



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

TO: Regional Permit Branch Chiefs

FROM: Marvin B. Rubin and M. Ahmar Siddiqui *MAR*
Engineering and Analysis Division, EPA Headquarters

RE: Applicability guidance

OFFICE OF
WATER

Attached is a series of papers written by Charlie Kaplan concerning the applicability of the effluent limitations guideline for the steam electric power generating category (40 CFR Part 423), promulgated on November 19, 1982. This guidance has been used over the years by Headquarters' NPDES and Effluent Guidelines programs in interpreting the applicability of the steam electric rule.

In summary, the Agency has taken the position, reflected in the attached papers, that power generating facilities are subject to the steam electric ELG if all of several conditions are met. They are as follows:

1. At least 50 % of the facility revenue is generated through the sale of generated electricity;
2. At least 50 % of the **fuel** is either fossil- or nuclear-based;
3. A steam-electric cycle is used;
4. A discharge exists to surface waters of the US or a POTW.

These standards have been used to **clarify** the meaning of the word 'primarily' in the applicability section of the rule (40 CFR 423.10).

The Agency is reiterating this guidance due to the recent construction of a large number of new gas turbine power generators with the use of a steam cycle for the portion of power generated by waste heat (combined cycle facilities). Please be aware that there is significant impetus being provided for this clarification being completed by the White House's Energy Task Force.

If you have any questions or comments on the enclosed materials, please contact either Marvin B. Rubin at (202) 260-3028 or M. Ahmar Siddiqui at (202) 260-1826.

cc: Ruby Cooper
Jeff Smith
George Wyeth
Sheila Frace
Dave Gravalles



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

343 COURTLAND STREET
ATLANTA, GEORGIA 30365

Joe V
FVF
M.P.

June 30, 1988

MEMORANDUM

SUBJECT: Guidance for NPDES Permits Issued to Electric Cogenerating Plants and Industrial Facilities with Electric Generating Plants

FROM: Charles H. Kaplan, PE (4WM-FP) *CHK*
National Expert, Steam Electric/Water

TO: Regional Permit Branch Chiefs
State NPDES Coordinators

The Office of Water Enforcement and Permits has received several inquiries about the proper implementation of the effluent limitations guideline for the steam electric power generating industrial category that was promulgated on November 19, 1982 (40 CFR Part 423, 47 FR 52290). Specifically, we have been asked for guidance regarding the applicability of the regulation to steam electric cogenerating plants and steam electric generating plants at industrial facilities. The attached guidance addresses when 40 CFR Part 423 requirements are applicable to such facilities.

Should you have questions, feel free to contact me at the above address or at FTS/257-3012 or 404/347-3012.

Attachment

cc: Frank Hall, EN-336

Susan G. Lepow, LE-132W

Question

Are requirements of 40 CFR Part 423 applicable to a cogeneration plant or an industrial source with an on-site steam electric power generating facility.

Answer

Part 423 requirements are specifically applicable (including NEPA review for a new source to be permitted by EPA) under the following conditions:

1. At least 50 percent of the facility revenue is derived from the generation of electricity,
2. At least 50 percent of the fuel is oil, gas, coal, and/or nuclear,
3. A steam-electric cycle is used, and
4. A discharge exists to waters of the United States or a POTW.

If all of these conditions are not met, Part 423 requirements are not specifically applicable. However, effluent limitations could be based on Part 423 by analogy using best professional judgement (BPJ).

Background

Steam electric power generating point source category regulations (40 CFR Part 423 November 19, 1982) state:

1. "The provisions of this part are applicable to discharges resulting from the operation of a generating unit by an establishment primarily (emphasis added) engaged in the generation of electricity for distribution and sale (emphasis added) which results from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium." Applicability, 224 FR 52304).
2. "Together these processes make up the steam electric category (Standard. Industrial Classification (SIC) Major and relate specifically to both the Electric Services (SIC 4911) and the Electric and Other Services Combined (SIC 4931) subgroups." (Preamble Section "II. Scope of this Rulemaking," second paragraph, third sentence, 224 FR 52290).



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET, N.E.
ATLANTA, GEORGIA 30365

December 19, 1989

REF: 4WM-FP

SUBJECT: Combined Cycle Electric Generation Plants
Steam Electric Power Generating Point Source Category

FROM: Charles H. Kaplan, P.E. (4WM-FP) *CHK*
National Expert, Steam Electric/Water

TO: Regional Permit Branch Chiefs
State Directors

Please be advised that on December 11, 1989, Mr. Greer C.

