Bay Area Air Quality Management District

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Permit Evaluation
and
Statement of Basis
for

RENEWAL of
MAJOR FACILITY REVIEW PERMIT

for

Mirant Delta, LLC, Pittsburg Power Plant
Facility #A0012

Facility Address:
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Pittsburg, CA 94565

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September 2004

Application Engineer: Thu H. Bui
Site Engineer: Thu H. Bui

Applications: 6442 & 7179

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Permit Evaluation/Statement of Basis for Renewal of Major Facility Review Permit

A. Background

This facility is subject to the Operating Permit requirements of Title V of the federal Clean Air Act, Part 70 of Volume 40 of the Code of Federal Regulations (CFR), and BAAQMD Regulation 2, Rule 6, Major Facility Review because it is a Phase II Acid Rain facility as defined by BAAQMD Regulation 2-6-217 and because it is a "major facility" as defined by BAAQMD Regulation 2-6-212. It is an Acid Rain facility because it burns fossil fuel and serves a generator that is over 25 MW that is used to generate electricity for sale. It is a "major facility" because it emits more than 100 tons per year of a regulated air pollutant.

Major Facility Operating permits (Title V permits) must meet specifications contained in 40 CFR Part 70 as contained in BAAQMD Regulation 2, Rule 6. The permits must contain all applicable requirements (as defined in BAAQMD Regulation 2-6-202), monitoring requirements, recordkeeping requirements, and reporting requirements. The permit holders must submit reports of all monitoring at least every six months and compliance certifications at least every year.

In addition, Phase II Acid Rain facilities must meet the requirements of Title IV of the federal Clean Air Act, Acid Rain, and the Acid Rain regulations in Parts 72 through 78 of Volume 40 of the Code of Federal Regulations. These regulations were adopted and incorporated by reference in BAAQMD Regulation 2, Rule 7, Acid Rain. The main provisions of the regulations for natural gas and distillate oil fired acid rain sources, such as the ones at this facility, are the requirement to obtain one SO2 allowance for each ton of SO2 that is emitted, stringent monitoring requirements for NOx, CO, CO2, and SO2, and stringent recordkeeping and reporting.

In the Bay Area, state and District requirements are also applicable requirements and are included in the permit. These requirements can be federally enforceable or non-federally enforceable. All applicable requirements are contained in Sections I through VI of the permit.

Each facility in the Bay Area is assigned a facility identifier that consists of a letter and a 4-digit number. This identifier is also considered to be the identifier for the permit. The identifier for this facility is A0012.

This facility received its initial Major Facility Review permit on September 14, 1998 under Pacific Gas & Electric Company. The initial Title IV permit, which was incorporated into the Major Facility Review permit, was effective on January 1, 1998. This application is for a renewal of the Title IV and Title V permits. The standard sections of the permit have been upgraded to include new standard language used in all Title V permits. Also, various other corrections have been made to the permit. The proposed permit shows all changes to the permit in strikeout/underline format.

Mirant Delta LLC (formerly Southern Energy) took ownership of the facility from Pacific Gas & Electric Company on April 16, 1999. At that time, the Major Facility Review Permit for the Pittsburg Power Plant facility was transferred from Pacific Gas & Electric Company to Mirant Delta, LLC.

The primary responsible official, secondary responsible official, and facility contact have changed.

All of these revisions are described below in the permit content section. The proposed permit shows all changes to the permit in strikeout/underline format.

The facility has submitted 7 applications since the Major Facility Review permit was issued on September 14, 1998. Following is a list of the applications:

Application #	Description	Date of Receipt
19623	Minor Title V Modification	2/22/99
743	NOx Reduction	12/20/99
1882	S-5 and S-6 SCR	10/5/00
6442	Title IV Permit Renewal	9/25/02
6855	Transfer of ERC	1/2/03
6925	Transfer of ERC	1/8/03
7179	Title V Permit Renewal	3/14/03

Applications 6442 and 7179 are for renewal of the Title IV and V permits, which is the subject of this action.

Application 6855 is for a transfer of emission reduction credits owned by Mirant Delta to City of Santa Clara. Application 6925 is for a transfer of emission reduction credits owned by Mirant Delta to Conoco Phillips. These applications do not affect the permit for the remaining sources.

Application 743 was submitted for combustion modifications at S5 and S-6, Boilers, to enable the unit to comply with BAAQMD Regulation 9, Rule 11. The modifications were: installation of new low NOx burners, improving the flue gas recirculation system, and over fire air systems. The proposed retrofit is part of Mirant Delta's compliance plan under the Advanced Technology alternative Emission Control Plan ("system-wide emissions bubble") of Section 9 of District Regulation 9, Rule 11.

Application 1882 is for the purpose of retrofitting S-5 and S-6 boilers with selective catalytic reduction (SCR). No additional permit conditions were required because these boilers are already subject to the requirements of District Regulation 9, Rule 11.

Application 19623 is for incorporation of non-SIP requirements of District Regulation 9, Rule 11 into the Title V permit as explicit permit conditions. These added conditions, applied under authority of CEQA, would remain in force regardless of changes of ownership, CPUC regulatory status, or rule applicability.

B. Facility Description

The facility is a power plant that produces maximum 2,022 MW of electrical power for commercial sale and distribution originally. The power plant includes seven power generating units consisting of steam generating boilers, steam turbines, turbogenerators and associated equipment. Boilers 1 through 4 (Units 1 through 4) began commercial operation in 1954. Boilers 5 and 6 (Units 5 and 6) were added to the plant in 1960 and 1961, respectively. Boiler 7 (Unit 7) began operating in 1972.

To comply with the Acid Rain Program, established in accordance with Title IV, PG&E installed and certified Continuous Emissions Monitoring Systems (CEMS) for all 7 boilers. These CEMS are monitoring NOx and CO emissions.

Boilers 5 through 7 at Pittsburg Power Plant are currently operating under the Advanced Technology Alternative Emission Control Plan (ATAECP) contained in BAAQMD Regulation 9-11-309. This plan specifies Systemwide NOx emission Rate Limits that are included in the current Major facility Review Permit for Pittsburg, Contra Costa, and Potrero Power Plants.

With this renewal Title V application, Mirant Delta shut down Boilers S1, S2, S3 and S4 since October 1, 2003 and requested the deletion of those sources from the permit. Therefore, all requirements for these sources have been deleted from the permit. This reduces the maximum electrical power generation for sale at Pittsburg to 1336 MW.

