



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

DATE: *August 16, 2021*

SUBJECT: CLEAN AIR ACT INSPECTION REPORT
Cleveland-Cliffs Burns Harbor, Burns Harbor, Indiana

FROM: Carlo Demma, Physical Scientist
AECAB (MN/OH)

THRU: Brian Dickens, Section Chief
AECAB (MN/OH)

TO: File

BASIC INFORMATION

Facility Name: Cleveland-Cliffs Burns Harbor

Facility Location: 250 U.S. Highway 12, Burns Harbor, Indiana 46304

Date of Inspection: July 20, 2020

EPA Inspector(s):

1. Patrick Miller, Environmental Engineer
2. Carlo Demma, Physical Scientist

Contact Email Address: Tom Maicher, Thomas.Maicher@clevelandcliffs.com

Purpose of Inspection: To conduct Clean Air Act offsite visible emission observations of integrated iron and steel manufacturing operations, including the Basic Oxygen Process Furnace (BOPF) roof monitor located at Cleveland-Cliffs Burns Harbor.

Facility Type: Integrated Iron and Steel Manufacturing Plant

Regulations Central to Inspection: EPA assessed compliance with the requirements of opacity limits required by 40 C.F.R. Part 63 Subpart FFFFF § 63.7790(a), Table 1 and the requirements of the Indiana Administrative Code, 326 IAC 5-1-2 (Opacity Limitations).

- Opacity limits at the roof monitor.
- Opacity limits at shop openings.
- Opacity limits at the flare.

Inspection Type:

- ☒ Unannounced Inspection
☐ Announced Inspection

OFFSITE VISIBLE EMISSION OBSERVATIONS**Data Collected and Observations:**

Offsite observations were conducted in accordance with EPA Alternative Method 082 on the roof monitor of the building which houses the Basic Oxygen Furnaces (BOF) at Cleveland-Cliffs Burns Harbor ("Facility") in the afternoon on July 20, 2020. Visible emissions were observed from the BOF Shop roof and were analyzed in accordance with EPA Alternative Method 082. The results indicate opacity was as high as 52.9% on a three-minute average.

Offsite observations were conducted in accordance with EPA Alternative Method 082 on the operations near the lower shop openings of the BOF at the Facility in the afternoon on July 20, 2020. Visible emissions were observed from the BOF Shop operations near the lower shop openings and were analyzed in accordance with EPA Alternative Method 082. The results indicate opacity was as high as 21.2% on a three-minute average.

Offsite observations were conducted in accordance with EPA Alternative Method 082 on the D Blast Furnace (BF) flare at the Facility in the afternoon on July 20, 2020. Visible emissions were observed from the D BF flare and were analyzed in accordance with EPA Alternative Method 082. The results indicate opacity was as high as 28.5% on a six-minute average.

Visible Emission Observation Reports are included in Attachments A, B, and C.

EPA did not enter the facility during any of the offsite visible emission observations.

DIGITAL SIGNATURES

Report Author: **CARLO DEMMA**

Digitally signed by CARLO DEMMA
Date: 2021.08.16 15:00:31 -05'00'

Section Chief: **Brian Dickens**

Digitally signed by Brian Dickens
Date: 2021.08.16 15:24:38 -05'00'

Facility Name: Cleveland-Cliffs Burns Harbor

Facility Location: 250 U.S. Highway 12, Burns Harbor, Indiana 46304

Dates of Inspection: July 20, 2020

APPENDICES AND ATTACHMENTS

1. Attachment A – Visible Emission Observation Report for July 20, 2020
2. Attachment B – Visible Emission Observation Report for July 20, 2020
3. Attachment C – Visible Emission Observation Report for July 20, 2020

Attachment A

VISIBLE EMISSION OBSERVATION FORM

Method Used Alternative Method 082		
Equipment Owner Start N/A		
Facility Name Cleveland-Cliffs Burns Harbor, LLC		
EO Street Address 250 West U.S. Highway 12		
EO City Burns Harbor	EO State IN	EO Zip 46304-9745

