AM | 61.3 | | | |
| 3/10/19 8:06 AM | 37.7 | | | |
| 3/10/19 8:12 AM | 23.8 | | | |
| 3/10/19 9:06 AM | 21.5 | | | |
| 3/10/19 10:12 AM | 24.5 | | | |
| 3/10/19 10:18 AM | 40.7 | | | |
| 3/10/19 10:24 AM | 33.1 | | | |
| 3/10/19 1:12 PM | 26.3 | Compartment 8 was out of service for maintenance and fields 7D and 5E were out of service due to grounds. Field 5A experienced consistently low power levels. | N/A | Power off rapping was performed as needed between heats. Closing the No. 5 outlet louver did not have a significant effect on the opacity so the focus shifted to the gas conditioning system and water sprays. It was noted that the No. 8 A-Vessel spray bank had lower than normal air pressure. The feed was switched to Nitrogen to provide more pressure and an additional No. 8 bank spray was added to service. Field 5E was returned to service at 5:48 AM on 3/11. |
| 3/10/19 1:18 PM | 33.8 | | | |
| 3/10/19 1:24 PM | 23.5 | | | |
| 3/10/19 2:24 PM | 22.8 | | | |
| 3/10/19 4:06 PM | 24.6 | | | |
| 3/10/19 4:12 PM | 34.2 | | | |
| 3/10/19 4:18 PM | 29.4 | | | |
| 3/10/19 5:00 PM | 25.6 | | | |
| 3/10/19 5:06 PM | 36.4 | | | |
| 3/10/19 5:12 PM | 28.0 | | | |
| 3/10/19 5:54 PM | 34.9 | | | |
| 3/10/19 6:00 PM | 31.0 | | | |
| 3/10/19 6:42 PM | 33.3 | | | |
| 3/10/19 6:48 PM | 51.4 | | | |
| 3/10/19 6:54 PM | 43.4 | | | |
| 3/10/19 7:18 PM | 43.4 | | | |
| 3/10/19 7:24 PM | 23.5 | | | |

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|---|---|---|---|---|
| 3/10/19 7:30 PM | 40.9 | Compartment 8 was out of service for maintenance and fields 7D and 5E were out of service due to grounds. Field 5A experienced consistently low power levels. | N/A | Power off rapping was performed as needed between heats. Closing the No. 5 outlet louver did not have a significant effect on the opacity so the focus shifted to the gas conditioning system and water sprays. It was noted that the No. 8 A-Vessel spray bank had lower than normal air pressure. The feed was switched to Nitrogen to provide more pressure and an additional No. 8 bank spray was added to service. Field 5E was returned to service at 5:48 AM on 3/11. |
| 3/10/19 7:36 PM | 39.1 | | | |
| 3/10/19 8:30 PM | 31.6 | | | |
| 3/10/19 8:36 PM | 27.6 | | | |
| 3/10/19 9:24 PM | 29.9 | | | |
| 3/10/19 9:30 PM | 35.5 | | | |
| 3/10/19 9:36 PM | 70.7 | | | |
| 3/10/19 10:36 PM | 26.1 | | | |
| 3/10/19 10:42 PM | 20.5 | | | |
| 3/10/19 11:42 PM | 58.1 | | | |
| 3/10/19 11:48 PM | 69.7 | | | |
| 3/11/19 12:06 AM | 32.7 | | | |
| 3/11/19 12:30 AM | 37.6 | | | |
| 3/11/19 12:36 AM | 51.0 | | | |
| 3/11/19 2:00 AM | 46.4 | | | |
| 3/11/19 2:06 AM | 66.4 | | | |
| 3/11/19 2:12 AM | 89.6 | | | |
| 3/11/19 2:18 AM | 82.5 | | | |
| 3/11/19 2:30 AM | 21.9 | | | |
| 3/11/19 2:36 AM | 22.5 | | | |
| 3/11/19 2:42 AM | 34.7 | | | |
| 3/11/19 2:48 AM | 58.1 | | | |
| 3/11/19 2:54 AM | 30.0 | | | |
| 3/11/19 3:24 AM | 29.7 | | | |
| 3/11/19 3:30 AM | 47.8 | | | |
| 3/11/19 3:36 AM | 32.9 | | | |
| 3/11/19 4:24 AM | 26.1 | | | |
| 3/11/19 5:12 AM | 22.1 | | | |
| 3/11/19 5:18 AM | 48.8 | | | |
| 3/11/19 5:24 AM | 42.6 | | | |
| 3/11/19 6:36 AM | 30.1 | | | |
| 3/11/19 6:42 AM | 46.0 | | | |
| 3/11/19 6:48 AM | 66.6 | | | |
| 3/11/19 6:54 AM | 33.7 | | | |
| 3/11/19 7:42 AM | 23.3 | | | |
| 3/11/19 7:48 AM | 41.8 | | | |
| 3/11/19 7:54 AM | 46.2 | | | |
| 3/11/19 8:00 AM | 21.4 | | | |
| 3/11/19 8:42 AM | 38.0 | | | |
| 3/11/19 8:48 AM | 28.8 | | | |

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|---|---|---|---|---|
| 3/11/19 7:18 PM | 27.7 | Compartment 8 was out of service for maintenance and field 7D was out of service due to a ground. Most of the A-fields experienced power problems during this time frame. The opacity alarms could not be tied to a specific root cause. | See Attachment 3 | Power off rapping was performed as needed between heats. This set of alarms was terminated by the start of a 48-hour outage on 3/12. During the outage, patching was performed in various locations with a focus being on the ID Fan outlets and the hoppers. |
| 3/11/19 7:24 PM | 22.7 | | | |
| 3/11/19 8:42 PM | 20.9 | | | |
| 3/11/19 9:30 PM | 26.4 | | | |
| 3/12/19 12:42 AM | 40.7 | | | |
| 3/12/19 12:48 AM | 27.6 | | | |
| 3/12/19 1:06 AM | 21.7 | | | |
| 3/12/19 1:36 AM | 27.7 | | | |
| 3/12/19 3:00 AM | 23.5 | | | |
| 3/12/19 4:48 AM | 31.8 | | | |
| 3/12/19 4:54 AM | 38.1 | | | |
| 3/12/19 5:42 AM | 27.0 | | | |
| 3/12/19 6:24 AM | 25.8 | | | |
| 3/12/19 6:30 AM | 37.4 | | | |
| 3/12/19 7:24 AM | 34.5 | | | |
| 3/12/19 8:30 AM | 21.8 | | | |
| 3/14/19 1:48 PM | 27.1 | Compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. The positions of several of the compartment louvers were shifted during the outage for maintenance and further tuning was required. | N/A | Adjustments to the outlet louvers were made to optimize air flow through the ESP. Adjustments were also made to the No. 8 and No. 9 spray banks to assist with conditioning. |
| 3/14/19 1:54 PM | 28.0 | | | |
| 3/14/19 2:00 PM | 24.7 | | | |
| 3/14/19 3:48 PM | 36.2 | | | |
| 3/14/19 3:54 PM | 36.8 | | | |
| 3/14/19 6:06 PM | 29.1 | | | |
| 3/14/19 6:12 PM | 40.3 | | | |
| 3/14/19 6:18 PM | 60.6 | | | |
| 3/14/19 11:36 PM | 21.8 | A root cause could not be determined. | See Attachment 4 | Power off rapping was performed on fields 3A-7A after the completion of the heat. |
| 3/14/19 11:42 PM | 20.8 | | | |
| 3/15/19 3:00 PM | 42.4 | The guillotine for B-Vessel was opened just prior to the heat. This creates a significant flow disturbance within the ESP. | N/A | Power off rapping was performed on compartments 1-4 A, C, and D fields after the completion of the heat. |
| 3/15/19 3:06 PM | 52.9 | | | |
| 3/15/19 3:12 PM | 31.6 | | | |
| 3/15/19 9:36 PM | 23.9 | Compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. No definitive root cause could be determined. | See Attachment 5 | Power off rapping was performed on fields 2A, 3A, 5A and 6A after the completion of the heat. |
| 3/15/19 9:42 PM | 30.2 | | | |
| 3/16/19 1:54 AM | 24.8 | Compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. No definitive root cause could be determined. | See Attachment 6 | Power off rapping was performed on fields 2A, 5A, 6A and 7A after the completion of the heat. |