The 1998 plant inventory emissions are as follows:

Boilers	NOx (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	VOC (tons/yr)	PM (tons/yr)
S-1	194.2	54.3	0.84	3.12	10.32
S-2	153.8	49.2	0.77	2.83	9.36
S-3	123.8	36.9	0.57	2.12	7.01
S-4	155.8	41.5	0.65	2.38	7.88
S-5	385.0	149.3	2.35	8.59	28.37
S-6	545.2	201.0	3.16	11.56	38.18
S-7	487.4	440.7	6.85	25.34	83.74
Total	2045.3	973.0	15.19	55.94	184.87

There has been a significant reduction in NOx emissions at S5 and S6, Boilers, due to the installation of two Selective Catalytic Reduction Units in 2002, and also due to the impact of BAAQMD Regulation 9, Rule 11, Nitrogen Oxides and Carbon Monoxide From Utility Electric Power Generating Boilers.

The 2003 plant inventory emissions after boilers 1 through 4 shut down are as follows:

Boilers	NOx (tons/yr)	CO (tons/yr)	SO2 (tons/yr)	VOC (tons/yr)	PM (tons/yr)
S-1 (shutdown)	1.6	1.5	0	0.1	0.1
S-2 (shutdown)	2.1	1.6	0	0.1	0.1
S-3 (shutdown)	1.5	1.4	0	0.1	0.1
S-4 (shutdown)	2.2	1.6	0	0.1	0.1
S-5 (SCR)	44.37	157.22	2.39	6.55	11.92
S-6 (SCR)	14.24	46.34	0.69	1.92	3.50
S-7	152.42	229.35	3.47	9.53	17.34
Total	218.43	439.01	6.55	18.40	33.16

Total emission reductions between 2003 and 1998 are:

Pollutant	Emission Reduction (tons/yr)
NOx	1827
CO	534
SO2	8.6
VOC	37.5
PM	152

In addition, Mirant Delta also requested that the ability to burn fuel oil and the requirement to monitor opacity from the boilers be deleted from the permit. Boilers 5 through 7 have been operated exclusively on natural gas since 1994 and no longer have the capability of combusting a non-gaseous fuel.

The facility also has miscellaneous maintenance sources, such as sandblasting, gasoline service station, emergency diesel generator, paint spray operation, sand blasting, solvent wipe cleaning operation, oil-water separator, cooling towers, and dissolved air floating unit.

Regulation 9, Rule 11 requires CO limits to prevent any tradeoff of NO_x for CO since some NO_x control technologies have the potential to increase CO emissions while reducing NO_x. This regulation requires a CO concentration of no more than 400 ppmvd during steady state operation for source testing. During normal operating conditions, these boilers are subject to load swings, which may increase CO concentrations above 400 ppmvd and thus limited by the Regulation to 1000 ppmvd (1 hour clock average). It is expected that there will be no increase and no reduction in CO emissions from retrofitting the boilers with SCR systems.

The addition of two SCR units also increases the ammonia emissions. Based on the required maximum ammonia slip of 10 ppmvd (3% O2) or 0.0044 lb NH_3/MMBtu per BAAQMD Regulation 9-11 311 and 2003 annual fuel usage, the estimated ammonia emissions are as follows:

Ammonia = (10,451,381 MMbtu/yr)(0.0044 lb NH_3/MMBtu) = 45,986 lb/yr or 23 ton/yr NH_3

Aqueous ammonia will be stored in three horizontal steel storage tanks. These tanks are sealed and pressurized; therefore ammonia emissions to the atmosphere from tank breathing and working loss are not expected as conservatively estimated using the fixed roof tank formula from AP-42. See attached application #1882.

C. Permit Content

The legal and factual basis for the permit follows. The permit sections are described in the order presented in the permit.

I. Standard Conditions

This section contains administrative requirements and conditions that apply to all facilities. If the Title IV (Acid Rain) requirements for fossil-fuel fired electrical generating facilities or the accidental release (40 CFR § 68) programs apply, the section will contain a standard condition pertaining to these programs. Many of these conditions derive from 40 CFR § 70.6, Permit Content, which dictates certain standard conditions that must be placed in the permit. The language that the District has developed for many of these requirements has been adopted into the BAAQMD Manual of Procedures, Volume II, Part 3, Section 4, and therefore must appear in the permit.

The standard conditions also contain references to BAAQMD Regulation 1 and Regulation 2. These are the District's General Provisions and Permitting rules.

The facility is subject to Standard Condition I.K., Accidental Release, because of aqueous ammonia storage with 60,000 gallons capacity at 30% by weight.

Changes to permit:

- The rule dates in Standard Condition I.A have been updated and corrected.
- Standard Condition I.B.1 has been amended to state that the permit continues in force after the expiration date if a complete application has been submitted in accordance with the renewal deadlines. This is the "application shield" pursuant to BAAQMD Regulation 2-6-407.
- Standard Condition I.D.1 has been moved to I.E.1. I.E has been changed to I.E.2.
- Standard Condition I.J has been changed to Standard Condition I.L so that the acid rain standard conditions for all acid rain sources in the Bay Area are in Standard Condition I.L.
- Standard Condition I.K is now Standard Condition I.J.
- Standard Condition I.L.1 was amended to correct the allowance transfer deadline in accordance with 40 CFR 72.2, as amended on December 11, 1998.

II. Equipment

This section of the permit lists all permitted or significant sources. Each source is identified by an S and a number (e.g., S24).

Permitted sources are those sources that require a BAAQMD operating permit pursuant to BAAQMD Rule 2-1-302.

Significant sources are those sources that have a potential to emit of more than 2 tons of a "regulated air pollutant," as defined in BAAQMD Rule 2-6-222, per year or 400 pounds of a "hazardous air pollutant," as defined in BAAQMD Rule 2-6-210, per year.

Major Facility Review permits list all abatement (control) devices.

The equipment section is considered to be part of the facility description. It contains information that is necessary for applicability determinations, such as fuel types, contents or sizes of tanks, etc. This information is part of the factual basis of the permit.

Each of the permitted sources has previously been issued an authority to construct or a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. These permits are issued in accordance with state law and the District's regulations.

Changes to permit:

Since October 1, 2003, Sources S1 through S4, Boilers, have been shut down. Therefore, the boiler's description, model and capacity were removed

Because the facility has decided to give up the permit to burn oil at S-5 through S-7, Boilers, the reference to oil firing has been deleted from Table II-A.

Source S-36, Emergency Diesel Generator and its description are added to permit source, Table II-A. This source was previously exempt from permit requirements but became subject to a permit to operate in 2001 due to a change in permit exemptions. The permit status was changed without a permit application.

Sources S-49, S-51 and S-53, Diesel Fire Pumps and their description are added to the permit source, Table II-A. These sources were also previously exempt from permit requirements but became subject to a permit to operate in 2001 due to a change in permit exemptions. The permit status was changed without a permit application.

Two Cooling Towers, Sources S-73 and S-74, have been added to Table II-A. These sources became subject to a permit to operate in 2000 due to the addition of Regulation 2-1-319 requirement that any source emitting more than 5 tons per year to get a permit, even though the source had an exemption per Regulation 2, Rule 1. The permit status was changed without a permit application because both sources were built in 1977 prior to promulgation of Regulation 2, Rule 1, General Requirements.

