ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

BUREAU OF AIR

DIVISION of AIR POLLUTION CONTROL

PERMIT SECTION

PROJECT SUMMARY for the
DRAFT CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT

Union Electric Company d/b/a Ameren U. E.
2816 Kinoka Road, Patoka, Marion County, IL 62875

Illinois EPA ID Number: 121803AAA

Application Number: 02100074

Application Type: Renewal Permit

Start of Public Comment Period: November 23, 2011

Close of Public Comment Period: December 22, 2011

Permit Engineer/Technical Contact: Ross Cooper, 217/782-2113

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(This Project Summary generally describes the source and explains the draft permit. This document has been prepared pursuant to Section 39.5(8)(b) of the Illinois Environmental Protection Act, which requires “a statement that sets forth the legal and factual basis for the draft CAAPP permit conditions.”)

I. INTRODUCTION

This source has applied for a renewal of the Clean Air Act Permit Program (CAAPP) operating permit. The CAAPP is the program established in Illinois for operating permits for significant stationary sources as required by Title V of the federal Clean Air Act and Section 39.5 of Illinois' Environmental Protection Act. The conditions in a CAAPP permit are enforceable by the Illinois Environmental Protection Agency (Illinois EPA), the USEPA, and the public. This document is for informational purposes only and does not shield the Permittee from enforcement actions or its responsibility to comply with applicable regulations. This document shall not constitute a defense to a violation of the Act or any rule or regulation.

A CAAPP permit contains conditions identifying the applicable state and federal air pollution control requirements that apply to a source. The permit also establishes emission limits, appropriate compliance procedures, and specific operational flexibility. The appropriate compliance procedures may include monitoring, record keeping, and reporting to show compliance with these requirements. The Permittee must carry out these procedures on an on-going basis to demonstrate that the source is operating in accordance with the requirements of the permit. Further explanations of the specific provisions of the draft CAAPP permit are contained in the attachments to this document, which also identify the various emission units at the source.

Also of note, 35 IAC 201.149 (Operation During Malfunction, Breakdown or Startups) can only provide authorization to continue operation of a turbine, engine, etc. in violation of the applicable standards or limitations set forth in Title 35 Subtitle B Chapter I Subchapter c, not hourly emission limitations established for other purposes. Authorization to continue operation in violation of the established hourly emission limitations are derived from Title 1 limits established by a construction permit. Pursuant to 35 IAC 201.149:

> No person shall cause or allow the continued operation of an emission source during malfunction or breakdown of the emission source or related air pollution control equipment if such operation would cause a violation of *the standards or limitations set forth in Subchapter c of this Chapter* unless the current operating permit granted by the Agency provides for operation during a malfunction or breakdown.
>
> No person shall cause or allow violation of *the standards or limitations set forth in that Subchapter* during startup unless the current operating permit granted by the Agency provides for violation of such standards or limitations during startup.

The proposed permit includes provisions to implement Illinois' Clean Air Interstate Rule (CAIR) program. The US Court of Appeals for the District of Columbia issued an opinion vacating CAIR on July 11, 2008. On Sept. 24, 2008, the USEPA filed a petition for rehearing or, in the alternative, for a remand of the case without vacatur. At the time of public notice (October of 2008) for the renewal CAAPP permit, the Illinois EPA acted in accordance with preliminary source comments and

on the belief that CAIR would be vacated in its entirety. As such, the draft renewal permit that was released for public comment did not contain the CAIR permit or any CAIR provisions. On Dec. 23, 2008, the US Court of Appeals for the District of Columbia issued an opinion stating that CAIR was remanded to USEPA without vacatur. As a result of this action by the court and in response to comments, the Illinois EPA has included CAIR provisions in the proposed permit to USEPA for its review, specifically Section 6.1 and Attachment 5. As of January 1, 2009, the NO_x SIP Call obligations have been replaced by the CAIR provisions at 35 Ill. Adm. Code Part 225, subsequently sources are no longer required to demonstrate compliance with the NO_x SIP call regulations at 35 IAC 217, Subpart W. The section implementing 35 IAC 217, Subpart W has been removed from the proposed permit.

It is appropriate to address a source comment over the perceived length and additional complexity/burden of the renewal CAAPP permit over the initial CAAPP permit. CAAPP permits are required by 40 CFR Part 70 and 39.5 of the Act to contain periodic monitoring that is sufficient to assure compliance with applicable regulations, standards, and limitations - this is also further evidenced through Sierra Club, et al. v EPA No. 04-1243. Since the time of the initial CAAPP permits, standards for periodic monitoring for Illinois as established by USEPA have risen. The initial CAAPP permits simply reissued today would not be approved by USEPA due to deficiencies from a lack of appropriate periodic monitoring, therefore it was necessary enhance those portions of the permit. While the source may view the additional monitoring, recordkeeping, and reporting as overly burdensome, the permit section is obligated to follow 40 CFR Part 70 and 39.5 of the Act, and in doing so attempted to craft source appropriate monitoring schemes that were minimally burdensome and costly for the source. Simply “testing upon request” or citing to an established limitation are insufficient periodic monitoring methods.