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|---|---|---|---|---|
| 3/16/19 4:12 AM | 29.1 | These alarms all occurred at the very beginning of the heat. It is suspected that some of the conditioning adjustments made created a condition at the start of the heat where the gas conditioning was not optimal. | N/A | Adjustments were made on 3/19 to the spray banks to increase the amount of water flow through the No. 8 and the No. 9 spray banks. These banks come on early in the blow. |
| 3/16/19 5:36 AM | 23.2 | | | |
| 3/16/19 1:36 PM | 23.3 | | | |
| 3/18/19 2:18 AM | 27.6 | | | |
| 3/18/19 5:42 AM | 28.7 | | | |
| 3/18/19 2:18 PM | 21.0 | | | |
| 3/19/19 2:06 PM | 24.9 | | | |
| 3/19/19 2:12 PM | 24.5 | | | |
| 3/19/19 3:00 PM | 20.5 | | | |
| 3/19/19 3:48 PM | 22.0 | | | |
| 3/19/19 4:42 PM | 30.9 | | | |
| 3/19/19 6:00 PM | 35.8 | | | |
| 3/19/19 6:30 PM | 27.3 | | | |
| 3/19/19 6:36 PM | 23.6 | | | |
| 3/19/19 7:12 PM | 31.3 | | | |
| 3/19/19 7:42 PM | 28.1 | | | |
| 3/19/19 8:18 PM | 22.5 | | | |
| 3/19/19 8:24 PM | 22.8 | | | |
| 3/19/19 11:54 PM | 22.5 | | | |
| 3/16/19 12:42 PM | 21.7 | Compartment 8 was out of service for maintenance and field 2C was out of service due to a ground. A lance pull occurred during the latter stages of the heat. Opacity spiked when the blow was reinitialized. | N/A | No corrective action was taken. |
| 3/17/19 5:36 PM | 24.9 | Compartment 8 was out of service for maintenance and fields 2C and 6C were out of service due to grounds. No definitive root cause could be determined. | See Attachment 7 | Power off rapping was performed on fields 4A and 5A after the completion of the heat. |
| 3/17/19 6:30 PM | 24.5 | | | |
| 3/17/19 6:36 PM | 21.1 | | | |
| 3/18/19 4:30 AM | 22.7 | Compartment 8 was out of service for maintenance and fields 2C and 6C were out of service due to grounds. No definitive root cause could be determined. | See Attachment 8 | Power off rapping was performed after each heat as needed. |
| 3/18/19 5:24 AM | 46.6 | | | |
| 3/18/19 5:30 AM | 29.7 | | | |
| 3/18/19 6:00 AM | 22.5 | | | |
| 3/18/19 6:06 AM | 31.2 | | | |
| 3/18/19 2:30 PM | 21.9 | Compartment 8 was out of service for maintenance. A lance pull occurred during the latter stages of the heat. Opacity spiked when the blow was reinitialized. | N/A | Power off rapping was performed on fields 1A and 1-6C after the completion of the heat. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

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| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/19/19 5:36 PM | 41.3 | Compartment 8 was returned to service after the completion of annual maintenance. Compartment 2 was immediately taken out of service for cleaning and to resolve power problems with field 2A. | N/A | The procedures for isolating compartments and returning compartments to service was followed. No additional corrective action was taken. |
| 3/19/19 5:42 PM | 28.5 | | | |
| 3/19/19 5:48 PM | 24.1 | | | |
| 3/19/19 6:42 PM | 25.3 | High loading was experienced on compartment flow after compartment 8 was returned to service and compartment 2 was taken out of service. This was enhanced by field 4C being out of service due to a ground. | N/A | The No. 4 compartment outlet louver was closed approximately 10% to direct flow away from that compartment. |
| 3/19/19 7:18 PM | 22.1 | | | |
| 3/20/19 2:30 PM | 25.3 | Compartment 2 was out of service for maintenance and field 6C was out of service due to a ground. High loading of dust occurred in compartment 7 due to power problems with field 7E. 7E tripped out of service after the completion of the 14:36 heat. | N/A | Power off rapping was performed as needed between heats. The No. 7 compartment outlet louver was closed approximately 5% to direct flow away from that compartment. |
| 3/20/19 2:36 PM | 24.4 | | | |
| 3/20/19 4:24 PM | 20.7 | | | |
| 3/20/19 4:30 PM | 22.5 | | | |
| 3/20/19 4:36 PM | 35.1 | | | |
| 3/22/19 12:24 AM | 24.1 | Compartment 2 was out of service for maintenance and fields 6C and 7E were out of service due to grounds. The lance was pulled early in the heat due to a lack of ignition. Opacity spiked when the blow was reinitialized. | N/A | Power off rapping was performed on fields 6A, 7A, 8A, and 7-8C after the completion of the heat. |
| 3/22/19 12:30 AM | 27.2 | | | |
| 3/22/19 7:06 PM | 24.1 | Compartment 2 was out of service for maintenance and fields 6C, 6D, and 7E were out of service due to grounds. A piece of debris became lodged in the No. 4 Compartment outlet louver. This caused flow disturbances due to its proximity to the ID Fans. | N/A | The ID Fans were shut down at 11:00 and the piece of debris was removed from the louver. |
| 3/22/19 7:12 PM | 27.2 | | | |
| 3/22/19 9:00 PM | 32.9 | | | |
| 3/22/19 9:48 PM | 28.2 | | | |
| 3/23/19 12:06 AM | 25.3 | | | |
| 3/23/19 4:12 AM | 21.1 | | | |
| 3/23/19 5:24 AM | 22.2 | | | |
| 3/23/19 6:00 AM | 30.7 | | | |
| 3/23/19 8:18 AM | 29.5 | | | |
| 3/23/19 11:00 AM | 53.0 | The ESP ID Fans were shut down to remove the piece of debris that was stuck in the No. 4 compartment outlet louver. | N/A | No further corrective action was taken. |
| 3/23/19 11:06 AM | 79.1 | | | |
| 3/23/19 11:12 PM | 48.1 | | | |
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1st Quarter 2019