Process BOF Shop	Unit Roof Monitor	Operating Mode N/A
Control Equipment N/A	Operating Mode N/A	

Describe Emission Point Uncaptured emissions, wind stable, plume aloft (lofting)			
Height of Emiss. Pt Start 314.4 End Same		Height of Emiss. Pt. Rel. to Observer Start 310.4 End Same	
Distance to Emiss. Pt Start 3547.86 End Same		Direction to Emiss. Pt (Degrees) Start 63.78 End Same	

Vertical Angle to Obs. Pt. Start 5.17 End Same		Direction to Obs. Pt. Start 64.62 End Same	
Distance and Direction to Observation Point from Emission Point Start 52.33 / 207.12 End Same			
Describe Emissions Start Striking yellowish smoke End Same			
Emission Color Start White End Same		Water Droplet Plume Attached: (X) Detached: () N/A: ()	

Describe Plume Background Start Clear sky. End Same			
Background Color Start Gray End Same		Sky Conditions Start Clear End Same	
Wind Speed Start 5 End Same		Wind Direction Start 315 End Same	
Ambient Temp. Start 90 End Same	Wet Bulb Temp. Start 62 End Same	RH Percent Start 58 End Same	



Longitude 087.09.01.894.W	Latitude 41.38.07.609.N	Declination
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Notes

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Observation Date 7/20/2021	Time Zone EST	Start Time 16:17:37	End Time 16:25:37
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					Comments
1	95	95	90	85	
2	85	45	40	30	Highest 3-min Avg
3	25	20	15	10	Opacity = 52.9%
4	10	15	10	15	
5	15	10	10	15	
6	10	10	5	10	
7	5	0	0	0	
8	0	0	0	0	
9	0				
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Observers Name (Print) Carlo Demma	
Observers Signature Carlo Demma	Date 7/20/2021
Organization USEPA Region 5	
Certified By Carlo Demma	Date 7/28/2021

Attachment B VISIBLE EMISSION OBSERVATION FORM

Method Used Alternative Method 082		
Equipment Owner Start N/A		
Facility Name Cleveland-Cliffs Burns Harbor, LLC		
EO Street Address 250 West U.S. Highway 12		
EO City Burns Harbor	EO State IN	EO Zip 46304-9745

Process BOF Shop	Unit Furnace No. 1	Operating Mode N/A
Control Equipment N/A	Operating Mode N/A	

Describe Emission Point Uncontrolled fugitive emissions, plume coning			
Height of Emiss. Pt Start 343.05 End Same		Height of Emiss. Pt. Rel. to Observer Start 339.05 End Same	
Distance to Emiss. Pt Start 3875.38 End Same		Direction to Emiss. Pt (Degrees) Start 61.12 End Same	

Vertical Angle to Obs. Pt. Start 5 End Same		Direction to Obs. Pt. Start 62.34 End Same	
Distance and Direction to Observation Point from Emission Point Start 93.6 / 180 End Same			
Describe Emissions Start Bright white smoke End Same			
Emission Color Start White End Same		Water Droplet Plume Attached: () Detached: () N/A: (X)	

Describe Plume Background Start Clear sky with some buildings End Same			
Background Color Start Gray End Same		Sky Conditions Start Clear End Same	
Wind Speed Start 5 End Same		Wind Direction Start 315 End Same	
Ambient Temp. Start 90 End Same	Wet Bulb Temp. Start 65 End Same	RH Percent Start 58 End Same	