II. GENERAL SOURCE DESCRIPTION

a. Nature of Source

Union Electric Company d/b/a Ameren U. E., Kinmundy Power Plant is located at 2816 Kinoka Road, Patoka. The source utilizes two natural gas or distillate fuel oil turbines to generate electricity. In addition, the turbines control NO_x with dry low NO_x burners during natural gas firing and water injection systems during fuel oil firing.

b. Ambient Air Quality Status for the Area

The source is located in an area that is currently designated attainment or unclassifiable for the National Ambient Air Quality Standards for all criteria pollutants (carbon monoxide, lead, nitrogen dioxide, ozone, $PM_{2.5}$, PM_{10}, sulfur dioxide).

c. Major Source Status

1. The source requires a CAAPP permit as a major source of PM_{10}, NO_x, CO, SO_2 emissions.

2. The source also requires a CAAPP permit as an "affected source" for the purposes of Acid Deposition Control, Title IV of the Clean Air Act, pursuant to 40 CFR 70.3(a)(4).

3. The source is not major for Hazardous Air Pollutants (HAPs) as the source has potential HAP emissions less than major source levels, (10 tons or greater of a single HAP, 25 tons or greater for combined HAP). The source shall keep records to ensure they have not become a major source of HAPs in the previous calendar year. If in the previous calendar year, emissions of HAPs exceeded 80% of the major source threshold for individual or total HAPs (greater than 8 tons of a single HAP or greater than 20 tons of total HAPs), then testing for HAPs shall be conducted according to 40 CFR Part 63, Subpart YYYY, National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines. The source is therefore not subject to 40 CFR Part 63, Subpart YYYY, National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines, but would rely on the HAP testing procedures within that rule should minor source verification be required. These conditions reflect the periodic monitoring needed to ensure compliance.

d. Source Emissions

The following table lists annual emissions of criteria pollutants from this source, as reported in the Annual Emission Reports sent to the Illinois EPA.

	Annual Emissions (tons)	
Pollutant	**2007**	**2006**
CO	6.42	3.27
NO_x	9.29	4.97
PM	1.24	0.63
SO_2	0.07	0.03
VOM	0.56	0.29
(top HAP)	---	---

III. NEW SOURCE REVIEW/TITLE I CONDITIONS

This draft permit contains terms and conditions that address the applicability of permit programs for new and modified sources under Title I of the Clean Air Act (CAA) and regulations promulgated thereunder, including 40 CFR 52.21, Prevention of Significant Deterioration (PSD) and 35 IAC Part 203, Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within the draft permit by T1, T1R, or T1N. Any conditions established in a construction permit pursuant to Title I and not

revised or deleted in this draft permit, remain in effect pursuant to Title I provisions until such time that the Illinois EPA revises or deletes them. Where the source has requested that the Illinois EPA establish new conditions or revise such conditions in a Title I permit, those conditions are consistent with the information provided in the CAAPP application and will remain in effect pursuant to Title I provisions until such time that the Illinois EPA revises or deletes them.

This draft permit would not establish any new Title I requirements or revised Title I requirements.

IV. COMPLIANCE INFORMATION

The source has certified compliance with all applicable rules and regulations; therefore, a compliance schedule is not required for this source. In addition, the draft permit requires the source to certify its compliance status on an annual basis.

V. PROPOSED ILLINOIS EPA ACTION/REQUEST FOR COMMENTS

It is the Illinois EPA's preliminary determination that this source's permit application meets the standards for issuance of a CAAPP permit. The Illinois EPA is therefore proposing to issue a CAAPP permit, subject to the conditions proposed in the draft permit.

Comments are requested by the Illinois EPA for the draft or proposed permit, pursuant to 35 IAC Part 252 and Sections 39.5(8) and (9) of the Illinois Environmental Protection Act. A final decision on the draft or proposed permit will not be made until the public, affected states, and USEPA have had an opportunity to comment. The Illinois EPA is not required to accept recommendations that are not based on applicable requirements. If substantial public interest is shown in this matter, the Illinois EPA will consider holding a public hearing in accordance with 35 IAC Part 166.

VI. APPEAL CHANGES

Added Condition 5.1.3 to specifically mention that the source is synthetic minor of HAP emissions. Previously, there were no synthetic limits in the Title V.

Modified 5.7.2(a) to indicate when testing is required.

Modified Condition 5.7.2(b) to specify after how many days the testing should be done by.

Modified Condition 7.1.3(f) to include which construction permit gave startup authorization to the Permittee and to clarify operating procedures and recordkeeping during startup.

Modified 5.9.2(a) to include synthetic limits from Condition 7.1.6(a) that assure the source is minor for HAPs. These conditions limit the amount of fuel oil the source can fire each year.

Modified 5.9.3(b) to allow electronic copies as well as paper.

Modified 7.1.3(f) to clarify start up procedures for the turbines.