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|---|---|---|---|---|
| 3/23/19 8:48 PM | 26.1 | Compartment 2 was out of service for maintenance and fields 5C, 6C, 6D, 7C, and 7E were out of service due to grounds. | N/A | Power off rapping was performed between heats as needed. Compartment 2 was returned to service at 6:12 PM on 3/24 and Compartment 6 was immediately taken out of service to clear the grounds in fields 6C and 6D. |
| 3/23/19 10:18 PM | 22.9 | | | |
| 3/24/19 6:06 AM | 20.6 | | | |
| 3/24/19 6:42 PM | 24.3 | Compartment 6 was out of service for maintenance and fields 5C, 7C, and 7E were out of service due to grounds. These opacity alarms occurred after compartment 2 was returned to service. | N/A | The No. 2 compartment outlet louver was adjusted to optimize flow. Adjustments were completed after the 7:48 PM heat. |
| 3/24/19 6:48 PM | 44.2 | | | |
| 3/24/19 7:48 PM | 20.8 | | | |
| 3/25/19 1:36 PM | 27.3 | Compartment 6 was out of service for maintenance and fields 5C, 7C, 7E were out of service due to grounds. Fields 1A and 3A experienced significant power problems, particular when blowing heats on B-Vessel. It is believed that large swings in ambient temperature were also a factor due to factors discussed earlier. | N/A | Power off rapping was performed as needed between heats. Fields 7C and 7E were returned to service after the 16:12 heat on 3/25. The steam baseline during the heat was increased by 5000 pounds on 3/25 to provide for additional conditioning during the heat. The No. 7 spray bank temperature was also adjusted from 325 to 300 degrees F on 3/26 to provide for more water flow towards the beginning of the heat. Additional adjustments to steam programming were made throughout the day on 3/26 to provide additional conditioning during the heat. |
| 3/25/19 1:42 PM | 42.2 | | | |
| 3/25/19 3:36 PM | 54.4 | | | |
| 3/25/19 3:42 PM | 40.3 | | | |
| 3/25/19 4:12 PM | 22.7 | | | |
| 3/25/19 4:18 PM | 24.7 | | | |
| 3/25/19 6:06 PM | 25.0 | | | |
| 3/25/19 6:36 PM | 25.5 | | | |
| 3/25/19 6:42 PM | 30.2 | | | |
| 3/25/19 7:48 PM | 23.4 | | | |
| 3/25/19 8:12 PM | 20.6 | | | |
| 3/25/19 10:12 PM | 25.0 | | | |
| 3/26/19 12:36 AM | 22.2 | | | |
| 3/26/19 4:42 AM | 20.7 | | | |
| 3/26/19 5:48 AM | 21.8 | | | |
| 3/26/19 11:00 AM | 23.0 | | | |
| 3/26/19 4:00 AM | 26.9 | Compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. The opacity spike occurred while charging on B and tapping on A. | N/A | No additional corrective action was taken at the time. Alarms of this type have occurred during the second quarter and are believed to be related to a possible problem with one of the A-Vessel primary louvers. An inspection of the louvers will be performed during the next outage in April. |
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1st Quarter 2019

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|---|---|---|---|---|
| 3/25/19 11:00 PM | 22.1 | These alarms all occurred at the very beginning of the heat. It is suspected that some of the conditioning adjustments made created a condition at the start of the heat where the gas conditioning was not optimal. | N/A | The No. 9 spray bank water flow was increased on 3/28 to provide for more atomized water at the start of the blow. This reduced the incidence of opacity spikes at the start of the heat. An additional change was made to the steam programming at 2:30 PM on 3/29 to ramp up to 20,000 pounds while charging and then to run at 40,000 pounds while blowing. |
| 3/26/19 1:42 AM | 25.8 | | | |
| 3/26/19 3:00 AM | 26.2 | | | |
| 3/26/19 3:30 AM | 27.3 | | | |
| 3/26/19 4:54 AM | 25.4 | | | |
| 3/26/19 5:30 AM | 27.2 | | | |
| 3/26/19 6:06 AM | 25.8 | | | |
| 3/26/19 7:54 AM | 20.5 | | | |
| 3/27/19 11:18 PM | 22.4 | | | |
| 3/27/19 11:54 PM | 22.2 | | | |
| 3/28/19 12:24 AM | 30.3 | | | |
| 3/28/19 1:12 AM | 25.9 | | | |
| 3/28/19 1:42 AM | 27.9 | | | |
| 3/28/19 3:00 AM | 32.9 | | | |
| 3/28/19 5:48 AM | 21.0 | | | |
| 3/28/19 10:18 AM | 20.6 | | | |
| 3/29/19 9:06 AM | 23.6 | | | |
| 3/29/19 10:12 AM | 24.8 | | | |
| 3/29/19 12:42 PM | 24.7 | | | |
| 3/29/19 1:18 PM | 22.0 | | | |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

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| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/26/19 9:54 AM | 42.0 | An electrical fault caused the B-Vessel relief dampers to open which lead to multiple lance pulls on the heat. Opacity spikes occurred each time the blow was re-initialized. | N/A | The electrical fault was identified and corrected. |
| 3/26/19 10:18 AM | 32.3 | | | |
| 3/27/19 8:30 PM | 25.4 | Compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. Dust density probes indicated that the majority of the opacity was coming from compartment 8. | N/A | Power off rapping was performed on fields 1A and 8A after the completion of the heat. |
| 3/27/19 8:36 PM | 24.8 | | | |
| 3/28/19 2:54 PM | 22.2 | Compartment 6 was out of service for maintenance and fields 4C and 5C were out of service due to grounds. Dust density probes indicated that the majority of the opacity was coming from compartment 8. | N/A | Power off rapping was performed as needed between heats. No adjustments could be made to the No.8 compartment outlet louver due to the need to maintain draft at the lance holes. Dust density levels in compartment 8 improved when compartment 6 was returned to service at approximately 3:15 AM on 3/29. |
| 3/28/19 3:00 PM | 30.6 | | | |
| 3/28/19 3:30 PM | 20.5 | | | |
| 3/28/19 6:24 PM | 20.6 | | | |
| 3/28/19 8:36 PM | 22.3 | | | |
| 3/28/19 9:24 PM | 29.7 | | | |
| 3/28/19 9:30 PM | 22.5 | | | |
| 3/28/19 10:12 PM | 20.9 | | | |
| 3/29/19 3:00 AM | 21.8 | | | |
| 3/29/19 3:18 AM | 24.9 | Compartment 6 was returned to service just prior to the heat. Field 4C was out of service due to a ground. | N/A | Power off rapping was performed on fields 1A, 4A, and 8A after the completion of the heat. Adjustments were made to the compartment outlet louvers to tune ESP flow with compartment 6 back online after the completion of the heat. |
| 3/29/19 3:24 AM | 24.3 | | | |
| 3/29/19 3:30 AM | 30.5 | | | |
| 3/29/19 3:36 AM | 23.1 | | | |
| 3/30/19 1:48 PM | 20.9 | The ESP No. 3 ID Fan tripped out of service. | N/A | The fan was blanked off and taken out of service until repairs could be made. |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