Longitude 087.09.01.875.W	Latitude 41.38.07.602.N	Declination
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Notes Opacity was seen rising from the operations near the lower portion of the building.
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Observation Date 7/20/2021	Time Zone EST	Start Time 14:38:48	End Time 14:57:03
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					Comments
1	45	30	15	15	
2	10	20	20	30	
3	20	20	15	15	Highest 3-min Avg
4	35	30	20	15	Opacity = 21.2%
5	5	0	15	30	
6	10	5	0	0	
7	0	10	30	35	
8	35	20	10	25	
9	35	20	15	5	
10	5	10	10	20	
11	20	25	15	20	
12	15	15	10	15	
13	5	5	10	5	
14	10	15	10	10	
15	5	10	5	5	
16	5	5	5	5	
17	5	10	10	10	
18	5	5	5	0	
19	5	0			
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Observers Name (Print) Carlo Demma	
Observers Signature Carlo Demma	Date 7/20/2021
Organization USEPA Region 5	
Certified By Carlo Demma	Date 8/13/2021

Attachment C VISIBLE EMISSION OBSERVATION FORM

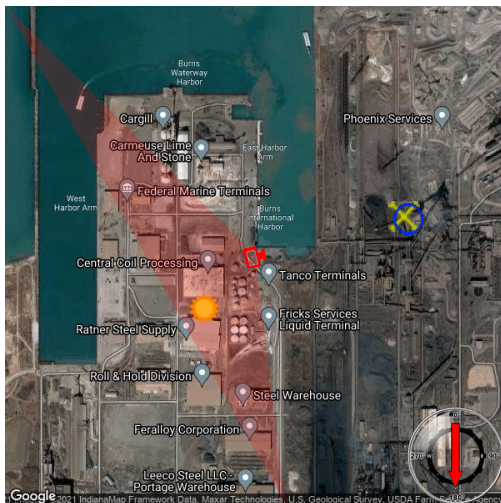
Method Used Alternative Method 082		
Equipment Owner Start N/A		
Facility Name Cleveland-Cliffs Burns Harbor, LLC		
EO Street Address 250 West U.S. Highway 12		
EO City Burns Harbor	EO State IN	EO Zip 46304-9745

Process Blast Furnace D	Unit Flare	Operating Mode N/A
Control Equipment N/A	Operating Mode N/A	

Describe Emission Point Uncontrolled emissions, plume coning			
Height of Emiss. Pt Start 120.01 End Same		Height of Emiss. Pt. Rel. to Observer Start 116.01 End Same	
Distance to Emiss. Pt Start 2213.69 End Same		Direction to Emiss. Pt (Degrees) Start 76.55 End Same	

Vertical Angle to Obs. Pt. Start 3 End Same		Direction to Obs. Pt. Start 75.29 End Same	
Distance and Direction to Observation Point from Emission Point Start 68.23 / 58.1 End Same			
Describe Emissions Start White smoke End Same			
Emission Color Start White End Same		Water Droplet Plume Attached: (☒) Detached: (☐) N/A: (☐)	

Describe Plume Background Start Background has smog coming in and out of frame. End Same			
Background Color Start Gray End Same		Sky Conditions Start Clear End Same	
Wind Speed Start 5 End Same		Wind Direction Start 315 End Same	
Ambient Temp. Start 90 End Same	Wet Bulb Temp. Start 65.66 End Same	RH Percent Start 58 End Same	



Longitude 087.09.01.913.W	Latitude 41.38.07.736.N	Declination
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Observation Date 7/20/2021	Time Zone EST	Start Time 14:12:29	End Time 14:18:13
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					Comments
1	25	25	25	25	
2	25	25	25	25	
3	20	25	30	25	Highest 6-min Avg
4	25	30	25	25	Opacity = 28.5%
5	30	35	30	35	
6	25	25	30	25	
7	25	30	25	30	
8	20	20	30	30	
9	20	20	30	30	
10	30	30	40	40	
11	20	25	30	30	
12	30	15	15	20	
13	30	25	30	20	
14	30	45	30	20	
15	35	30	20	20	
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Observers Name (Print) Carlo Demma	
Observers Signature <i>Carlo Demma</i>	Date 7/20/2021
Organization USEPA Region 5	
Certified By Carlo Demma	Date 8/9/2021