In Condition 7.1.5(a)(iii)(A), deleted the reference to follow manufacturer’s written instructions when conducting inspections because the manufacturer did not provide any. Instead, the Permittee shall conduct visual inspections on a quarterly basis.

7.1.8(c) Added condition to allow Permittee flexibility if they meet the definition of a gas-fired peaking unit or oil fired peaking unit as defined in 40 CFR 72.2.

7.1.9(d) Added recordkeeping requirement to keep track of which monitoring method they use for 7.1.8(c)

7.1.9(l) Modified records required for each startup and shutdown plus allowed 45 minutes for startup because these turbines are larger than other Ameren facilities.

7.1.9(o) modified to include a description of the startup and what type of problems occurred during it. This was done to simplify the process of reporting for a startup.

7.1.10(e) was deleted because it redundant with the new conditions in 7.1.9(o).

7.1.12(e)(ii) Changed in order to match with the construction permit already issued.

ATTACHMENT 1: Summary of Source-Wide Requirements

The following table indicates the source-wide emissions control programs and planning requirements that are applicable to this source. These programs are addressed in Sections 5 and 6 of the draft permit.

Program/Plan	**Applicable**
Emissions Reduction Market System (ERMS)	No
Acid Rain Program[1]	Yes
Clean Air Interstate Rule (CAIR) Program[3]	Yes
Compliance Assurance Monitoring (CAM) Plan	No
Fugitive Particulate Matter (PM) Operating Program	No
Risk Management Plan (RMP)	No
PM_{10} Contingency Measure Plan	No

1. The overall goal of the Acid Rain Program is to achieve significant environmental and public health benefits through reductions in emissions of sulfur dioxide (SO_2) and nitrogen oxides (NO_x), the primary causes of acid rain (Title IV of the federal Clean Air Act). To achieve this goal at the lowest cost to society, the program employs both traditional and innovative, market-based approaches for controlling air pollution. In addition, the program encourages energy efficiency and pollution prevention. If applicable, this program is further described in Section 6.0 of the draft permit, and does not relax other requirements for NO_x and SO_2 emissions.

2. Under Section 110 of the Clean Air Act (CAA), the USEPA adopted the Clean Air Interstate Rule or CAIR, 40 CFR Part 96, to reduce and permanently cap emissions of sulfur dioxide (SO_2), and nitrogen oxides (NO_x) from electric power plants that significantly contribute to fine particulate and ozone in the ambient air in the Eastern United States. To implement CAIR in Illinois, the Illinois EPA adopted 35 IAC Part 225 Subparts A, C, D and E.

ATTACHMENT 2: Summary of Requirements for Specific Emission Units

The following tables include information on the requirements that apply to significant emission units at this source. The requirements are found in Section 7 of the draft permit, which is further divided into subsection, i.e., Section 7.1, 7.2, etc., for the different categories of units at the source. A separate table is provided for each subsection in Section 7 of the draft permit. An explanation of acronyms and abbreviations is contained in Section 2 of the draft permit.

Table 1 (Section 7.1 of the draft permit)

Emission Unit - Turbines	
Description	The turbines are process emission units used to generate electricity.
Date Constructed	KCTG1 09/99 KCTG2 09/99
Emission Control Equipment	Dry Low NO_x Burners (Natural Gas Fired Mode) Water Injection System (Distillate Fuel Oil Fired Mode)
Applicable Rules and Requirements	
Emission Standards	• 35 IAC 212.123 – Opacity restrictions • 35 IAC 214.301 – Sulfur dioxide restrictions • 40 CFR 60.332(a)(1) – NSPS nitrogen oxides restriction • 40 CFR 60.333 – NSPS sulfur dioxide restriction • 35 IAC 217.706(a) - Nitrogen oxides restriction • 40 CFR 76 - Acid Rain Program • 40 CFR Part 96 - Clean Air Interstate Rule (CAIR)
Title I Conditions	• The draft permit contains limits on operation and emissions in Conditions 7.1.5 and 7.1.6. These limits were incorporated from Permit 99020027.
Non-applicability	• 40 CFR Part 63, Subpart YYYY, Stationary Combustion Turbines: Because the affected turbines are not located at a major source of HAP emissions, pursuant to 40 CFR 63.6085. • 35 IAC 212.321 or 212.322: Due to the unique nature of such units, a process weight rate cannot be set so that such rules cannot reasonably be applied, pursuant to 35 IAC 212.323. • 35 IAC 217.141: Because the affected engines are not fuel combustion units, as defined by 35 IAC 211.2470. • 35 IAC 216.121: Because the affected engines are not fuel combustion units, as defined by 35 IAC 211.2470.