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|---|---|---|---|---|
| 1/4/19 8:36 AM | 21.6 | Steam Interference | N/A | N/A |
| 1/4/19 9:54 AM | 28.5 | Steam Interference | N/A | N/A |
| 1/6/19 4:12 AM | 22.8 | Steam Interference | N/A | N/A |
| 1/6/19 4:18 AM | 22.1 | Steam Interference | N/A | N/A |
| 1/11/19 9:24 AM | 38.7 | Steam Interference | N/A | N/A |
| 1/11/19 9:30 AM | 22.7 | Steam Interference | N/A | N/A |
| 1/11/19 1:24 PM | 21.5 | Steam Interference | N/A | N/A |
| 1/11/19 9:36 PM | 21.0 | Steam Interference | N/A | N/A |
| 1/14/19 12:00 AM | 32.4 | Steam Interference | N/A | N/A |
| 1/14/19 12:06 AM | 23.6 | Steam Interference | N/A | N/A |
| 1/14/19 5:18 AM | 28.7 | Steam Interference | N/A | N/A |
| 1/15/19 9:18 AM | 22.0 | Steam Interference | N/A | N/A |
| 1/15/19 8:48 PM | 36.1 | Steam Interference | N/A | N/A |
| 1/18/19 11:24 AM | 22.3 | Steam Interference | N/A | N/A |
| 1/21/19 10:24 PM | 23.8 | Steam Interference | N/A | N/A |
| 1/21/19 10:30 PM | 22.4 | Steam Interference | N/A | N/A |
| 1/22/19 2:24 AM | 32.1 | Steam Interference | N/A | N/A |
| 1/30/19 5:48 AM | 26.7 | Steam Interference | N/A | N/A |
| 1/31/19 4:12 AM | 38.1 | Steam Interference | N/A | N/A |
| 1/31/19 4:18 AM | 29.7 | Steam Interference | N/A | N/A |
| 1/31/19 7:12 AM | 23.0 | Steam Interference | N/A | N/A |
| 1/31/19 11:00 AM | 24.2 | Steam Interference | N/A | N/A |
| 1/31/19 11:06 AM | 24.3 | Steam Interference | N/A | N/A |
| 1/31/19 11:12 AM | 25.0 | Steam Interference | N/A | N/A |
| 2/2/19 2:18 AM | 24.0 | Steam Interference | N/A | N/A |
| 2/8/19 9:54 PM | 25.5 | Steam Interference | N/A | N/A |
| 2/9/19 5:24 PM | 28.8 | Steam Interference | N/A | N/A |
| 2/9/19 8:42 PM | 21.1 | Steam Interference | N/A | N/A |
| 2/10/19 12:30 AM | 22.4 | Steam Interference | N/A | N/A |
| 2/11/19 6:00 PM | 26.3 | Steam Interference | N/A | N/A |
| 2/11/19 8:00 PM | 20.6 | Steam Interference | N/A | N/A |
| 2/11/19 8:06 AM | 23.9 | Steam Interference | N/A | N/A |
| 2/11/19 9:12 PM | 20.6 | Steam Interference | N/A | N/A |
| 2/11/19 9:18 PM | 29.8 | Steam Interference | N/A | N/A |
| 2/16/19 3:42 PM | 21.8 | Steam Interference | N/A | N/A |
| 2/18/19 2:12 AM | 26.1 | Steam Interference | N/A | N/A |
| 2/18/19 11:54 PM | 33.4 | Steam Interference | N/A | N/A |
| 2/20/19 5:54 AM | 22.5 | Steam Interference | N/A | N/A |
| 2/20/19 5:48 PM | 26.6 | Steam Interference | N/A | N/A |
| 2/23/19 1:12 PM | 21.1 | Steam Interference | N/A | N/A |

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|---|---|---|---|---|
| 2/23/19 1:18 PM | 21.9 | Steam Interference | N/A | N/A |
| 2/23/19 3:00 PM | 23.0 | Steam Interference | N/A | N/A |
| 2/23/19 6:42 PM | 23.1 | Steam Interference | N/A | N/A |
| 2/25/19 12:30 AM | 21.3 | Steam Interference | N/A | N/A |
| 2/27/19 2:24 AM | 21.2 | Steam Interference | N/A | N/A |
| 2/27/19 9:42 PM | 25.8 | Steam Interference | N/A | N/A |
| 2/27/19 9:54 PM | 33.9 | Steam Interference | N/A | N/A |
| 2/27/19 11:24 PM | 21.4 | Steam Interference | N/A | N/A |
| 2/28/19 7:00 PM | 27.4 | Steam Interference | N/A | N/A |
| 2/28/19 9:12 PM | 24.8 | Steam Interference | N/A | N/A |
| 3/1/19 1:12 AM | 21.6 | Steam Interference | N/A | N/A |
| 3/1/19 1:18 AM | 33.0 | Steam Interference | N/A | N/A |
| 3/1/19 11:18 AM | 20.7 | Steam Interference | N/A | N/A |
| 3/1/19 2:24 PM | 21.3 | Steam Interference | N/A | N/A |
| 3/1/19 6:00 PM | 33.7 | Steam Interference | N/A | N/A |
| 3/1/19 6:54 PM | 21.5 | Steam Interference | N/A | N/A |
| 3/3/19 12:54 AM | 26.9 | Steam Interference | N/A | N/A |
| 3/3/19 1:00 AM | 26.9 | Steam Interference | N/A | N/A |
| 3/3/19 7:06 AM | 25.3 | Steam Interference | N/A | N/A |
| 3/3/19 8:12 PM | 23.4 | Steam Interference | N/A | N/A |
| 3/3/19 9:42 PM | 24.3 | Steam Interference | N/A | N/A |
| 3/4/19 12:30 AM | 21.5 | Steam Interference | N/A | N/A |
| 3/4/19 1:24 AM | 23.8 | Steam Interference | N/A | N/A |
| 3/4/19 1:30 AM | 21.2 | Steam Interference | N/A | N/A |
| 3/4/19 5:48 AM | 37.1 | Steam Interference | N/A | N/A |
| 3/4/19 5:54 AM | 28.1 | Steam Interference | N/A | N/A |
| 3/4/19 6:00 AM | 26.2 | Steam Interference | N/A | N/A |
| 3/4/19 6:36 AM | 22.3 | Steam Interference | N/A | N/A |
| 3/4/19 7:24 AM | 20.7 | Steam Interference | N/A | N/A |
| 3/4/19 8:36 AM | 20.9 | Steam Interference | N/A | N/A |
| 3/4/19 5:48 PM | 21.0 | Steam Interference | N/A | N/A |
| 3/4/19 5:54 PM | 28.6 | Steam Interference | N/A | N/A |
| 3/5/19 1:06 AM | 23.4 | Steam Interference | N/A | N/A |
| 3/5/19 2:36 AM | 26.9 | Steam Interference | N/A | N/A |
| 3/5/19 2:42 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/5/19 4:18 AM | 23.1 | Steam Interference | N/A | N/A |
| 3/5/19 4:54 AM | 23.0 | Steam Interference | N/A | N/A |
| 3/5/19 9:36 AM | 29.6 | Steam Interference | N/A | N/A |
| 3/5/19 8:30 PM | 25.6 | Steam Interference | N/A | N/A |
| 3/5/19 10:24 PM | 20.9 | Steam Interference | N/A | N/A |