Administrator, EPA Region IV, determined that the steam electric unit of a combined cycle electric generating plant is subject to the requirements of Effluents and Standards for the Steam Electric Power Generating Point Source Category (40 CFR Part 423, 47 FR 52290, November 29, 1982), if that facility meets the provisions of Section 423.10, Applicability. Thus, new units will generally be subject to New Source Performance Standards (§423.15) and, if EPA is the permitting authority, to environmental review requirements of 40 CFR 6.600, et seq. A copy of this determination, which has received the Office of General Counsel, is attached.

Should you have specific questions, feel free to contact me at FTS/257-3012 or 404/347-3012.

Attachments

cc: Cynthia C. Dougherty, EN-336
WH-552
Susan G. Lepow, LF-132W

DETERMINATION OF NEW SOURCE STATUS
COMBINED **CYCLE/COAL** GASIFICATION FACILITIES
MARTIN
MARTIN COUNTY, **FLORIDA**

Florida Power & Light Company (FPL) is planning to expand the facilities at the site of its Martin Power Plant by adding combined cycle and coal gasification units. Pursuant to 40 CFR § 122.21(1)(2)(i), FPL has submitted information to the Regional Administrator of EPA Region IV to assist his determination of whether the new facilities will be new sources.

I. DESCRIPTION OF PLANNED A _____

A combined cycle module is essentially a combination of one or more combustion turbine (CT) electric generating units and one steam turbine electric generating unit, with necessary auxiliary equipment. Gas or oil is burned in the **CTs** (similar to jet engines), which are connected to generators and produce electricity. Hot exhaust gas (waste heat) from the **CTs** is used to generate steam in heat recovery steam generators (**HRSGs**). Steam from the **HRSGs** turns a steam turbine, which is connected to a different generator and produces additional electricity (in some cases, some of the steam may be sold directly to industrial users; this will not, however, be the case at Martin). Exhausted steam is then condensed to water for reuse and waste heat is transferred to cooling water for discharge to the environment.

According to **FPL's** submittal, the new facilities at Martin will consist of multiple combined cycle generating modules and coal gasification plants. Each of the four modules will provide about 400 **MW** of generating capacity, for a total capacity of 1600 **MW** of electricity. The **facility's CTs** will generate approximately 1100 **MW**, while the **HRSGs** and associated **steam-driven** turbine generators will produce approximately 500 **MW**. Generally, two **CTs** and associated generators will be required for each combined cycle module, with one **HRSG** for each **CT**. There will be one steam turbine generator for each combined cycle module. The Martin combined cycle facility may also use a supplemental firing stage.¹

¹ In a supplemental firing stage, additional **fuel** is burned to increase the temperature of the **CT** exhaust gas prior to injection into the **HRSGs**. At Martin, the heat energy added to the exhaust gas by the additional fossil fuel burned is expected to produce up to 25 percent of the total heat being injected into the **HRSGs**.

The Martin project will also include facilities to convert coal into a low sulfur, medium BTU fuel gas. The combined cycle modules will use the cleaned fuel to generate electricity. The combined cycle and coal gasification facilities will cover approximately 1300 acres at the existing site. Documents submitted by FPL contain further background information on the planned facilities.

11. DETERMINATION OF NEW SOURCE STATUS

A. Combined Cycle Facility

Regulations for determining whether a facility constitutes a new source are set forth in 40 CFR Part 122. The "source" is defined at 40 CFR § 122.2 as "any building, structure, facility, or installation from which there is or may be a 'discharge of pollutants'" Further criteria for new source determinations are set forth at 40 CFR § 122.29, which provides:

(b)(1) Except as otherwise provided in an applicable new source performance-standard, a source is a "new source" if it meets the definition of "new source" in § 122.2, and . . . (iii) Its processes are substantially independent of an existing source at the same site. In determining whether these processes are substantially independent, the Director shall consider such factors as the extent to which the new facility is integrated with the existing plant; and the extent to which the new facility is engaged in the same general type of activity as the existing source.