Emission Unit - Turbines	
Non-applicability (Continued)	• 40 CFR Part 64, Compliance Assurance Monitoring (CAM): Because the affected turbines are subject to a NSPS proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i). • The affected turbines are not subject to 40 CFR Part 64, Compliance Assurance Monitoring (CAM) for Major Stationary Sources: i. For NO_x and SO_2, because: A. The affected turbines are subject to a NSPS proposed after November 15, 1990, pursuant to 40 CFR 64.2(b)(1)(i). B. The affected turbines are subject to Acid Rain Program requirements, pursuant to 40 CFR 64.2(b)(1)(iii). C. The affected turbines are subject to an emission limitation or standard for which this CAAPP permit specifies a continuous compliance determination method, pursuant to 40 CFR 64.2(b)(1)(vi). ii. For PM, VOM, and CO because the affected turbines do not use an add-on control device to achieve compliance with an emission limitation or standard.
Periodic Monitoring (other than basic regulatory requirements)	
Testing	Compliance with the opacity limitation in the permit is assured through the use of Reference Method 9 which is an accurate test for opacity and visible emissions. Compliance with the sulfur dioxide limitation in the permit is assured through sampling of the fuel for the sulfur content which is a reliable surrogate parameter for such emissions from these sources. Compliance with NO_x limitations is based on Method 20 and CEMS
Emissions Monitoring	• The observation is not intended to be a USEPA Test Method 9 opacity test, nor does the observation require a USEPA Test Method 9 certified observer. It is intended to be performed by personnel familiar with the operation of the turbine who would be able to make a determination based from the observed opacity as to whether or not the turbine was running properly, and subsequently initiate a corrective action if necessary. • Fuel monitoring • NO_x CEM
Operational Monitoring	Continuous monitoring system to track fuel usage.
Inspections	Periodic inspections of the turbine

Emission Unit - Turbines	
Recordkeeping	Numerous: fuel usage, hours of operation, sulfur contents, emissions, startup records, etc.
Other	• The established periodic monitoring is sufficient based on the fact that the facility does not routinely operate, does not have a history of non-compliance, and because the likelihood of an exceedance is very low. • IEPA is reauthorizing the exceedance of the opacity emission rate and the hourly emission rates for periods of startup. The hourly emissions rate exceedance continues to be authorized by the underlying construction permit. Prior to issuing the construction permit, IEPA personnel considered the technology employed, manufacture's guarantees data, and other available data (e.g., prior experience and job knowledge, testing results, familiarity with the combustion process and control methods, etc.) prior to authorizing an exceedance to the hourly limits which would ensure minimal impact on the NAAQS. The initial and renewal CAAPP permit establish various recordkeeping during startup, specifically whether an exceedance may have occurred. These records are then reported to the Bureau of Air Compliance Section who, if the situation warranted, would issue a violation notice for emissions in excess. Seeing no current or pending violation notice's indicates that historic emissions during startup have not been a great concern and have been inline with the criteria established under the original construction permit and test conditions established by that permit. • Terms are used in conjunction with conditions relating to testing: 1. "Qualified observer" is established in USEPA Test Method 9 (http://www.epa.gov/ttn/emc/promgate/m-09.pdf). 2. "Representative operation" is operation "serving as a typical or characteristic example." Therefore, to test under "representative conditions" the Permittee is obligated to perform the test: 1) in accordance with the manner in which the Permittee represented the process in the construction and operating permit applications, 2) in accordance to the criteria established in its permits, and 3) in accordance with a typical or characteristic example of the process in operation to properly represent the levels of emissions.
Reporting	
Prompt Reporting	See Attachment 3

ATTACHMENT 3: Prompt Reporting of Deviations

Prompt reporting of deviations is critical in order to have timely notice of deviations and the opportunity to respond, if necessary. The effectiveness of the permit depends upon, among other important elements, timely and accurate reporting. The Illinois EPA, USEPA and the public rely on timely and accurate reports submitted by the Permittee to measure compliance and to direct investigation and follow-up activities. Prompt reporting is evidence of a Permittee's good faith in disclosing deviations and describing the steps taken to return to compliance and prevent similar incidents.

Any occurrence that results in an excursion from any emission limitation, operating condition, or work practice standard as specified in this CAAPP permit is a deviation subject to prompt reporting. Additionally, any failure to comply with any permit term or condition is a deviation of that permit term or condition and must be reported to the Illinois EPA as a permit deviation. The deviation may or may not be a violation of an emission limitation or standard. A permit deviation can exist even though other indicators of compliance suggest that no emissions violation or exceedance has occurred. Reporting permit deviations does not necessarily result in enforcement action. The Illinois EPA has the discretion to take enforcement action for permit deviations that may or may not constitute an emission limitation or standard or the like, as necessary and appropriate.

Section 39.5(7)(f)(ii) of the Illinois Environmental Protection Act, which mirrors 40 CFR 70.6(a)(3)(iii)(B), requires prompt reporting of deviations from the permit requirements. The permitting authority (in this case, Illinois EPA) has the discretion to define "prompt" in relation to the degree and type of deviation likely to occur. Furthermore, Section 39.5(7)(f)(i) of the Illinois Environmental Protection Act, which mirrors 40 CFR 70.6(a)(3)(iii)(A) requires that monitoring reports must be submitted at least every 6 months. Therefore, USEPA generally considers anything less than 6 months to be "prompt" as long as the selected time frame is justified appropriately (60 Fed. Reg. 36083, 36086 (July 13, 1995)).