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|---|---|---|---|---|
| 3/5/19 10:42 PM | 28.3 | Steam Interference | N/A | N/A |
| 3/5/19 10:48 PM | 32.3 | Steam Interference | N/A | N/A |
| 3/6/19 12:06 AM | 23.9 | Steam Interference | N/A | N/A |
| 3/6/19 1:18 AM | 42.7 | Steam Interference | N/A | N/A |
| 3/6/19 1:24 AM | 48.6 | Steam Interference | N/A | N/A |
| 3/6/19 2:18 AM | 38.8 | Steam Interference | N/A | N/A |
| 3/6/19 2:24 AM | 25.1 | Steam Interference | N/A | N/A |
| 3/6/19 3:18 AM | 26.0 | Steam Interference | N/A | N/A |
| 3/6/19 4:06 AM | 24.7 | Steam Interference | N/A | N/A |
| 3/6/19 10:18 AM | 23.6 | Steam Interference | N/A | N/A |
| 3/6/19 11:30 AM | 34.7 | Steam Interference | N/A | N/A |
| 3/6/19 11:36 AM | 27.1 | Steam Interference | N/A | N/A |
| 3/6/19 5:12 PM | 26.5 | Steam Interference | N/A | N/A |
| 3/6/19 6:54 PM | 21.4 | Steam Interference | N/A | N/A |
| 3/6/19 11:54 PM | 25.5 | Steam Interference | N/A | N/A |
| 3/7/19 12:42 AM | 26.7 | Steam Interference | N/A | N/A |
| 3/7/19 8:42 PM | 26.6 | Steam Interference | N/A | N/A |
| 3/7/19 10:00 PM | 22.3 | Steam Interference | N/A | N/A |
| 3/7/19 10:54 PM | 26.7 | Steam Interference | N/A | N/A |
| 3/8/19 4:06 AM | 22.9 | Steam Interference | N/A | N/A |
| 3/9/19 3:18 PM | 20.8 | Steam Interference | N/A | N/A |
| 3/9/19 4:36 PM | 26.7 | Steam Interference | N/A | N/A |
| 3/10/19 12:12 AM | 24.4 | Steam Interference | N/A | N/A |
| 3/10/19 12:18 AM | 31.0 | Steam Interference | N/A | N/A |
| 3/10/19 1:00 AM | 31.8 | Steam Interference | N/A | N/A |
| 3/10/19 1:06 AM | 34.1 | Steam Interference | N/A | N/A |
| 3/10/19 3:06 AM | 31.5 | Steam Interference | N/A | N/A |
| 3/10/19 3:12 AM | 33.2 | Steam Interference | N/A | N/A |
| 3/10/19 4:00 AM | 28.4 | Steam Interference | N/A | N/A |
| 3/10/19 4:06 AM | 39.9 | Steam Interference | N/A | N/A |
| 3/10/19 8:00 AM | 26.7 | Steam Interference | N/A | N/A |
| 3/10/19 9:00 AM | 23.7 | Steam Interference | N/A | N/A |
| 3/10/19 10:06 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/10/19 11:06 AM | 22.2 | Steam Interference | N/A | N/A |
| 3/10/19 12:12 AM | 24.4 | Steam Interference | N/A | N/A |
| 3/10/19 12:18 AM | 31.0 | Steam Interference | N/A | N/A |
| 3/10/19 1:00 AM | 31.8 | Steam Interference | N/A | N/A |
| 3/10/19 1:06 AM | 34.1 | Steam Interference | N/A | N/A |
| 3/10/19 3:06 AM | 31.5 | Steam Interference | N/A | N/A |
| 3/10/19 3:12 AM | 33.2 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/10/19 4:00 AM | 28.4 | Steam Interference | N/A | N/A |
| 3/10/19 4:06 AM | 39.9 | Steam Interference | N/A | N/A |
| 3/10/19 8:00 AM | 26.7 | Steam Interference | N/A | N/A |
| 3/10/19 9:00 AM | 23.7 | Steam Interference | N/A | N/A |
| 3/10/19 10:06 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/10/19 11:06 AM | 22.2 | Steam Interference | N/A | N/A |
| 3/10/19 8:24 PM | 23.8 | Steam Interference | N/A | N/A |
| 3/10/19 10:30 PM | 30.8 | Steam Interference | N/A | N/A |
| 3/10/19 11:36 PM | 28.2 | Steam Interference | N/A | N/A |
| 3/11/19 12:24 AM | 22.6 | Steam Interference | N/A | N/A |
| 3/11/19 4:18 AM | 23.7 | Steam Interference | N/A | N/A |
| 3/11/19 8:36 AM | 25.5 | Steam Interference | N/A | N/A |
| 3/11/19 9:24 AM | 27.1 | Steam Interference | N/A | N/A |
| 3/11/19 9:30 AM | 26.0 | Steam Interference | N/A | N/A |
| 3/11/19 10:12 AM | 21.4 | Steam Interference | N/A | N/A |
| 3/11/19 12:00 PM | 26.4 | Steam Interference | N/A | N/A |
| 3/11/19 12:42 PM | 20.7 | Steam Interference | N/A | N/A |
| 3/11/19 12:48 PM | 20.8 | Steam Interference | N/A | N/A |
| 3/11/19 2:54 PM | 20.7 | Steam Interference | N/A | N/A |
| 3/11/19 3:18 PM | 25.6 | Steam Interference | N/A | N/A |
| 3/11/19 3:24 PM | 20.6 | Steam Interference | N/A | N/A |
| 3/11/19 4:24 PM | 26.6 | Steam Interference | N/A | N/A |
| 3/11/19 4:30 PM | 21.6 | Steam Interference | N/A | N/A |
| 3/11/19 7:12 PM | 20.8 | Steam Interference | N/A | N/A |
| 3/11/19 9:24 PM | 25.3 | Steam Interference | N/A | N/A |
| 3/11/19 11:06 PM | 23.5 | Steam Interference | N/A | N/A |
| 3/11/19 11:12 PM | 22.2 | Steam Interference | N/A | N/A |
| 3/12/19 12:36 AM | 27.4 | Steam Interference | N/A | N/A |
| 3/12/19 1:18 AM | 21.8 | Steam Interference | N/A | N/A |
| 3/12/19 1:48 AM | 22.3 | Steam Interference | N/A | N/A |
| 3/12/19 3:12 AM | 23.3 | Steam Interference | N/A | N/A |
| 3/12/19 3:18 AM | 21.5 | Steam Interference | N/A | N/A |
| 3/12/19 4:42 AM | 23.1 | Steam Interference | N/A | N/A |
| 3/12/19 5:36 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/12/19 7:18 AM | 30.7 | Steam Interference | N/A | N/A |
| 3/12/19 8:36 AM | 25.6 | Steam Interference | N/A | N/A |
| 3/15/19 3:36 AM | 23.8 | Steam Interference | N/A | N/A |
| 3/15/19 3:42 AM | 22.5 | Steam Interference | N/A | N/A |
| 3/15/19 5:18 AM | 23.0 | Steam Interference | N/A | N/A |
| 3/15/19 7:18 AM | 21.7 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/15/19 7:24 AM | 22.7 | Steam Interference | N/A | N/A |
| 3/15/19 9:06 AM | 21.0 | Steam Interference | N/A | N/A |
| 3/15/19 10:48 AM | 21.1 | Steam Interference | N/A | N/A |
| 3/15/19 10:54 AM | 21.7 | Steam Interference | N/A | N/A |
| 3/15/19 4:42 AM | 20.5 | Steam Interference | N/A | N/A |
| 3/15/19 7:00 PM | 21.9 | Steam Interference | N/A | N/A |
| 3/15/19 7:06 PM | 37.3 | Steam Interference | N/A | N/A |
| 3/15/19 8:48 PM | 22.1 | Steam Interference | N/A | N/A |
| 3/15/19 10:30 PM | 30.3 | Steam Interference | N/A | N/A |
| 3/15/19 11:12 PM | 21.9 | Steam Interference | N/A | N/A |
| 3/16/19 12:54 AM | 21.8 | Steam Interference | N/A | N/A |
| 3/16/19 5:12 AM | 22.5 | Steam Interference | N/A | N/A |
| 3/16/19 7:48 AM | 20.8 | Steam Interference | N/A | N/A |