The capacity of Service Station G#8348 was added to the permit source, Table II-A.

The opacity limit for A-72, Dust Collector, has been corrected to show that Ringelmann 1.0 can be exceeded for only 3 min/hr.

The current system-wide average NOx limit has been updated for A-5 and A-6, Selective Catalytic Reduction.

III. Generally Applicable Requirements

This section of the permit lists requirements that generally apply to all sources at a facility including insignificant sources and portable equipment that may not require a District permit. If a generally applicable requirement applies specifically to a source that is permitted or significant, the standard will also appear in Section IV and the monitoring for that requirement will appear in Sections IV and VII of the permit. Parts of this section apply to all facilities (e.g., particulate, architectural coating, odorous substance, and sandblasting standards). In addition, standards that apply to insignificant or unpermitted sources at a facility (e.g., refrigeration units that use more than 50 pounds of an ozone-depleting compound) are placed in this section.

Unpermitted sources are exempt from normal District permits pursuant to an exemption in BAAQMD Regulation 2, Rule 1. They may, however, be specifically described in a Major Facility Review permit if they are considered significant sources pursuant to the definition in BAAQMD Rule 2-6-239.

Changes to permit:

Language has been added to Section III to clarify that this section contains requirements that may apply to temporary sources. This provision allows contractors that have "portable" equipment permits that require them to comply with all applicable requirements to work at the facility on a temporary basis, even if the permit does not specifically list the temporary source. Examples are temporary sandblasting or soil-vapor extraction equipment.

Section III has been modified to state that SIP standards are now found on EPA's website and are not included as part of the permit.

Table III has been updated by adding the following rules and standards to conform to current practice:

- SIP Regulation 2, Rule 1, General Requirements
- SIP Regulation 5, Open Burning
- BAAQMD Regulation 8, Rule 40 Aeration of Contaminated Soil and Removal of Underground Storage Tanks
- BAAQMD Regulation 8, Rule 47, Air Stripping and Soil Vapor Extraction Operations
- SIP Regulation 8, Rule 51, Adhesive and Sealant Products
- California Health and Safety Code Section 41750 et seq., Portable Equipment
- California Health and Safety Code Section 44300 et seq., Air Toxics “Hot Spots” Information and Assessment Act of 1987

The dates of adoption or approval of the rules and their "federal enforceability" status in Table III have also been updated.

IV. Source-Specific Applicable Requirements

This section of the permit lists the applicable requirements that apply to permitted or significant sources. These applicable requirements are contained in tables that pertain to one or more sources that have the same requirements. The order of the requirements is:

- District Rules
- SIP Rules (if any) are listed following the corresponding District rules. SIP rules are District rules that have been approved by EPA for inclusion in the California State Implementation Plan (SIP). SIP rules are "federally enforceable" and a "Y" (yes) indication will appear in the "Federally Enforceable" column. If the SIP rule is the current District rule, separate citation of the SIP rule is not necessary and the "Federally Enforceable" column will have a "Y" for "yes". If the SIP rule is not the current District rule, the SIP rule or the necessary portion of the SIP rule is cited separately after the District rule. The SIP portion will be federally enforceable; the non-SIP version will not be federally enforceable, unless EPA has approved it through another program.
- Other District requirements, such as the Manual of Procedures, as appropriate.
- Federal requirements (other than SIP provisions)
- BAAQMD permit conditions. The text of BAAQMD permit conditions is found in Section VI of the permit.
- Federal permit conditions. The text of Federal permit conditions, if any, is found in Section VI of the permit.

Section IV of the permit contains citations to all of the applicable requirements for particular sources. The text of the requirements is found in the regulations, which are readily available on the District's or EPA's websites, or in the permit conditions, which are found in Section VI of the permit. All monitoring requirements are cited in Section IV. Section VII is a cross-reference between the limits and monitoring requirements.

Complex Applicability Determinations

The facility is not subject to 112(j) of the Clean Air Act because it is not a major source of hazardous air pollutants.

S5 through S7, Boilers

The boilers are subject to the Acid Rain program contained in 40 CFR Parts 72 through 78 because they are utility units as defined in 40 CFR 72.2.

Changes to permit:

Section IV has been modified to state that SIP standards are now found on EPA's website and are not included as part of the permit.

The dates of adoption or approval of the rules and their "federal enforceability" status have been updated.

S1 through S4, Electrical Generation Boilers:

The Specific Application Requirement for Sources S1 through S4, Table II, has been removed because they were shut down in October 1, 2003.

Source Specific Applicable Requirement Table II-B was split into two Tables. One for Sources S5 and S6, the other is for S7 alone because S5 and S6 now have SCR units.

S5 through S7, Electrical Generation Boilers:
Condition 401, Part 1a, 1b, 2, 3, 4, and 5 have been deleted because these are fuel oil requirements for Sources S5 through S7, Boilers. These boilers no longer burn fuel oil.

Condition 401, part 6 has been added to require that S5 through S7, Boilers, burn PUC-quality natural gas exclusively.

Changes have been made to the citations for BAAQMD Regulation 1 because the SIP version has changed.

Various changes have been made because the facility has given up the permit to burn fuel oil at the boiler. BAAQMD Regulation 1-520.1 requires an opacity monitor only if the source burns non-gaseous fuel. NOx and either CO2 or O2 monitors are still required. The following requirements will deleted because the source will not burn fuel oil:

- BAAQMD Regulation 6-302, Opacity Limitation
- BAAQMD Regulation 6-401, Appearance of Emissions
- BAAQMD Regulation 6-501, Sampling Facilities and Instruments Required
- BAAQMD Regulation 6-502, Data, Records, and Reporting
- BAAQMD Regulation 9-1-304, Fuel Burning (Liquid and Solid Fuels)
- BAAQMD Regulation 9-11-112, Exemption, Oil Testing

Changes have been made to the citations for BAAQMD Regulation 9, Rule 11 because the rule has changed, applicability of parts of the rule relate to time periods in the part, and portions of the rule have been adopted into the SIP. In particular, BAAQMD 9-11-303 and 304 no longer apply to the boiler because the facility is using the BAAQMD 9-11-309 Alternative Emission Control Plan. Since there is no parallel requirement in the SIP rule, SIP 9-11-304 applies to the boilers.

Parts 1 through 12 of Condition 16326 have been deleted. The District imposed these conditions in 1999 pursuant to Application 19623 because Regulation 9, Rule 11 no longer applied to the facility due to a change to the definition of utility by the Public Utilities Commission. Condition 16326 was equivalent to Regulation 9, Rule 11. The rule was amended on May 17, 2000, and now applies to any electric power generating steam boilers. The condition explicitly stated that the condition would be rescinded when the rule was amended. Since the conditions were based on the parts of the rule that were not in the State Implementation Plan, the deleted permit conditions were not federally enforceable.