The USEPA has stated that, for purposes of administrative efficiency and clarity, it is acceptable to define prompt in each individual permit. *Id.* The Illinois EPA has elected to follow this approach and defines prompt reporting on a permit by permit basis. In instances where the underlying applicable requirement contains "prompt" reporting, this frequency or a shorter frequency of reporting is the required timeframe used in this permit. Where the underlying applicable requirement fails to explicitly set forth the timeframe for reporting deviations, the Illinois EPA has developed a structured manner to determine the reporting approach used in this permit.

The Illinois EPA generally uses a time frame of 30 days to define prompt reporting of most deviations. Also, for certain permit conditions in individual permits, the Illinois EPA may require an alternate timeframe that is less than 30 days if the permit requirement justifies a shorter reporting time period. Under certain circumstances, EPA may establish a deviation reporting period longer than 30 days, but, in no event exceeding 6 months. Where it has established a deviation reporting period other than 30 days in an individual permit (specifically Section 7.x.10), the Illinois EPA has explained the reason for the alternative timeframe. (See Attachment 2 of this Project Summary.)

The timing for certain deviation reporting may be different when a source or emission unit at a source warrants reporting to address operation, independent of the occurrence of any deviations. This is the case for a source that is required to perform continuous monitoring for the emission unit, for which quarterly or semi-annual “monitoring” reports are appropriate. Where appropriate, reporting of deviations has generally been combined in, or coordinated with these quarterly or semi-annual reports, so that the overall performance of the plant can be reviewed in a comprehensive fashion. This will allow a more effective and efficient review of the overall performance of the source by the Illinois EPA and other interested parties, as well as by the source itself.

At the same time, there are certain deviations for which quicker reporting is appropriate. These are deviations for which individual attention or concern may be warranted by the Illinois EPA, USEPA, and other interested parties. Under this scenario, emphasis has been placed primarily on deviations that could represent substantial violations of applicable emission standards or lapses in control measures at the source. For these purposes, depending on the deviation, immediate notification may be required and preceded by a follow-up report submitted within 15 days, during which time the source may further assess the deviation and prepare its detailed plan of corrective action.

In determining the timeframe for prompt reporting, the Illinois EPA assesses a variety of criteria such as:

- historical ability to remain in continued compliance,
- level of public interest in a specific pollutant and/or source,
- seriousness of the deviation and potential to cause harm,
- importance of applicable requirement to achieving environmental goals,
- designation of the area (i.e., non-attainment or attainment),
- consistency among industry type and category,
- frequency of required continuous monitoring reports (i.e., quarterly),
- type of monitoring (inspection, emissions, operational, etc.), and
- air pollution control device type and operation

These prompt reporting decisions reflect the Illinois EPA’s consideration of the possible nature of deviations by different emission units and the responses that might be required or taken for those different types of deviations. As a consequence, the conditions for different emission units may identify types of deviations which include but are not limited to: 1) Immediate (or very quick) notification; 2) Notification within 30 days as the standard; or 3) Notification with regular quarterly or semi-annual monitoring reports.

The Illinois EPA’s decision to use the above stated prompt reporting approach for deviations as it pertains to establishing a shorter timeframe in certain circumstances reflects the criteria discussed as well as USEPA guidance on the topic.

- 40 CFR 71.6(a)(3)(iii)(B) specifies that certain potentially serious deviations must be reported within 24 or 48 hours, but provides for

semi-annual reporting of other deviations. (Serious or severe consequences)

- FR Vol. 60, No. 134, July 13, 1995, pg. 36086 states that prompt should generally be defined as requiring reporting within two to ten days of the deviation, but longer time periods may be acceptable for a source with a low level of excess emissions. (intermediate consequences)
- Policy Statement typically referred to as the “Audit Policy” published by the USEPA defines prompt disclosure to be within 21 days of discovery. (Standard for most “pollutant limiting” related conditions)
- Responses to various States by USEPA regarding other States’ definition of prompt.

As a result, the Illinois EPA’s approach to prompt reporting for deviations as discussed herein is consistent with the requirements of 39.5(7)(f)(ii) of the Act as well as 40 CFR part 70 and the CAA. This reporting arrangement is designed so that the source will appropriately notify the Illinois EPA of those events that might warrant individual attention. The timing for these event-specific notifications is necessary and appropriate as it gives the source enough time to conduct a thorough investigation into the causes of an event, collecting any necessary data, and to develop preventative measures, to reduce the likelihood of similar events, all of which must be addressed in the notification for the deviation.

ATTACHMENT 4: Periodic Monitoring Discussion

The Illinois EPA must evaluate whether sufficient monitoring is contained in each sources CAAPP permit to assure compliance with regulations developed to meet Clean Air Act requirements. Under the CAAPP permit program, periodic monitoring is required for each emission point at a source subject to Clean Air Act requirements. No emission points are categorically exempt from this requirement.