| 3/16/19 1:42 PM | 20.7 | Steam Interference | N/A | N/A |
| 3/16/19 5:48 PM | 23.9 | Steam Interference | N/A | N/A |
| 3/16/19 5:54 PM | 21.7 | Steam Interference | N/A | N/A |
| 3/16/19 10:48 PM | 27.5 | Steam Interference | N/A | N/A |
| 3/17/19 12:42 AM | 21.0 | Steam Interference | N/A | N/A |
| 3/17/19 1:36 AM | 25.8 | Steam Interference | N/A | N/A |
| 3/17/19 1:42 AM | 21.9 | Steam Interference | N/A | N/A |
| 3/17/19 7:42 AM | 20.8 | Steam Interference | N/A | N/A |
| 3/17/19 7:48 AM | 21.6 | Steam Interference | N/A | N/A |
| 3/17/19 10:00 AM | 20.8 | Steam Interference | N/A | N/A |
| 3/17/19 10:06 AM | 33.4 | Steam Interference | N/A | N/A |
| 3/17/19 10:12 AM | 23.6 | Steam Interference | N/A | N/A |
| 3/17/19 11:30 AM | 26.3 | Steam Interference | N/A | N/A |
| 3/17/19 1:36 PM | 23.9 | Steam Interference | N/A | N/A |
| 3/17/19 2:42 PM | 27.1 | Steam Interference | N/A | N/A |
| 3/17/19 3:42 PM | 21.7 | Steam Interference | N/A | N/A |
| 3/17/19 7:18 PM | 28.2 | Steam Interference | N/A | N/A |
| 3/17/19 7:24 PM | 26.8 | Steam Interference | N/A | N/A |
| 3/17/19 8:24 PM | 23.6 | Steam Interference | N/A | N/A |
| 3/17/19 8:30 PM | 22.1 | Steam Interference | N/A | N/A |
| 3/17/19 9:12 PM | 23.2 | Steam Interference | N/A | N/A |
| 3/17/19 9:18 PM | 29.6 | Steam Interference | N/A | N/A |
| 3/17/19 10:00 PM | 26.4 | Steam Interference | N/A | N/A |
| 3/17/19 10:06 PM | 31.6 | Steam Interference | N/A | N/A |
| 3/17/19 10:54 PM | 21.9 | Steam Interference | N/A | N/A |
| 3/17/19 11:00 PM | 38.0 | Steam Interference | N/A | N/A |
| 3/17/19 11:06 PM | 38.9 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/18/19 12:12 AM | 27.7 | Steam Interference | N/A | N/A |
| 3/18/19 12:18 AM | 35.1 | Steam Interference | N/A | N/A |
| 3/18/19 12:24 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/18/19 1:48 AM | 35.1 | Steam Interference | N/A | N/A |
| 3/18/19 3:18 AM | 27.3 | Steam Interference | N/A | N/A |
| 3/18/19 3:24 AM | 22.5 | Steam Interference | N/A | N/A |
| 3/18/19 5:18 AM | 31.8 | Steam Interference | N/A | N/A |
| 3/18/19 5:48 AM | 21.4 | Steam Interference | N/A | N/A |
| 3/18/19 5:54 AM | 21.9 | Steam Interference | N/A | N/A |
| 3/18/19 6:54 AM | 23.7 | Steam Interference | N/A | N/A |
| 3/18/19 8:36 AM | 29.1 | Steam Interference | N/A | N/A |
| 3/18/19 9:54 AM | 22.4 | Steam Interference | N/A | N/A |
| 3/18/19 10:00 AM | 26.7 | Steam Interference | N/A | N/A |
| 3/18/19 11:36 AM | 23.0 | Steam Interference | N/A | N/A |
| 3/18/19 11:42 AM | 20.5 | Steam Interference | N/A | N/A |
| 3/18/19 2:24 PM | 20.5 | Steam Interference | N/A | N/A |
| 3/18/19 5:12 PM | 25.8 | Steam Interference | N/A | N/A |
| 3/18/19 5:18 PM | 25.9 | Steam Interference | N/A | N/A |
| 3/19/19 1:30 AM | 21.2 | Steam Interference | N/A | N/A |
| 3/19/19 8:42 AM | 21.7 | Steam Interference | N/A | N/A |
| 3/19/19 9:18 AM | 21.6 | Steam Interference | N/A | N/A |
| 3/19/19 9:24 AM | 20.9 | Steam Interference | N/A | N/A |
| 3/19/19 11:12 AM | 27.2 | Steam Interference | N/A | N/A |
| 3/19/19 12:36 PM | 36.6 | Steam Interference | N/A | N/A |
| 3/19/19 12:42 PM | 38.7 | Steam Interference | N/A | N/A |
| 3/19/19 1:42 PM | 28.3 | Steam Interference | N/A | N/A |
| 3/19/19 1:48 PM | 23.0 | Steam Interference | N/A | N/A |
| 3/19/19 2:18 PM | 30.0 | Steam Interference | N/A | N/A |
| 3/19/19 3:06 PM | 29.8 | Steam Interference | N/A | N/A |
| 3/19/19 4:00 PM | 21.7 | Steam Interference | N/A | N/A |
| 3/19/19 4:48 PM | 31.8 | Steam Interference | N/A | N/A |
| 3/19/19 9:24 PM | 23.3 | Steam Interference | N/A | N/A |
| 3/19/19 10:18 PM | 20.7 | Steam Interference | N/A | N/A |
| 3/19/19 10:54 PM | 21.3 | Steam Interference | N/A | N/A |
| 3/20/19 1:54 AM | 21.2 | Steam Interference | N/A | N/A |
| 3/20/19 2:36 AM | 22.2 | Steam Interference | N/A | N/A |
| 3/20/19 3:30 AM | 21.0 | Steam Interference | N/A | N/A |
| 3/20/19 5:00 AM | 23.0 | Steam Interference | N/A | N/A |
| 3/20/19 7:18 AM | 21.9 | Steam Interference | N/A | N/A |
| 3/20/19 1:00 PM | 22.2 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/20/19 1:36 PM | 24.1 | Steam Interference | N/A | N/A |
| 3/20/19 1:42 PM | 22.7 | Steam Interference | N/A | N/A |
| 3/20/19 3:24 PM | 26.7 | Steam Interference | N/A | N/A |
| 3/20/19 3:30 PM | 22.5 | Steam Interference | N/A | N/A |
| 3/22/19 5:42 AM | 21.4 | Steam Interference | N/A | N/A |
| 3/22/19 5:48 AM | 33.1 | Steam Interference | N/A | N/A |
| 3/22/19 5:54 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/22/19 6:48 AM | 38.7 | Steam Interference | N/A | N/A |
| 3/22/19 6:54 AM | 30.4 | Steam Interference | N/A | N/A |
| 3/22/19 7:30 AM | 20.7 | Steam Interference | N/A | N/A |
| 3/22/19 7:36 AM | 24.1 | Steam Interference | N/A | N/A |
| 3/22/19 10:30 AM | 26.3 | Steam Interference | N/A | N/A |
| 3/22/19 1:12 PM | 32.4 | Steam Interference | N/A | N/A |
| 3/22/19 1:18 PM | 26.5 | Steam Interference | N/A | N/A |
| 3/22/19 1:42 PM | 23.7 | Steam Interference | N/A | N/A |
| 3/22/19 1:48 PM | 22.8 | Steam Interference | N/A | N/A |
| 3/22/19 4:24 PM | 23.4 | Steam Interference | N/A | N/A |
| 3/22/19 7:00 PM | 21.4 | Steam Interference | N/A | N/A |
| 3/22/19 8:00 PM | 25.9 | Steam Interference | N/A | N/A |
| 3/22/19 8:06 PM | 25.4 | Steam Interference | N/A | N/A |
| 3/22/19 8:48 PM | 22.2 | Steam Interference | N/A | N/A |
| 3/22/19 8:54 PM | 34.1 | Steam Interference | N/A | N/A |
| 3/22/19 9:36 PM | 26.3 | Steam Interference | N/A | N/A |
| 3/22/19 9:42 PM | 32.5 | Steam Interference | N/A | N/A |
| 3/22/19 10:42 PM | 22.9 | Steam Interference | N/A | N/A |
| 3/22/19 11:06 PM | 24.9 | Steam Interference | N/A | N/A |
