

CAM Determination by EPA for a coal-fired boiler with three control devices in series including a multiclone, wet scrubber, and wet electronic precipitator.

The boiler is subject to 40 CFR Part 63, Subpart DDDDD (Boiler MACT). The boiler has a Rule 331 particulate matter (PM) limit and was determined to be subject to the CAM Rule. In summary, EPA (Barrett Parker with Beth Valenziano) concluded that only the multiclone is subject to the CAM Rule because it controls PM to meet the Rule 331 limit. The other two control devices that were added later downstream of the multiclone for compliance with the boiler MACT are not subject to the CAM Rule because they are not needed to meet the Rule 331 PM limit. Thus, CAM monitoring is included only for the multiclone in the ROP. There is also a discussion about streamlining the emission limits. The emission limits were not streamlined in the ROP.

This determination only applies in situations where the first control device is sufficient to meet a permit limit and other control devices were added later downstream of the first control device to meet a 40 CFR Part 60 (NSPS) or Part 63 (MACT) limit.

The first email is from the facility with the boilers asking EPA for a determination. It is the 2nd email to EPA and includes more detailed information. The second email is from EPA and includes the determination. The last three emails are about streamlining emission limits.

Sent: Friday, September 07, 2018 11:45 AM
To: Parker, Barrett <Parker.Barrett@epa.gov>
Subject: RE: response to your question
Importance: High

Dear Barrett:

Thank you for the response and contact. I am providing additional and specific information below. When completed, I would like to forward your response to the local (Part 70) permitting authority in Michigan, which is the local district office of the MDEQ. We have an exceptionally good working relationship with the MDEQ Air Quality Division office and with the AQD District Supervisor (the permit decision maker) on this issue as well as the state expert on Part 64 provisions. In conversation with the MDEQ AQD District Supervisor and the Michigan Part 64 expert, we agreed that I would reach out to the national EPA experts on the Part 64 subject. The specific and additional information is as follows:

The subject boiler units include two existing (grandfathered) non-utility coal fired, steam producing units with an input capacity of approximately 87 million BTU per hour each. The boilers have existed for more than a half century. The units were subjected to Michigan RACT requirements for total particulates well before the Part 70 and Part 63 rules were promulgated. Each boiler was fitted with a mechanical (multiclone) dry particulate separator at that time, in order to meet the Michigan Part 3 (total particulate) RACT emission restriction of 0.45 pounds of total particulate per 1,000 pounds of stack gas. When the Part 70 regulations were promulgated, the coal fired units were rolled into the site renewable operating permit program as a component of the major source operating permit program and were subjected to Part 64 CAM provisions (correctly or incorrectly) for monitoring and proper operation of the multiclone units. Guidance on this subject indicates that the total PM could be considered a surrogate for the parameters PM10 and PM2.5; however, we have pointed out the mechanical control equipment is not effective on fine

particulates which may be an indication that using total PM as a surrogate is not appropriate in this case. Guidance appears to indicate otherwise.

Source testing indicates the multiclone units are effective in the removal of total PM, thereby meeting the (federally enforceable) Michigan Part 3 total PM limitations. We are of the opinion the multiclones are not highly effective at removing or reducing PM10 nor PM2.5 emissions from the coal fired units, but are effective at removing total PM, as a federally enforceable requirement within the Michigan SIP provisions, under Michigan Part 3 rules for affected boiler units.

Compliance with the major source Boiler NESHAP has been demonstrated by way of MACT control equipment that was installed on the combined discharges from the multiclones. The MACT controls consist of a single high-pressure venturi (wet) scrubber, followed by a separation changer and wet electrostatic precipitator (WESP). The WESP connects and discharges to the existing stack. The boiler NESHAP requires the control of, monitoring for, and ongoing compliance with the NESHAP MACT control equipment operating parameters, including the emissions of total PM (as a surrogate for HAP metals), as well as other HAP and other surrogate pollutants. The MACT air pollution control components have been very effective at reducing emissions beyond the RACT controls as demonstrated during NESHAP required source testing.

Our technical and regulatory discussions with the Michigan DEQ staff have centered on their interpretation that CAM monitoring requirements are superimposed upon the operating parameters for each of the multiclone units, the single venturi and the single WESP. We recognize that Part 64 requirements apply to emissions, however the CAM monitoring provisions apply to the operating conditions of the pollution control device(s). Taking each of the pollutant control devices into consideration for the CAM monitoring provisions, we have the following questions:

For each of the two multiclones, the parameter or pollutant of Part 64 discussion has been total PM. We understand that total PM can be a surrogate for the targeted Part 64 pollutant and in looking at the definitions, we find the scope applies to the same list of pollutants that are subject to Part 70. The criteria pollutants list includes fine particulates (PM10 and PM2.5). So our first question relates to the (pre NESHAP) portion of the emission associated with the multiclones. Does CAM apply to the multiclones, assuming the multiclones are not effective at reducing PM10 nor PM2.5? In short, do we need to monitor and operate the multiclones with the associated reporting under Part 64 in a CAM plan, which would entail operating the multiclones within acceptable differential pressure range, as we have been doing for several years.