Significant benefits of title V include compliance assurance and public access to data. Periodic monitoring provides data sources can use to promptly identify and correct compliance problems and to certify compliance. This data is also reported to the Illinois EPA and available to the USEPA and to the public. Periodic monitoring provides information and compliance tools to the public that may not otherwise always be available under state law.

EPA has not mandated specific monitoring or protocols for developing monitoring to meet the above requirements. Periodic monitoring determinations are therefore made on a case-by-case basis. Because of the case-by-case nature of periodic monitoring determinations, it is important that the determinations are made consistent with Section 39.5 of the Act.

What is Periodic Monitoring?

In addition to gathering all requirements that apply to a source into one document, the CAAPP permit is meant to enable the public, US EPA, and the Illinois EPA to know whether the source can comply with those requirements. To achieve that goal, every CAAPP permit must include adequate “periodic monitoring”. What this means is that the CAAPP permit must require the source to perform monitoring, recordkeeping and reporting so that it can assure the Illinois EPA, USEPA and the public that it is complying with its CAAPP permit or that it is identifying, reporting and addressing non-compliance. Ensuring that a CAAPP permit includes adequate periodic monitoring is the most important aspect of permit development.

Monitoring is a broad term that describes a source’s ongoing activities to determine how it is operating in relation to its emission limitations and standards. Monitoring provisions must be set forth in the permit. The monitoring must be done at the source’s initiative and a requirement to prepare or maintain a “monitoring plan” is not enough. Inspections by the Illinois EPA are also not sufficient.

The most obvious type of pollution monitoring is the direct measurement of smokestack emissions. Sometimes, a source is equipped with continuous emissions monitoring systems (CEMS) or continuous opacity monitoring systems (COMS). As their name implies, these systems are designed to directly measure smokestack emissions on a continuous basis. While continuous monitoring is one of the best ways to assure sources are in compliance with an emission limitation, installation of CEMS and COMS may be technically or economically infeasible compared to frequent manual monitoring. If a source has CEMS and COMS, these systems are identified in the sources CAAPP permit. If a source lacks CEMS and COMS, the source may be required to install these systems. However, the Illinois EPA may decide that some other type of monitoring is sufficient to assure the sources compliance with applicable requirements.

Periodic monitoring must be included with all types of permit conditions, not just those that directly limit pollution levels. For example, a CAAPP permit is likely to include conditions that require equipment maintenance and work practices. For these types of conditions, recordkeeping, and inspections is usually necessary to satisfy the periodic monitoring requirement. Monitoring includes activities such as:

- Continuous Emission Monitoring Systems (CEMS)
- Continuous Opacity Monitoring Systems (COMS)
- Parametric Emissions Monitoring (PEMS)
- Parametric Monitoring (continuous or at specified intervals)
- Periodic Source Testing
- Readings/Inspections
- Recordkeeping

Periodic Monitoring, a term used in 39.5(7)(d)(ii) of the Act, describes the combination of monitoring required by the applicable requirements and monitoring created in the CAAPP permit as necessary to meet the CAA requirement that the permit that assure compliance with the applicable requirements. Periodic monitoring is required because some applicable requirements do not contain adequate provisions for determining whether a source is in compliance with its emissions limitations or how this is to be accomplished.

In addition to the requirement for periodic monitoring, permits must contain "conditions as are necessary to assure compliance". This requirement is reflected in 39.5(7)(d)(ii) of the Act, which requires "monitoring sufficient to yield reliable data from the relevant time period that are representative of the sources compliance" and 39.5(7)(a) of the Act, which requires all CAAPP permits to contain "testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit".

If the permit contains good periodic monitoring, the source can most certainly be held accountable if it violates applicable air quality requirements. Without adequate periodic monitoring, it may be more difficult for the Illinois EPA, USEPA and a member of the public to determine whether a source is violating an air quality requirement. Also, good periodic monitoring will provide the source with information necessary to identify and minimize compliance problems and assist the source with the annual certification of compliance.

When is Periodic Monitoring Presumed in a Rule?

Sometimes, the underlying statute or regulation explicitly requires a source to perform a particular kind of monitoring. Any monitoring that is specifically required by statute or regulation must be included in the CAAPP permit. However, many air quality statutes and regulations do not identify a monitoring method. And, even when a monitoring method is specified, there is often no indication of how often the monitoring must be performed. Many statutes and regulations require a source to perform an initial test to demonstrate compliance, but never require any additional monitoring.