S36, Emergency Generator; S49, S51 and S53, Fire Pumps:
The table for S36, S49, S51 and S53 was added to include all applicable requirements.

Condition 21654 was added to require fuel certification, hours of operation, measuring meters and records for S36, S49, S51 and S53.

S58, Service Station:

The table for S58 has been changed to indicate that all applicable requirements are federally enforceable because Regulation 8, Rule 7 was adopted into SIP on November 6, 2002.

The following requirements have been added:

- Tanks with a capacity greater than 250 gallons must be equipped with a submerged fill pipe when Phase I vapor recovery equipment is not required. (BAAQMD Regulation 8-7-311)
- New and modified Phase II installation, effective on June 1, 2000 (BAAQMD Regulation 8-7-313)
- The requirement for nozzles to be equipped with hold open latch (BAAQMD Regulation 8-7-314)
- Periodic testing (BAAQMD Regulation 8-7-407)
- Periodic testing notification and submission (BAAQMD Regulation 8-7-408)
- Vapor tightness for tank requirement, effective on June 1, 2003 (BAAQMD Regulation 8-7-301.13)
- Vapor pressure for Balance Phase II vapor recovery system, effective on June 1, 2003 (BAAQMD Regulation 8-7-302.14)

The future effective dates of October 2008 have been added to the table in the following requirements:

- Limit requirements of VOC emissions on liquid removal rate (BAAQMD Regulation 8-7-302.8)
- Liquid retention (BAAQMD Regulation 8-7-302.12)
- Spitting (BAAQMD Regulation 8-7-302.13) in nozzle

The word “Part 1” is added in place of “Condition” under applicable requirement of BAAQMD Condition # 6583.

S70, Paint Spray Operation-Maintenance:
The requirements for this source have been updated. The current District Regulation 8, Rule 3, Architectural Coatings, adopted on November 11, 2001, has been included. This rule has been approved into the SIP, so the separate SIP requirements have been deleted.

BAAQMD Regulation 8, Rule 19, Surface Coating of Miscellaneous Metal Parts and Products, has been updated. The exemption for Solid Film Lubricant, BAAQMD 8-19-123, has been added to the permit. The prohibition on using surface preparation solvents with a VOC content that exceeds 50 g/l (0.42 lbs/gal), as applied, for surface preparation of any metal part or product, in Section 8-19-321, Surface Preparation Standards, has been added. The prohibition on using emission reduction credits for compliance in Section 8-19-408 has been added.

S71, Solvent Wipe Cleaning Operation:
The requirements for this source have been updated. The current District Regulation 8, Rule 16, Solvent Cleaning Operations, adopted on October 16, 2002, has been included.

S73 and S74, Cooling Towers:
The requirements for these sources have been added. The current District Regulation 6, Particulate Matter and Visible Emissions, adopted on December 19, 1990, has been included.

V. Schedule of Compliance

A schedule of compliance is required in all Major Facility Review permits pursuant to BAAQMD Regulation 2-6-409.10 which provides that a major facility review permit shall contain the following information and provisions:

"409.10 A schedule of compliance containing the following elements:

10.1 A statement that the facility shall continue to comply with all applicable requirements with which it is currently in compliance;

10.2 A statement that the facility shall meet all applicable requirements on a timely basis as requirements become effective during the permit term; and

10.3 If the facility is out of compliance with an applicable requirement at the time of issuance, revision, or reopening, the schedule of compliance shall contain a plan by which the facility will achieve compliance. The plan shall contain deadlines for each item in the plan. The schedule of compliance shall also contain a requirement for submission of progress reports by the facility at least every six months. The progress reports shall contain the dates by which each item in the plan was achieved and an explanation of why any dates in the schedule of compliance were not or will not be met, and any preventive or corrective measures adopted."

The BAAQMD Compliance and Enforcement Division have conducted a review of compliance over the past year and have no records of compliance problems at this facility during the past year. The compliance report is contained in Appendix A of this permit evaluation and statement of basis.

VI. Permit Conditions

The existing permit conditions are derived from previously issued District Authorities to Construct (A/C) or Permits to Operate (P/O). Permit conditions may also be imposed or revised as part of the annual review of the facility by the District pursuant to California Health and Safety Code (H&SC) § 42301(e), through a variance pursuant to H&SC § 42350 et seq., an order of abatement pursuant to H&SC § 42450 et seq., or as an administrative revision initiated by District staff. After issuance of the Title V permit, permit conditions will be revised using the procedures in Regulation 2, Rule 6, Major Facility Review. Permit conditions may also be derived from periodic monitoring requirements pursuant to BAAQMD Regulation 2-5-503, Monitoring.

Each permit condition is identified with a unique numerical identifier, up to five digits. Each part of the condition is also identified by a part number and each subpart is identified by a letter (for example, Condition 789, part 1a).

The regulatory basis is listed following each condition. The regulatory basis may be a rule or regulation. The District is also using the following terms for regulatory basis:

- BACT: This term is used for a condition imposed by the Air Pollution Control Officer (APCO) to ensure compliance with the Best Available Control Technology in Regulation 2-2-301.
- Cumulative Increase: This term is used for a condition imposed by the APCO that limits a source's operation to the operation described in the permit application pursuant to BAAQMD Regulation 2-1-403.

- Offsets: This term is used for a condition imposed by the APCO to ensure compliance with the use of offsets for the permitting of a source or with the banking of emissions from a source pursuant to Regulation 2, Rules 2 and 4.
- PSD: This term is used for a condition imposed by the APCO to ensure compliance with a Prevention of Significant Deterioration permit issued pursuant to Regulation 2, Rule 2.
- TRMP: This term is used for a condition imposed by the APCO to ensure compliance with limits that arise from the District's Toxic Risk Management Policy.

Any changes to existing permit conditions are clearly shown in "strike-out/underline" format in the proposed permit. When the permit is issued, all "strike-out" language will be deleted and all "underline" language will be retained, subject to consideration of comments received.

Condition 401

Parts 1a, 1b, 3, 4, and 5 were removed as part of Title V renewal because Boiler S5, S6 and S7 are not using fuel oil.

Condition 10431

Sources S-65 and S-66 are exempt sources; therefore, any language related to S-65 and S-66 were taken out of the condition. Sources S-65 and S-66 are gravity settlers/thickeners. They are exempt because tanks, vessels and pumping equipment used exclusively for the storage or dispensing of any aqueous solution that contains less than 1% (wt) organic compounds is exempt pursuant to BAAQMD Regulation 2 1-123.2. There is no requirement for exempted sources.

Condition 16326

- Parts 1 through 12 have been deleted. The deletion is explained in part C.IV of this permit evaluation/statement of basis.
- A requirement to burn PUC-quality natural gas exclusively at S5 through S7, Boilers, has been added as Part 1.