| 3/22/19 11:12 PM | 27.3 | Steam Interference | N/A | N/A |
| 3/23/19 2:48 AM | 22.4 | Steam Interference | N/A | N/A |
| 3/23/19 3:30 AM | 28.0 | Steam Interference | N/A | N/A |
| 3/23/19 3:36 AM | 25.5 | Steam Interference | N/A | N/A |
| 3/23/19 4:18 AM | 33.7 | Steam Interference | N/A | N/A |
| 3/23/19 4:24 AM | 32.5 | Steam Interference | N/A | N/A |
| 3/23/19 4:54 AM | 21.5 | Steam Interference | N/A | N/A |
| 3/23/19 5:30 AM | 27.4 | Steam Interference | N/A | N/A |
| 3/23/19 5:36 AM | 21.6 | Steam Interference | N/A | N/A |
| 3/23/19 6:06 AM | 22.3 | Steam Interference | N/A | N/A |
| 3/23/19 7:18 AM | 25.8 | Steam Interference | N/A | N/A |
| 3/23/19 7:54 AM | 27.7 | Steam Interference | N/A | N/A |
| 3/23/19 8:00 AM | 36.8 | Steam Interference | N/A | N/A |
| 3/23/19 8:24 AM | 38.8 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/23/19 8:30 AM | 31.1 | Steam Interference | N/A | N/A |
| 3/23/19 8:54 AM | 25.9 | Steam Interference | N/A | N/A |
| 3/23/19 9:00 AM | 29.0 | Steam Interference | N/A | N/A |
| 3/23/19 9:06 AM | 28.3 | Steam Interference | N/A | N/A |
| 3/23/19 7:48 PM | 23.3 | Steam Interference | N/A | N/A |
| 3/23/19 7:54 PM | 21.1 | Steam Interference | N/A | N/A |
| 3/23/19 10:06 PM | 23.7 | Steam Interference | N/A | N/A |
| 3/23/19 10:12 PM | 27.6 | Steam Interference | N/A | N/A |
| 3/24/19 4:36 PM | 23.5 | Steam Interference | N/A | N/A |
| 3/24/19 5:54 PM | 21.0 | Steam Interference | N/A | N/A |
| 3/25/19 4:06 AM | 21.0 | Steam Interference | N/A | N/A |
| 3/25/19 12:30 PM | 26.6 | Steam Interference | N/A | N/A |
| 3/25/19 1:30 PM | 21.3 | Steam Interference | N/A | N/A |
| 3/25/19 3:24 PM | 26.2 | Steam Interference | N/A | N/A |
| 3/25/19 3:30 PM | 41.5 | Steam Interference | N/A | N/A |
| 3/25/19 5:12 PM | 21.9 | Steam Interference | N/A | N/A |
| 3/25/19 6:00 PM | 27.7 | Steam Interference | N/A | N/A |
| 3/25/19 7:06 PM | 23.9 | Steam Interference | N/A | N/A |
| 3/25/19 7:12 PM | 21.8 | Steam Interference | N/A | N/A |
| 3/25/19 10:00 PM | 37.0 | Steam Interference | N/A | N/A |
| 3/25/19 10:06 PM | 41.9 | Steam Interference | N/A | N/A |
| 3/25/19 11:12 PM | 23.1 | Steam Interference | N/A | N/A |
| 3/26/19 12:24 AM | 23.8 | Steam Interference | N/A | N/A |
| 3/26/19 12:30 AM | 34.8 | Steam Interference | N/A | N/A |
| 3/26/19 1:18 AM | 25.8 | Steam Interference | N/A | N/A |
| 3/26/19 1:54 AM | 24.5 | Steam Interference | N/A | N/A |
| 3/26/19 2:36 AM | 27.1 | Steam Interference | N/A | N/A |
| 3/26/19 2:42 AM | 27.9 | Steam Interference | N/A | N/A |
| 3/26/19 4:30 AM | 32.4 | Steam Interference | N/A | N/A |
| 3/26/19 4:36 AM | 34.8 | Steam Interference | N/A | N/A |
| 3/26/19 5:00 AM | 27.2 | Steam Interference | N/A | N/A |
| 3/26/19 5:06 AM | 23.4 | Steam Interference | N/A | N/A |
| 3/26/19 5:36 AM | 28.2 | Steam Interference | N/A | N/A |
| 3/26/19 5:42 AM | 28.7 | Steam Interference | N/A | N/A |
| 3/26/19 6:12 AM | 25.4 | Steam Interference | N/A | N/A |
| 3/26/19 6:18 AM | 21.0 | Steam Interference | N/A | N/A |
| 3/26/19 8:00 AM | 20.8 | Steam Interference | N/A | N/A |
| 3/26/19 10:54 AM | 23.8 | Steam Interference | N/A | N/A |
| 3/26/19 5:06 PM | 26.8 | Steam Interference | N/A | N/A |
| 3/26/19 10:42 PM | 35.5 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/27/19 2:12 AM | 20.5 | Steam Interference | N/A | N/A |
| 3/27/19 3:00 AM | 22.5 | Steam Interference | N/A | N/A |
| 3/27/19 4:00 AM | 21.4 | Steam Interference | N/A | N/A |
| 3/27/19 4:06 AM | 23.0 | Steam Interference | N/A | N/A |
| 3/27/19 5:54 AM | 25.0 | Steam Interference | N/A | N/A |
| 3/27/19 8:36 AM | 22.4 | Steam Interference | N/A | N/A |
| 3/27/19 10:24 AM | 22.9 | Steam Interference | N/A | N/A |
| 3/27/19 10:30 AM | 21.9 | Steam Interference | N/A | N/A |
| 3/27/19 10:36 AM | 27.3 | Steam Interference | N/A | N/A |
| 3/27/19 3:00 PM | 20.9 | Steam Interference | N/A | N/A |
| 3/27/19 10:00 PM | 26.8 | Steam Interference | N/A | N/A |
| 3/27/19 10:06 PM | 28.7 | Steam Interference | N/A | N/A |
| 3/27/19 11:24 PM | 32.3 | Steam Interference | N/A | N/A |
| 3/27/19 11:30 PM | 26.8 | Steam Interference | N/A | N/A |
| 3/28/19 12:00 AM | 33.2 | Steam Interference | N/A | N/A |
| 3/28/19 12:06 AM | 28.6 | Steam Interference | N/A | N/A |
| 3/28/19 1:18 AM | 32.4 | Steam Interference | N/A | N/A |
| 3/28/19 1:24 AM | 31.1 | Steam Interference | N/A | N/A |
| 3/28/19 1:54 AM | 27.1 | Steam Interference | N/A | N/A |
| 3/28/19 2:00 AM | 27.1 | Steam Interference | N/A | N/A |
| 3/28/19 2:42 AM | 25.3 | Steam Interference | N/A | N/A |
| 3/28/19 3:06 AM | 26.7 | Steam Interference | N/A | N/A |
| 3/28/19 3:12 AM | 26.1 | Steam Interference | N/A | N/A |
| 3/28/19 5:30 AM | 21.8 | Steam Interference | N/A | N/A |
| 3/28/19 9:12 AM | 22.0 | Steam Interference | N/A | N/A |
| 3/28/19 9:18 AM | 21.5 | Steam Interference | N/A | N/A |
| 3/28/19 10:24 AM | 20.9 | Steam Interference | N/A | N/A |
| 3/28/19 10:30 AM | 22.3 | Steam Interference | N/A | N/A |
| 3/29/19 2:54 AM | 22.2 | Steam Interference | N/A | N/A |
| 3/29/19 4:42 AM | 32.1 | Steam Interference | N/A | N/A |
| 3/29/19 4:48 AM | 31.9 | Steam Interference | N/A | N/A |
| 3/29/19 6:06 AM | 30.0 | Steam Interference | N/A | N/A |
| 3/29/19 11:18 AM | 20.8 | Steam Interference | N/A | N/A |
| 3/29/19 6:54 PM | 20.9 | Steam Interference | N/A | N/A |
| 3/30/19 3:54 AM | 20.7 | Steam Interference | N/A | N/A |
| 3/30/19 8:18 AM | 22.1 | Steam Interference | N/A | N/A |
| 3/30/19 9:06 AM | 20.9 | Steam Interference | N/A | N/A |
| 3/30/19 5:30 PM | 25.2 | Steam Interference | N/A | N/A |
| 3/30/19 11:54 PM | 23.8 | Steam Interference | N/A | N/A |
| 3/31/19 3:12 AM | 22.1 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