Periodic monitoring is not required unless the applicable requirement "requires no periodic testing, specifies no frequency, or requires only a one-time test." If the underlying State or federal standard requires a source to perform a specific type of testing or monitoring from time to time (yearly, monthly, weekly, daily, hourly), then this satisfies the periodic monitoring requirement of 40 CFR 70.6(a)(3)(i)(B). If an underlying requirement (1) has no periodic testing or monitoring, (2) does not mention how frequently testing or monitoring should be done, or (3) requires just a one-time test, then periodic monitoring is added to the CAAPP permit. The basic types of scenarios that are presumed to already contain sufficient monitoring requirements are those such as:

- NSPS and NESHAP promulgated after November 15, 1990
- When the Pollutant Specific Emission Unit is subject to a CAM Plan
- Federal or SIP standards specifying a continuous compliance determination method
- Acid Rain/CAIR/CAMR rules

What is the Process for Evaluating Periodic Monitoring?

In evaluating periodic monitoring, Illinois EPA determines whether a source's applicable requirements already contain adequate monitoring, and, if not, identifies additional necessary monitoring after consideration of certain factors. Review each applicable requirement emission limit or standard to determine what monitoring, recordkeeping and reporting (MRR) is associated with the emission limit. Note that periodic monitoring is only required if there is an applicable emission limit or standard. The term emission limit includes mass, rate and concentration limits, technology requirements, percent reduction requirements, work practice standards, process or control device parameters, and design, operational, or maintenance requirements. Determine whether the monitoring yields reliable data from the relevant time period that are representative of the source's compliance, and will assure compliance with the emissions limit or standard. Even if the MRR is not presumptively acceptable, it may still be acceptable. If the monitoring is not adequate to assure compliance, monitoring must be added to the permit. There are often various monitoring options that would satisfy the periodic monitoring requirement.

The frequency and averaging period of the emission limit of the monitoring must be made clear (periodic = e.g., hourly, daily, annual, etc.). When the emission limit has no time element (e.g., 0.5 grains/dscf), the relevant time period is the time needed to conduct an emission test. The relevant time period can be instantaneous as well (e.g., no holes or cracks in a lid for any amount of time). The data collected should provide for a reasonable assessment of the sources compliance status with permit emission limits.

Factors Considered in Evaluating Periodic Monitoring

- <u>Likelihood of violating</u> an applicable requirement. (Margin of compliance with the applicable requirement)
- <u>Presence of add-on controls</u> to comply with underlying rules. (If controls are required, consider whether the controls will assure compliance with the emission limit. If so, the best option may be to

monitor the control equipment for proper operation instead of or in addition to the process.)

- Variability of emission level over time. (Consider how close a unit's emissions are to the emission limits during normal and anticipated upset operations.)
- Consider how emissions may vary. (Emissions may vary day to day under normal operation, e.g., as a turbine or engine increases or decreases load emissions change. Emissions may vary slowly over time, e.g., SCR catalyst may degrade over time. Emissions may vary quickly due to malfunction, e.g., a baghouse bag may break.)
- Monitoring data already available. (The source often maintains monitoring, process, maintenance, or control equipment data of emission units even if not required under an applicable requirement. Consider whether these activities would assure compliance; if so, they may be the best fit monitoring option for that source.)
- Technical and economic feasibility
- Monitoring done for similar emission Units/Emissions. (Existing CAAPP and construction permits, Federal, State and Local rules, CAM Guidelines Document)
- Will the monitoring method yield reliable data with respect to the emission limit?
- Will the monitoring method provide data that can be related to the relevant time period over which compliance with the emission limit is determined?
- Will the monitoring data be collected at a frequency that will provide information that is representative of the sources compliance with the permit?
- Is the monitoring condition written in a way that is practically enforceable? (Practical Enforceability involves ensuring that the following items are present: Frequency of monitoring, Data averaging period, Procedures for checking data validity, Minimum period of data availability, Recordkeeping, Prompt deviation and summary reports)

What is the Periodic Monitoring Criterion?

Compliance Assurance Monitoring that assures compliance is designed to:

- Monitor key parameters which determine compliance
- Be done at a frequency consistent with the likely variability of emissions and margin of compliance
- Detect deviations within specific timeframes (provide information to operator to correct problems promptly)
- Provide information that the Illinois EPA, USEPA and the public could use for enforcement

Margin of compliance: Amount of monitoring varies based on how a unit is operating with respect to emission limits (x% of emission limit); less monitoring if there is a comfortable margin of compliance. In determining margin of compliance, consider accuracy of emission estimation method – less monitoring if reliable emission factors exist. Consider reference method accuracy range. AP-42 or other emission factor accuracy, e.g., rating and range of emission factor.

Consider existence of control equipment and variability:

- Look at emissions over time under normal/upset conditions (within an individual unit)
- More variability more monitoring; less variability less monitoring. Variability within margin of compliance is acceptable.
- Also consider variability within a source category.
- Equipment failure or degradation.

Source size: Vary monitoring based on unit size as a lb/day or ton/year threshold based on potential uncontrolled emissions, e.g., more monitoring if uncontrolled emissions exceed major source threshold.

Burden/Cost to Permittee: Cost of equipment, personnel (training, time spent on job, etc), administrative costs (e.g., time and expense of MRR), burden on agency (i.e., inspections, record review), reasonableness (does it make sense?), time to implement condition, technical feasibility of monitoring and test methods (e.g., stack testing of fugitive emissions), existing burden for monitoring.