Condition 21654

This new condition was added to require fuel certification, hours of operation, measuring meter and record for S36, Diesel Emergency Generator and S49, S51 and S53 Diesel Fire Pumps.

VII. Applicable Limits and Compliance Monitoring Requirements

This section of the permit is a summary of numerical limits and related monitoring requirements for each source. The summary includes a citation for each monitoring requirement, frequency of monitoring, and type of monitoring. The applicable requirements for monitoring are completely contained in Sections IV, Source-Specific Applicable Requirements, and VI, Permit Conditions, of the permit.

The District has reviewed all monitoring and has determined the existing continuous emission monitoring is adequate. For boilers equipped with SCR, the equipment needs to test for ammonia slip concentration quarterly as specified in BAAQMD Regulation 9-11-311.

The tables below contain only the limits for which there is no monitoring or inadequate monitoring in the applicable requirements. The District has examined the monitoring for other limits and has determined that monitoring is adequate to provide a reasonable assurance of compliance. Calculations for potential to emit will be provided in the discussion when no monitoring is proposed due to the size of a source.

Monitoring decisions are typically the result of a balancing of several different factors including: 1) the likelihood of a violation given the characteristics of normal operation, 2) degree of variability in the operation and in the control device, if there is one, 3) the potential severity of impact of an undetected violation, 4) the technical feasibility and probative value of indicator monitoring, 5) the economic feasibility of indicator monitoring, and 6) whether there is some other factor, such as a different regulatory restriction applicable to the same operation, that also provides some assurance of compliance with the limit in question.

These factors are the same as those historically applied by the District in developing monitoring for applicable requirements**.** It follows that, although Title V calls for a re-examination of all monitoring**,** there is a presumption that these factors have been appropriately balanced and incorporated in the District's prior rule development and/or permit issuance. It is possible that, where a rule or permit requirement has historically had no monitoring associated with it, no monitoring may still be appropriate in the Title V permit if, for instance, there is little likelihood of a violation**.** Compliance behavior and associated costs of compliance are determined in part by the frequency and nature of associated monitoring requirements. As a result, the District will generally revise the nature or frequency of monitoring only when it can support a conclusion that existing monitoring is inadequate**.**

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S5 through S7, Boilers	BAAQMD Regulation 6-301	Ringelmann 1.0 for less than 3 min/hr	None
S5 through S7, Boilers	BAAQMD Regulation 6-304	Ringelmann 2.0 or greater than 40% opacity for less than 3 min/hr during tube cleaning	None
S5 through S7, Boilers	BAAQMD Regulation 6-310	0.15 gr/dscf	None
S5 through S7, Boilers	BAAQMD Regulation 6-310.3	0.15 gr/dscf at 6% O2	None
S36, EMERGENCY GENERATOR , AND S49, S51, S53, DIESEL FIRE PUMPS	BAAQMD Regulation 6-303	Ringelmann 2.0 for less than 3 min/hr	None
S36, EMERGENCY GENERATOR , AND S49, S51, S53, DIESEL FIRE PUMPS	BAAQMD Regulation 6-310	0.15 gr/dscf	None

PM Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
COOLING TOWERS	BAAQMD Regulation 6-301	Ringelmann 1.0	None
	BAAQMD Regulation 6-310	0.15 gr/dscf	None

PM Discussion:

BAAQMD Regulation 6 "Particulate Matter and Visible Emissions"

Visible Emissions

Source S5 through S7, Boilers, have opacity monitors pursuant to District Regulation 1-520.1 because they hold a permit to burn fuel oil. The facility is giving up the permit to burn fuel oil and has accepted a condition to burn natural gas exclusively at this source. Therefore, the source will no longer have an opacity monitor. The Title IV Acid Rain regulation, 40 CFR 75, also exempts gas-fired equipment from the requirement for opacity monitoring.

Moreover, in EPA's June 24, 1999 agreement with CAPCOA and ARB, "Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", EPA has agreed that natural-gas-fired combustion sources do not need additional monitoring to verify compliance with Regulation 6, Visible Emissions. Therefore, no monitoring is necessary for this requirement.

Particulate Weight Limitation

BAAQMD Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. Section 310.3 limits filterable particulate emissions from "heat transfer operations" to 0.15 gr/dscf @ 6% O_2. These are the "grain loading" standards.

S5 through S7, Boilers

S5 through S7, Boilers are subject to BAAQMD Regulation 6-310.3, 0.15 gr/dscf PM @ 6% O2. No monitoring has been imposed because the margin of compliance is high, as shown by the following calculation.

Natural Gas

The AP-42 factor for natural gas combustion is 7.6 lb/million standard cubic feet of natural gas (MMscf).

Converting to an emission factor per MMbtu:

(7.6 lb/MMscf) x (MMscf/1,050 MMbtu) = 0.00724 lb/MMbtu

The flue gas production rate for natural gas at 0% oxygen is 8,710 dscf. At 6% oxygen, the production rate is:

(20.9/20.9-6) (8710 dscf) = 12,217 dscf

The calculated particulate loading is:

(0.00724 lb PM/MMbtu) x (7000 gr/lb) / (12,217 dscf/MMbtu) = 0.004 gr/dscf

The ratio of the limit to the calculated grain loading is 37.5:1, therefore, no additional monitoring is necessary to assure compliance.

S36, Diesel Emergency Generator, and S49, S51 and S53, Diesel Fire Pumps

In accordance with the June 24, 1999 "Periodic Monitoring Recommendations for Generally Applicable Requirements" prepared by the CAPCOA/CARB/EPA Region IX periodic monitoring workgroup, no opacity monitoring is required for diesel standby and emergency reciprocating engines. In accordance with the July 2001 "CAPCOA/CARB/EPA Region IX Recommended Periodic Monitoring for Generally Applicable Grain Loading Standards in the SIP: Combustion Sources," non-utility distillate-oil-fueled emergency piston-type IC engines are not required to monitor engine exhaust but must maintain records of all engine usage only.

Cooling Towers

BAAQMD Regulation 6-301 limits visible emissions to no darker than 1.0 on the Ringelmann Chart (except for periods or aggregate periods less than 3 minutes in any hour). Particulate emissions from cooling towers come from dissolved solids in the cooling tower water and are therefore expected to be fairly constant and not subject to operational control.

BAAQMD Regulation 6-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. As shown in the following calculation, the worst-case grain loading from the Cooling Tower is much less than 0.15 grains per dscf. Therefore, no monitoring is required to ensure compliance with this limit for cooling towers.

Cooling water circulation rate	186,000 gpm from each tower
Drift rate	0.02% taken from AP-42, Table 13.4-1
Maximum total dissolved solids	24,000 ppm taken from AP-42, Table 13.4-2
Minimum Exhaust gas flow rate:	15,916,952 dscfm from each tower*

*note: this number will be refined as more data are available from the plant's source test.