(2) A source meeting the requirements of paragraphs (i), (ii), or (iii) of this section is a new source only if a new source performance standard is independently applicable to it. If there is no such independently applicable standard, the source is a new discharger. See § 122.2.

The combined cycle facility² planned at the Martin site meets the above criteria source. First, its processes will be substantially **independent** of an existing source at the same site. One factor listed in section (b)(1)(iii) for evaluating the independence of the new facility is the extent to which it is integrated with the existing plant. The Martin combined cycle facility is **planned** as an independent power generating station and it integrated with the existing plant. A second factor is the extent to which the new facility is engaged in the same general type of **activity** as the existing source. Under this factor, to the extent that construction results in a facility engaged in the **same** type of activity because it essentially replicates, without replacing, the existing sources, the new construction results in a new source (see 49 FR 38044, September 26, 1984). The Martin combined cycle facility therefore qualifies as a new source under both of the factors listed in 40 CFR § 122.29 (b) .

Although it satisfies section 122.29(b)(1)(iii), the combined cycle facility cannot be considered a new source unless there is a new source performance standard applicable to it. See 40 CFR §§ 122.2, 122.29(b)(2). Therefore, the next inquiry is whether 40 CFR Part 423, which contains the new source performance standards for the steam electric power generating category, applies to the Martin combined cycle facility. The applicability of Part 423 is addressed in section 423.10, which states:

The provisions of this part are applicable to discharges resulting from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium.

The Regional Administrator has determined that, under the section 423.10 criteria, Part 423 does apply to the Martin combined cycle facility. There is no question that the Martin combined cycle facility meets the first criterion under section 423.10. FPL intends that the combined cycle facility will function wholly to generate electricity for **distribution** and sale. As to the second criterion in this provision, with respect

² This decision will refer collectively to the **combined cycle** modules planned for Martin as the Martin combined cycle facility.

to the steam electric units within the combined cycle facility,³ the generation of electricity will result from a process that uses only fossil-type fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium. Consequently, the criteria of section 423.10 are satisfied.

In evaluating the criteria of section 423.10, it is appropriate to consider the steam within the combined cycle facility to be the generating units to which this provision refers. The steam electric units within the facility will be identical or virtually identical in all relevant respects to the traditional stand-alone steam electric power plant that was EPA's primary focus in developing the Part 423 regulations. In particular, the process stages used for power generation are essentially identical to the processes for steam electric power plants described in the 1974 and 1982 Development Documents supporting the Part 423 regulations.⁴ The one exception is that the CTs and HRSGs in the combined cycle facility will functionally take the place of the boiler (first stage) in a traditional steam electric plant. In addition, virtually all of the wastewaters from the combined cycle facility will be associated with the operation of the steam electric unit components, and virtually all of the pollutants in the wastewaters will be identical, or nearly so, to the wastewater pollutants generated by a traditional steam electric plant.⁵ As

³ .The steam electric unit within each combined cycle module at Martin includes those components used to generate electricity through use of the four-stage steam electric process (steam production, turbine/generator stage, steam condensing stage, and reintroduction stage) described at page 25 of the Development Document supporting the 1982 revisions to 40 CFR Part 423 (EPA-440/1-82/029, November 1982). Thus, the steam electric units in general include the HRSGs, steam turbine and generator, condensers, and other components.

⁴ Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Steam Electric Power Generating Point Source Category, EPA 440/1-74/029(a) (October Document for Final Effluent Limitations Guidelines and Standards and Pretreatment Standards for the Steam Electric Point Source Category, EPA-440/1-82/029 (November 1982).

⁵ Liquid chemical wastes from steam electric plants are characterized in section A-V of the 1974 Development Document, pollutant parameters are addressed in section A-VI, and control and treatment technologies are described in section A-VII (sections V, VI, and VII, respectively, of the 1982 Development Document). Wastes from the steam electric units within the Martin combined cycle facility will include low volume wastes

a result, **the** waste treatment technologies considered in the development of the Part 423 guidelines are **all** applicable to the combined cycle facility wastewaters as well.

Moreover, there are **no** operational or technological factors associated with the steam **electric** units within the combined cycle facility that **distinguish** them in any important manner from a traditional steam electric unit for purposes of Part 423. There also are no economic or cost factors that distinguish the two types of units **for Part 423** purposes, due to the identity of their processes, wastewaters and the available **treatment** technologies. **In** short, with respect to the processes employed and the generation and treatment of wastewaters, the steam electric units within the combined cycle facility function virtually identically to the traditional steam electric unit that the Agency primarily focused on in developing the new source standards, and there is no reason to treat them differently from the traditional steam electric unit for purposes of Part 423.