Consistency: Consistency means monitoring may be different but consistently meets the established criteria. Consistency is important between similar or identical sources, e.g., with regard to size, source emission unit category, types of emissions and emission limits.

Historical capability to demonstrate compliance: A source that has a history of violating emission limitations is likely to be required more frequent monitoring than a source that has a strong record of compliance.

Step Description

Preliminary investigation. The first step toward establishing appropriate monitoring is to identify the need for additional monitoring for the emitting processes or applicable requirements at this point.

Brainstorm possible MRR types. Next, brainstorm potential monitoring proposals. Ideas for monitoring proposals may come from experience, from the source, be developed by applying technologies used for similar source categories, or they may be innovative.

Choose MRR method and frequency. Choose the most appropriate monitoring method and frequency. Some of the criteria, such as technical feasibility and data necessary to determine compliance on an ongoing basis will be mandatory. A monitoring method that is not technologically feasible, or that will not provide necessary data cannot be chosen. For other criteria such as cost and consistency, there is not the mandatory element. The relative merits of each option with respect the criteria must be considered. Keep in mind that periodic monitoring can include a mix of monitoring techniques. For example, a sources permit might require daily or weekly inspections of pollution control equipment in addition to a stack test every few months or years.

Also, instead of requiring a source to monitor emissions coming from its smokestack, a permit might allow a source to monitor some other aspect of its operations instead. This type of monitoring is called “surrogate” (e.g.,

substitute) monitoring. Surrogate monitoring is allowed when (1) monitoring of actual emissions is technically or economically infeasible and/or impractical, and (2) surrogate monitoring is adequate to assure compliance with the underlying applicable requirement. The CAA “does not prohibit the use of an appropriate surrogate pollutant for individual species to confirm compliance. “A surrogate may be used to regulate pollutants if it is ‘reasonable’ to do so. “A surrogate may attribute characteristics of a subclass of substances to an entire class of substances if doing so is scientifically reasonable”; (NRDC v. EPA, 822 F.2d 104, 125 (D.C. Cir. 1987)).

A three part analysis is generally used for determining whether the use of a surrogate is reasonable: (1) “the emissions are invariably present or characterized by the surrogate (i.e., demonstrate and quantify a consistent correlation between PM stack emissions and their HAP metal content),”, (2) “the control technology indiscriminately captures the target pollutant along with the surrogate or characterizes the effect on the target pollutant;” and (3) “the only means by which facilities ‘achieve’ reductions in the target pollutant.” If these criteria are satisfied then the surrogate may be considered given the potential impact upon emissions.” A surrogate is not a reasonable surrogate where other factors (for instance, the HAP content of a raw material affects HAP metal emissions.)” play a role in the reduction of emissions in the target pollutant (for instance, “PM might not be an appropriate surrogate for HAP metals if switching fuels would decrease HAP metal emissions without causing a corresponding reduction in total PM emissions.)” The use of a surrogate "eliminates the cost of performance testing to comply with numerous standards for individual species." 64 Fed. Reg. at 31,916/3.

Conclusions

Where the periodic monitoring does not fall within one of the below categories for the basic periodic monitoring established in the majority of the permits, further explanation is provided in the emission unit specific section of this Statement of Basis (Project Summary). Each emission unit specific section in this Project Summary has a section that is identified as “Justification for Periodic Monitoring” that will give the basis for the type of periodic monitoring described in the tables. Based upon the information provided in the above discussion and analysis that is performed to evaluate periodic monitoring, the results generally fall into a set of specific categories as follows:

1. Work practice standards are generally assured through the use of periodic inspections and the frequency is established based on the emission unit size, capability to comply, historical compliance and margin of compliance.

2. Production limits are generally assured through the use of recordkeeping for the specific raw material or finished product.

3. Emission limits are generally assured by means of a couple different methodologies (the choice of methodology is based on the evaluation of the factors described above):

a. Performance testing on a set frequency based on the factors identified above,

b. Emission factors/engineering calculations based on specific recordkeeping requirements that are representative of the scientific units for which the emission factor/calculation is based,

c. Surrogate monitoring such as fuel sampling or raw material testing.

4. Control requirements are generally assured through the use of establishing operating parameters to be monitored that ensure proper functioning of the control device and are representative of the operation.

The mechanism by which the data is collected is also generally established such as a specific reference method (i.e., Method 9 or Method 311) or generally accepted test procedure such as an ASTM or ANSI test method. It also generally will identify the type of monitoring such as pressure sensor, thermocouple or flow gauge. The relevant timeframe is generally established by looking to the likelihood of an exceedance, the margin of compliance and historical capability to comply with a particular standard. These timeframes generally fall into specific slots when a CEM or COM is not available and can be hourly, daily, weekly, monthly or annual. The averaging periods are generally a rolling average commensurate with the monitoring frequency and the established limit.

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