Cooling tower drift:

(186,000 gal/min)(60 min/hr)(8.34 lb/gal)(0.0002) = 18,614.9 lb/hr

Max. PM10 emission rate = (18,614.9 lb/hr)(24,000 ppm)/10^6
= 446.7 lb/hr

Grain loading = (446.7 lb/hr)(hr/60 min)(7000 gr/lb)/(15,916,952 dscfm)
= 0.0032 gr/dscf

It can be seen from above that the worst-case grain loading rate from each of the cooling tower is much less than Regulation 6-310 limit. Since the grain loading is so low, the cooling tower is not expected to have visible emissions. In addition, a search in the District's database revealed that Mirant Delta has no violation or complaints in regard to particulate emissions. Therefore, the District is satisfied that additional periodic monitoring requirements to assure compliance with Regulation 6-310 for the two cooling towers are not necessary.

SO_2 Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S5 through S7, Boilers	BAAQMD 9-1-301	Ground level concentrations of SO2 shall not exceed: 0.5 ppm for 3 consecutive minutes AND 0.25 ppm averaged over 60 consecutive minutes AND 0.05 ppm averaged over 24 hours	None
S5 through S7, Boilers	BAAQMD 9-1-302	300 ppm (dry)	None
S36, Emergency Diesel Generator; S49, S51 and S-53 Diesel Fire Pumps	BAAQMD 9-1-304	Liquid fuel < 0.5% wt. sulfur	Fuel Certification

SO2 Discussion:

BAAQMD Regulation 9-1-301

Area monitoring to demonstrate compliance with the ground level SO2 concentration requirements of Regulation 9-1-301 is at the discretion of the APCO (per BAAQMD Regulation 9-1-501). This facility does not have equipment that emits large amounts of SO2 and therefore is not required to have ground level monitoring by the APCO.

All facility combustion sources are subject to the SO2 emission limitations in District Regulation 9, Rule 1 (ground-level concentration and emission point concentration). In EPA's June 24, 1999 agreement with CAPCOA and ARB, "Periodic Monitoring Recommendations for Generally Applicable Requirements in SIP", EPA has agreed that natural-gas-fired combustion sources do not need additional monitoring to verify compliance with Regulation 9, Rule 1, since violations of the regulation are unlikely. Therefore, no monitoring is necessary for this requirement for S5 through S7, Boilers, which will exclusively burn natural gas.

The limit for sources that burn liquid fuel is 0.5% of sulfur by weight in fuel according to BAAQMD Regulation 9-1-304. The standard monitoring for this limit is fuel certification.

Lead Sources

S# & Description	Emission Limit Citation	Federally Enforceable Emission Limit	Monitoring
S5 through S7, Boilers	BAAQMD 11-1-301	6.75 kg/day	None
S5 through S7, Boilers	BAAQMD 11-1-302	1.0 g/m3 averaged over 24 hours	None

Following are detailed citations of the lead standards:

11-1-301 **Daily Limitation:** A person shall not discharge any emission of lead, or compound of lead calculated as lead, from any emission point in excess of 6.75 kg (15 lbs) per day.

11-1-302 **Ground Level Concentration Limit Without Background:** A person shall not discharge any emission of lead, or compound of lead calculated as lead, that will result in ground level concentrations in excess of 1.0 ug/m^3 averaged over 24 hours.

These limits shall be compared with the potential to emit for lead from each emission point.

Compliance with 11-1-301

The AP-42 emission factor for lead from natural gas combustion at S5 through S7, Boilers, is 0.0005 lb/MMscf. The biggest boiler can burn 6.53 MMscf/hr or 156.7 MMscf/day. The maximum amount of lead that could be emitted by the boiler is 0.0783 lb/day or 0.0356 kg/day.

Since the potential to emit is at least 190 times lower than the limit, no additional monitoring is required.

Compliance with 11-1-302

The maximum lead emission levels above and the dispersion calculations prescribed in BAAQMD Regulation 11-1-601 were used to determine compliance with 11-1-302. The maximum 24-hr average ground level lead concentration caused by the facility at maximum operation is expected to be about 0.000011 micrograms/cubic meter, which is in compliance with the 1.0 micrograms/cubic meter limit. The calculations are attached in Appendix A and form part of this Statement of Basis. These calculations are based on natural gas combustion at the boiler. Since the margin of compliance is high, no monitoring is required for this limit.

Following is a list of revisions to Section VII:

- The language at the beginning of the section has been made clearer that this section is a summary of the limits and monitoring, and that in the case of a conflict between Sections I-VI and Section VII, the preceding sections take precedence.
- The headings at the top of the table have been changed. The "Pollutant" column has been changed to "Type of Limit" since not every limit is a pollutant limit. The first "Emission Limit" column has been changed to "Citation of Limit" since not every limit is an emission

limit. The second "Emission Limit" column has been changed to "Limit" since not every limit is an emission limit and the column actually contains a short summary of the limit.

- The “type of limit” has been changed to “opacity” for Regulation 6-301.
- The “type of limit” has been changed to “FP” or “filterable particulate” for Regulation 6-310 and 6-310.3. Filterable particulate is defined as “particulate as measured by BAAQMD Method ST-15, Particulate.” This is the type of particulate that is regulated by Regulation 6-310.

S5 through 7, Boilers

- The description of the limit for BAAQMD 6-301 has been expanded from "Ringelmann No. 1" to "Ringelmann No. 1 for no more than 3 min/hr", which is more complete.
- The description of the limit for BAAQMD 6-304 has been expanded from "Ringelmann No. 2" to "Ringelmann No. 2 or 40% opacity for no more than 3 min/hr", which is more complete.
- Parts 1 through 12 of Condition 16326 have been deleted. The deletion is explained in part C.IV of this Permit Evaluation/Statement of Basis.
- Part 1 of Condition 16326 has been added to specify the use of natural gas fired only.
- Outdated limits from Regulation 9, Rule 11 have been deleted.

Various changes have been made because the facility has given up the permit to burn fuel oil at the boiler. BAAQMD Regulation 1-520.1 requires an opacity monitor only if the source burns non-gaseous fuel. NOx and either CO2 or O2 monitors are still required. The following requirements will deleted because the source will not burn fuel oil:

- BAAQMD Regulation 6-302, Opacity Limitation
- BAAQMD Regulation 9-1-304, Fuel Burning (Liquid and Solid Fuels)
- BAAQMD Regulation 9-11-304.1.2, the oil-firing limit of 700 ppmv NOx
- BAAQMD Regulation 9-11-304.1.2, the weighted average NOX limit for simultaneous natural gas and oil firing
- The requirement for opacity monitoring in 40 CFR Part 75. Pursuant to 40 CFR 75.14(c), opacity monitoring is not required for gas-fired units.