The second portion of the question relates to the Part 64 applicable emissions downstream of the multiclones. Since the major source NESHAP provisions provide/requires testing and monitoring of the venturi and WESP units;

1. Are the provisions and federally enforceable monitoring requirements in the boiler NESHAP sufficient demonstrations to satisfy Part 64 CAM (presumption of compliance with NESHAP demonstrations compliance with Part 64? And, does the exemption provided in 40 CFR 64.2(b)(i) apply to the emissions/monitoring requirements for the venturi and WESP units? We are assuming if the monitoring for the venturi and WESP is exempt from Part 64, their monitoring need not be included in the CAM plan, but rather just the NESHAP monitoring plan.

2. Does the retrofit equipment and the resulting control of emissions provide presumptive assurance of compliance with Part 64 since the control strategy and equipment used is effective at reducing the Michigan Part 3 (and federally enforceable) limit for total PM? This question speaks to our discussion with MDEQ regarding the point in the process stream where compliance demonstration would be determined, for example downstream of the multiclones but upstream of the MACT control units.
3. Do we need to include the operating parameters for the Part 63 NESHAP controls (venturi and WESP) in the Part 64 CAM plan?

Ultimately, we need to comply with each applicable requirement and properly identify the applicable requirements in the Part 70, renewable operating permit. The overlap in Part 64, with the SIP provisions in the state rule, along with the NESHAP Part 63 MACT controls have caused confusion. Further, the source is required to certify compliance to the applicable requirement. In the event an emission excursion or deviation occurs in the future, we would like to clarify exactly what applicable requirement, or requirements, have been violated. For example, if the WESP operating conditions were not maintained, that would constitute a NESHAP deviation or violation. Would that also be a Part 64 deviation or violation? This question is in consideration of the site-specific configuration whereby controls upstream of the WESP would continue to be operational, and technically we would assume Part 64 monitoring could demonstrate compliance with the Part 64 provisions in consideration of and by way of proper operation of the multiclone and venturi units. Or would the “out of range operation” of one of the units in series of the overall pollution control strategy also be indicative of, or provide evidence that Part 64 CAM provisions were not met and would be a Part 64 deviation or violation, in addition to a NESHAP deviation or violation?

We realize there are several facets to this inquiry, including general applicability, Part 64 exemption, NESHAP control and presumption of compliance as well as the proper monitoring provisions for all. Thank you in advance for your attention to our question and for your response. If you would like to have a call on this issue, I may be reached at 616-218-8353 (cell).

Best regards,

Jeff

Parker, Barrett <Parker.Barrett@epa.gov>

Beth et al:

I apologize for the delay in responding; I've been the recipient of a new computer and all the 'fun' that entails. As we all recall, the boiler at Sebewaing relies on a cyclone to meet a SIP PM limit and is subject to the CAM rule. The boiler is also subject to a MACT PM standard which is about 15 times lower than the SIP PM limit; this lower limit required installation of a wet ESP and scrubber. I understand that the averaging time is consistent for each PM limit. As boiler exhaust now is routed through all 3 control devices in sequence, Sebewaing's consultant wants to know whether the newer PM control devices need to be included in the CAM plan for the SIP.

The argument for including the newer PM control devices is based on the idea that compliance with the SIP PM limit can only be determined at the stack after the exhaust passes through all of the control devices. It seems to me that one could conduct a Method 5 downstream of the

cyclone, but upstream of the newer control devices (provided the appropriate amount of spacing exists); however, given the previous test results combined with a generous SIP PM limit and simple control device (as long as the cyclone hasn't degraded to the point of having extra openings) the cyclone is going work as designed, dropping the larger particles and allowing the smaller ones to continue in the exhaust stream. This is another way of saying that the newer PM control devices appear unnecessary to meet the SIP PM limit.

The converse does not appear to be true for the MACT PM limit: one or both of the newer control devices are necessary to meet that limit. I suppose Sebewaing could determine the operating conditions necessary to meet that limit, if it wished, but by following the periodic testing with concurrent operating parameters recordation and operation of the parameters within the ranges established during concurrent testing requirements, Sebewaing is able to meet the MACT PM standard. As a post 1990 enacted standard, the boiler and its newer control devices are not subject to the CAM rule. This is consistent with Response 17 to the CAM rule FAQs (see <https://www.epa.gov/sites/production/files/2016-05/documents/camfaq.pdf>). That response also mentions the ability to subsume monitoring requirements (and associated CAM requirements) into the MACT monitoring requirements via permit streamlining, which is discussed in White Paper Number Two (see <https://www.epa.gov/sites/production/files/2015-08/documents/wtppr-2.pdf>). Note that as Chris mentioned, Sebewaing would need to request – and MDEQ would need to agree on – permit streamlining. The benefit, from my seat, is that Sebewaing would remove the need for further CAM / SIP PM requirements, thus eliminating superfluous requirements.