FPL notes that the development documents issued by EPA in connection with the promulgation of both the original Part 423 regulations in 1974 and the revisions to Part 423 in 1982 focus on traditional steam electric plants and mention combined cycle plants under the heading "**Alternate** Processes Under Active Development." FPL concludes that EPA distinguished combined cycle facilities from traditional steam electric units in developing the regulations and that there is no indication that EPA took the characteristics of combined cycle facilities into account in the regulations. However, as described above, the characteristics of the new steam electric units at Martin, notwithstanding the fact that they will be situated within the larger combined cycle facility, are accounted for in the regulations.⁶

To support a conclusion that Part 423 does not apply to the Martin combined cycle facility, FPL puts forth **several rationales**; none, however, are valid. FPL first points out that approximately two-thirds of the electric power generating capacity of the combined cycle facility will come from the

(e.g., water treatment wastes, boiler blowdown, laboratory and sampling wastes, floor drains), chemical metal cleaning wastes, and cooling water. Wastes from the CT units may include low volume wastes (water treatment wastes, only **if** a water injection system is used for control of nitrogen oxides, and floor drains) and metal cleaning wastes (generated very infrequently, **if**

⁶ In addition, EPA also considered and discussed combined cycle facilities in section **B-VII** of the 1974 Development Document, under the heading "Control and Treatment Technology, Process Change, Future Improvements in Present Cycles" (at 477-79).

combustion turbine portions facility, which do not use a steam generating cycle. However, this comparison is not relevant since, as described above, the steam electric units at Martin should be evaluated independently of the other portions of the facility with respect to applicability.

FPL next states that the stand-alone capabilities and phased implementation of the project's essentially independent parts (and coal gasifiers) is important because none of these parts separately falls within the description of steam electric units in the regulations. To the contrary, the steam electric units within the overall facility do fit the description of units subject to the regulations, as described above.

In addition, FPL claims that the steam electric units do not fit within because they will use waste heat (recovered from the combustion turbines) to produce electricity rather than fossil fuel. This argument is without merit. The steam electric units will not be fueled by "waste heat" but by fossil fuel from which the waste heat is generated. Thus, the electricity generated by the steam electric units at Martin will result "primarily from a process that utilizes fossil-type fuel. . . ."

FPL also states that NPDES standards are triggered by the discharges from the cooling pond into the surrounding canals rather than by the discharge of effluent from the plant facilities to the cooling pond. Therefore, it states, the existing NPDES permit for discharges from the cooling pond as the "point source" may be modified and the combined cycle facility (which will use the same cooling pond) need not be viewed as a new source independently requiring an NPDES permit. As discussed at 49 FR 38044, this claim is contradicted by language of the Clean Water Act and by case law. The newly constructed facility at Martin will clearly meet the statutory definition of "source." When a similar claim was raised in Mahelona v. Hawaiian Electric Co., 9 ERC 1625 (D. the court held that the point source was the facility generating the discharge, not the system treating it.

B. Coal Gasification Facilities

40 CFR Part 423 is not applicable to the coal gasification facilities planned at Martin because they will not be engaged in the generation of electricity for distribution and sale. The only other categorical standards that might apply would be the standards for the coal mining point source category, 40 CFR Part 434. However, the coal gasification facilities at Martin will not fit the definition of coal mine or coal preparation plants (see 40 CFR §§ 434.10, 434.11); Part 434 therefore does not


apply. Consequently, the coal gasification facilities at Martin will not constitute new **sources** because there are no new source performance standards **applicable** to them. See 40 CFR §§ 122.2, 122.29(b)(2).

III. CONCLUSION

For the above reasons, the Regional Administrator has determined that the combined cycle facility planned for the Martin site will be a new source and thus will be subject to the new source performance standards set forth at 40 CFR Part 423, while the coal gasification facilities at Martin will not constitute new sources. Florida Power & Light Co. must therefore comply accordingly with the environmental review requirements of 40 CFR 6.600 et seq.

DEC 11 1989

Date


Greer C. Tidwell
Regional Administrator,
Region IV