The following instances occurred due to steam interference.

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 3/31/19 3:18 AM | 22.6 | Steam Interference | N/A | N/A |
| 3/31/19 5:24 AM | 20.9 | Steam Interference | N/A | N/A |
| 3/31/19 5:18 PM | 26.7 | Steam Interference | N/A | N/A |
| 3/31/19 5:24 PM | 25.9 | Steam Interference | N/A | N/A |
| 3/31/19 6:06 PM | 26.6 | Steam Interference | N/A | N/A |
| 3/31/19 9:00 PM | 22.1 | Steam Interference | N/A | N/A |
| 3/31/19 10:00 PM | 23.5 | Steam Interference | N/A | N/A |

ESP 20% Opacity Report (Required by Consent Decree for Civil Action No. 15-cv-11804; section B.20.)
1st Quarter 2019

| The following instances occurred due to daily or quarterly calibration checks or during maintenance on the COMS. |
|---|
| |

| Date / Time | 6-Min Avg Opacity | Section B.20.a<br><br>Identify the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity; | Section B.20.b<br><br>When the root cause is unknown, provide a description of efforts taken by Defendant to investigate the root cause of each 6-minute block average reading that exceeds 20% opacity, including a copy of any related ESP operating records; | Section B.20.c<br><br>Describe corrective actions taken in response to the root cause of each instance in which the 6-minute block average reading exceeds 20% opacity, including but not limited to a copy of related work orders or other documents submitted to address the cause of the high reading, if any; |
|---|---|---|---|---|
| 1/22/19 10:18 AM | 24.7 | Quarterly COMS calibration and maintenance checks. | N/A | N/A |
| 1/22/19 10:24 AM | 24.7 | Quarterly COMS calibration and maintenance checks. | N/A | N/A |
| 1/22/19 10:30 AM | 44.6 | Quarterly COMS calibration and maintenance checks. | N/A | N/A |
| 1/22/19 10:36 AM | 46.5 | Quarterly COMS calibration and maintenance checks. | N/A | N/A |
| 2/9/19 4:12 PM | 22.9 | Daily COMS calibration | N/A | N/A |
| 3/1/19 4:06 PM | 22.3 | Daily COMS calibration | N/A | N/A |
| 3/19/19 11:24 AM | 25.3 | Daily COMS calibration | N/A | N/A |
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