Without streamlining the SIP PM requirements, Sebewaing remains subject to the SIP PM limit and CAM plan requirements for the cyclone. Ongoing testing, if it is required, would need to show the relationship between the cyclone parameters and PM emissions (the newer control devices could be on or off, but I suppose would need some sort of variance if the newer control devices were off, since you've described that the boiler could not meet its MACT PM limit under that circumstance).

Let me know if you'd like to chat further, as well as how you want to inform Sebewaing's consultants of the response. If we're in consensus, I think the local MDEQ folks should make the response.

Barrett

Question 17. A unit is subject to a newly-promulgated MACT standard. The unit is part of a facility that is subject to Title V (and has a Part 70 permit) because the facility emits a criteria pollutant above the major source threshold. Is the unit exempt from the CAM rule, even if the MACT does not require monitoring for the criteria pollutant that makes the facility a major source?

Response 17. The CAM rule exemption for MACT rules applies only to monitoring for those MACT emission limits. That is, the CAM rule imposes no additional monitoring on the emission unit for showing compliance with MACT limits. This exemption does not extend to monitoring for compliance with other limitations that may also apply to that unit. However, the MACT monitoring may satisfy CAM requirements. This may often be the case when the MACT requires particulate or VOC control measures and the criteria pollutant is particulate or VOC. Note that the source owner must make this determination initially and indicate in the permit application that the existing

monitoring satisfies CAM or propose additional monitoring to meet the CAM requirements for monitoring for compliance with the criteria pollutant limit.

From: Hare, Chris (DEQ) [<mailto:HAREC@michigan.gov>]

Sent: Monday, September 24, 2018 2:28 PM

To: Valenziano, Beth <valenziano.beth@epa.gov>; Parker, Barrett <Parker.Barrett@epa.gov>; Chatfield, Ethan <chatfield.ethan@epa.gov>; dunlapd_michigan.gov <dunlapd@michigan.gov>; Ethridge, Christopher (DEQ) <ETHRIDGEC@michigan.gov>

Subject: MI Sugar Sebewaing CAM information

FYI. Based on our conversation today regarding Michigan Sugar, Sebewaing, MI, facility and CAM applicability, Barrett asked if the SIP PM limit for the coal fired boilers could be subsumed by the boiler MACT limit. The boiler MACT limit is more stringent. Below is a conversion by John Vial of our Permit section. I'm not sure MI Sugar would want to do this in their Title 5 permit, but it's an option.

From: Vial, John (DEQ)

Sent: Monday, September 24, 2018 2:20 PM

To: Mitchell, Mark (DEQ) <MITCHELLM7@michigan.gov>

Cc: Hare, Chris (DEQ) <HAREC@michigan.gov>

Subject: RE: Conversion Information

Chris:

Looks as though the boilers are rated at 87 MMBTU/hr. as reported in MAERs. They are also reporting a heating value of 12,998 BTU per pound of coal used in the boilers

The maximum coal usage is 6,693 lbs. per hour for each boiler based on 87 MMBTU/hr. and 12,998 BTU per pound of coal.

Amount of air required for complete combustion is 11.5 kilogram of air per kilogram of coal.

Our PM regulations are based on 50% excess air.

I'm calculating 115,460 lbs. of air for each boiler at 50% excess air.

At 0.45 lbs. PM per 1,000 lbs. of exhaust gas, the 0.45 lbs./1,000 limit equates to approximately 0.59 lb/MMBTU, which is substantially higher than the MACT limit of 0.04 lb/MMBtu.

Keep in mind that this is an approximation.

From: Hare, Chris (DEQ)

Sent: Monday, September 24, 2018 11:12 AM

To: Vial, John (DEQ) <VIALJ@michigan.gov>; Mitchell, Mark (DEQ)

<MITCHELLM7@michigan.gov>; Gasloli, Tom (DEQ) <GASLOLIT@michigan.gov>

Subject: Conversion Information

Hey Guys, I need a little help. MSC Sebewaing has a .45 lbs PM/1,000 lbs exhaust limit on their coal fired boilers. They now have a MACT limit of .04 lbs PM / mmBTU heat input on the coal fired boilers. I'm assuming the MACT limit is more stringent, but how do I convert these limits to the same units to compare? What information would I need (CFM of exhaust, BTU rating of boilers, etc.)? EPA is asking us if we can subsume the state limit, but wants us to compare the limits. Can you guys assist me in converting limits? Thanks, Chris