S36, Diesel Emergency Generator; S49, S51 and S53 Diesel Fire Pumps

The new table is added for these emergency generator and diesel fire pumps. The limits from BAAQMD Regulation 6-310 and BAAMQD Regulation 9-1-301 are added. In addition, the hours of operation limit requirement is added also.

S-58, Service Station

The table was modified to include limit requirements of VOC emissions on liquid removal rate (BAAQMD Regulation 8-7-302.8), connector size requirement (BAAQMD Regulation 8-7-302.10), liquid retaining (BAAQMD Regulation 8-7-302.12) and spitting (BAAQMD Regulation 8-7-302.13) in nozzle and dynamic back pressure (BAAQMD Regulation 8-7-302.14.2).

S-72, Sand Blasting

The description of the limit for BAAQMD 6-301 has been expanded from "Ringelmann No. 1" to "Ringelmann No. 1 for no more than 3 min/hr", which is more complete.

The limit from general operation requirement of BAAQMD Regulation 6-311 was removed from the table because it does not applied to sand blasting operation specifically. Sand blasting operation is already subject to BAAQMD Regulation 6-310, which is a more stringent requirement.

VIII. Test Methods

This section of the permit lists test methods that are associated with standards in District or other rules. It is included only for reference. In most cases, the test methods in the rules are source test methods that can be used to determine compliance but are not required on an ongoing basis. They are not applicable requirements.

If a rule or permit condition requires ongoing testing, the requirement will also appear in Section IV of the permit.

The test methods for Condition 16326, #4, #5a, #5b, and #6 have been deleted since the permit has been deleted.

Changes to permit

EPA Reference Method 5 (40 CFR 60, Appendix A), Determination of Particulate Emissions from Stationary Sources, has been added as an alternative method for BAAQMD Regulation 6-310.

Source test Method ST-27 for Dynamic Back Pressure has been added to the Phase II Vapor Recovery for gasoline service station.

IX. Revision History

Changes in the permit since 1998 were documented.

X. Glossary

Additions and corrections have been made to the glossary.

XI. Title IV Acid Rain Permit

The Title IV Acid Rain permit is contained in the Title V permit. 40 CFR 75 requires that it contain the following elements:

- Statement of Basis
- SO2 allowance allocations and NOx requirements, if any.
- Any comments, notes or justifications regarding permit decisions
- The permit application (attached at the end of the Title V permit)

Changes to permit

The dates, name of BAAQMD Air Pollution Control Officer and Designated Representative have been changed. Sources 1 through 4, Boilers, have been deleted since they have been shut

down. The note about changes to 40 CFR Part 73 Tables 2, 3, and 4 has been deleted since the number of allowances allocated to the remaining boiler has not been changed.

XII. Title IV Permit Application

The Title IV Permit Application is considered part of the Title IV permit and therefore, is attached to the permit.

D. Alternate Operating Scenarios:

No alternate operating scenario has been requested for this facility.

E. Permit Shield

The District rules allow two types of permit shields. The permit shield types are defined as follows: (1) A provision in a major facility review permit that identifies and justifies specific federally enforceable regulations and standards are not applicable to a source or group of sources, or (2) A provision in a major facility review permit that identifies and justifies specific federally enforceable applicable requirements for monitoring, recordkeeping and/or reporting which are subsumed because other applicable requirements for monitoring, recordkeeping, and reporting in the permit will assure compliance with all emission limits.

The second type of permit shield is allowed by EPA's White Paper 2 for Improved Implementation of the Part 70 Operating Permits Program. The District uses the second type of permit shield for all streamlining of monitoring, recordkeeping, and reporting requirements in Major Facility Review permits. The District's program does not allow other types of streamlining in Major Facility Review permits.

This facility has no permit shields.

F. Compliance Status:

A December 17, 2004 office memorandum from the Director of Compliance and Enforcement, to the Director of Engineering, presents a review of the compliance record of Mirant Delta (Site #: a0012). The Compliance and Enforcement Division staff has reviewed the records for the period from November 1, 2003 through December 1, 2004. This review was initiated as part of the District evaluation of an application by the facility for a Title V permit renewal. During the period subject to review, activities known to the District include:

- The District did not issue any Notices of Violation during this review period
- The District did not receive any complaints alleging Mirant Delta as the source.
- During this this review period no breakdowns or excesses were reported or documented by District staff.
- There are no pending variances or abatement orders for Mirant Delta.
- In addition, staff reviewed Mirant Delta's Annual Compliance Certifications for 2000-2004 and found no outstanding compliance issues.

The owner certified that all equipment was operating in compliance on March 30, 2004. No ongoing non-compliance issues have been identified to date.

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APPENDIX A

DISPERSION CALCULATIONS FOR LEAD

APPENDIX A

CALCULATION OF GROUND LEVEL LEAD CONCENTRATION

Mirant Delta, Plant 12

Methodology

According to the Manual of Procedures, Volume VI, Section 2.:

> "Emission limitations required to meet Regulation 11-1-302 shall be determined by use of formulas 4.1 and 5.13, and figures 3-3 and 3-9, in "Workbook of Atmospheric Dispersion Estimates," by D. Bruce Turner, Public Health Service Publication No. 999-AP-26, Revised 1969, published by the U.S. Department of Health, Education and Welfare. In using said equations and figures, a neutral or "D" stability category shall be assumed, a wind shall be assumed that remains throughout the averaging period directed within a 22.5 ^{o} sector of the compass rose at an average speed of two meters per second, and an ambient air temperature of 293 K shall be assumed.

Calculations

1. Stack parameters:

	S5	S6	S7
V_S	35.7 m/s	35.7 m/s	32.3 m/s
T_S	413.7 K	413.7 K	413.7 K
d	4.2 m	4.2 m	6.1 m
H_S	137.16 m	137.16 m	137.16 m

2. Calculate plume rise using formula 4.1 (Holland's Equation) in Turner's workbook.

$\delta H = (V_S\ d/u)(1.5 + (2.68\ E\text{-}3)(p\ d)((T_S - T_A)/T_S))$

using

$u = 2$ m/s
$T_a = 293$ K
$p = 1013$ mb

	S5	S6	S7
δH	361.9 m	361.9 m	623.8 m

3. Determine X_{MAX} from Figure 3-9 in Turner's Workbook.

H = Effective height of emission

$H = H_S + \delta H$

	S5	S6	S7
H	499.16 m	499.1 m	761 m

From Fig. 3-9 in Turner's Workbook, assuming "D" stability as specific in the MOP and H from above:

	S5	S6	S7
X_{MAX}	17 km	17 km	17 km

4. Determine Vertical Dispersion Coefficient (σ_z) from Figure 3-3 in Turner's workbook.

From Fig. 3-3, assuming "D" stability and X_{MAX} from above:

	S5	S6	S7
σ_z	180 M	180 M	180 m

5. Calculate maximum annual average (X_{AN}) and 24-hour average (X_{24}) concentrations using Formula 5.13 in Turner's Workbook:

$X_{AN} = (2.03\ Q)(\exp[\ -0.5\ (H/\sigma_z)^2\ ])/(\ \sigma_z\ u\ X_{MAX})$

Using Q = g/sec lead

X_{AN} = g/m^3, maximum annual average

$X_{24} = 4\ X_{AN}$ = g/m^3, maximum 24-hr average

Where lead calculation is based on AP-42-Table 1.4-2 for EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION

Q for S5 or S6 = [(0.0005 lb/10^6 scf)(3,300 MMbtu/hr)(454 g/lb)]/[(1050 Btu/scf)(3600 sec/hr)] = 1.98E-4 g/sec

Q for S7 = [(0.0005 lb/10^6 scf)(6,854 MMbtu/hr)(454 g/lb)]/[(1050 Btu/scf)(3600 sec/hr)] = 4.12E-4 g/sec

	S5	S6	S7	Maximum Total
Q	1.98 E-4 g/s	1.98E-3 g/s	4.12 E-4 g/s	
X_{AN}	1.4 E-6 $\mu g/m^3$	1.4 E-6 $\mu g/m^3$	1.8 E-8 $\mu g/m^3$	2.8E-6 $\mu g/m^3$
X_{24}	5.6 E-6 $\mu g/m^3$	5.6 E-6 $\mu g/m^3$	7.2 E-8 $\mu g/m^3$	1.1 E-5 $\mu g/m^3$

APPENDIX B

GLOSSARY

ACT
Federal Clean Air Act

APCO
Air Pollution Control Officer

AP-42
EPA's Compilation of Air Pollutant Emission Factors

ARB
Air Resources Board

BAAQMD
Bay Area Air Quality Management District

BACT
Best Available Control Technology

Basis
The underlying authority that allows the District to impose requirements.

CAA
The federal Clean Air Act

CAAQS
California Ambient Air Quality Standards

CAPCOA
California Air Pollution Control Officers Association

CEQA
California Environmental Quality Act

CFR
The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO
Carbon Monoxide

Cumulative Increase
The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Cumulative increase is used to determine whether threshold-based requirements are triggered.

District
The Bay Area Air Quality Management District

dscf

Dry Standard Cubic Feet

EPA
The federal Environmental Protection Agency.

Excluded
Not subject to any District regulations.

Federally Enforceable, FE
All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60 (NSPS), Part 61 (NESHAPs), Part 63 (MACT), and Part 72 (Permits Regulation, Acid Rain), including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

FP
Filterable Particulate as measured by BAAQMD Method ST-15, Particulate.

HAP
Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by 40 CFR Part 63.

IERC
Interchangeable Emission Reduction Credit, as defined by BAAQMD Regulation 2-9-212.

Major Facility
A facility with potential emissions of: (1) at least 100 tons per year of regulated air pollutants, (2) at least 10 tons per year of any single hazardous air pollutant, and/or (3) at least 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity of hazardous air pollutants as determined by the EPA administrator.

MFR
Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Federal Clean Air Act and implemented by District Regulation 2, Rule 6.

MOP
The District's Manual of Procedures.

NAAQS
National Ambient Air Quality Standards

NESHAPS
National Emission Standards for Hazardous Air Pollutants. See in 40 CFR Parts 61 and 63.

NMHC
Non-methane Hydrocarbons (Same as NMOC)

NMOC
Non-methane Organic Compounds (Same as NMHC)

NOx

Oxides of nitrogen.

NSPS
Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Federal Clean Air Act, and implemented by 40 CFR Part 60 and District Regulation 10.

NSR
New Source Review. A federal program for pre-construction review and permitting of new and modified sources of pollutants for which criteria have been established in accordance with Section 108 of the Federal Clean Air Act. Mandated by Title I of the Federal Clean Air Act and implemented by 40 CFR Parts 51 and 52 and District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement
A New Source Review requirement to provide federally enforceable emission offsets for the emissions from a new or modified source. Applies to emissions of POC, NOx, PM10, and SO2.

Phase II Acid Rain Facility
A facility that generates electricity for sale through fossil-fuel combustion and is not exempted by 40 CFR 72 from Titles IV and V of the Clean Air Act.

POC
Precursor Organic Compounds

PM
Particulate Matter

PM10
Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD
Prevention of Significant Deterioration. A federal program for permitting new and modified sources of those air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

SIP
State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

SO2
Sulfur dioxide

THC
Total Hydrocarbons (NMHC + Methane)

Title V
Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC
Total Organic Compounds (NMOC + Methane, Same as THC)

TPH
Total Petroleum Hydrocarbons

TRMP
Toxic Risk Management Plan

TSP
Total Suspended Particulate

VOC
Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
cfm	=	cubic feet per minute
g	=	grams
gal	=	gallon
gpm	=	gallons per minute
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m^2	=	square meter
min	=	minute
mm	=	million
MMbtu	=	million btu
MMcf	=	million cubic feet
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute
yr	=	year

APPENDIX C

Application #1882

Engineering Evaluation
Mirant Delta LLC
Application # 1882
Plant # 12

Background

Mirant Delta has submitted an application for an Authority to Construct to retrofit boilers S-5 and S-6 to comply with the requirements of District Regulation 9, Rule 11 (Nitrogen Oxides and Carbon Monoxide from Utility Electric Power Generating Boilers). The company has proposed retrofitting S-5 and S-6 boilers with selective catalytic reduction (SCR). S-5 and S-6 are Babcock and Wilcox 3,300 MMbtu/hr boiler that provide steam to 330 MW steam turbine generators Unit 5 and Unit 6, respectively. The entire Pittsburg Power Plant has a generating capacity of 2,022 MW of electricity.

SCR is a post-combustion flue gas treatment that destroys NO_x after it is formed. This technology uses a reducing agent, urea or ammonia, to reduce the NOx molecules to elemental nitrogen and water. The SCR process uses a catalyst to increase the reaction rate and thus improves the NOx removal efficiency at a required temperature typically lower than 800 degrees F. The SCR reactor will be installed in the boiler exhaust duct downstream of the boiler economizer and upstream of the air preheater.

The proposed retrofit is part of Mirant's compliance plan under the Advanced Technology Alternative Emission Control Plan ("system-wide emissions bubble") of Section 9 of District Regulation 9, Rule 11. Under the ATAECP, S-5 and S-6 do not have a specific emission limit, but their emissions contribution will be entered into the Mirant system-wide average (consisting of the Potrero, Pittsburg, and the Contra Costa power plants). The current system-wide average NO_x limit in 2000 is 0.105 lb/MMbtu; pursuant to District Regulation 9-11-309.1, this limit will ratchet down to 0.057 lb/MMbtu in 2002, 0.037 lb/MMbtu in 2004, and 0.018 lb/MMbtu in 2005.

S-5 has been retrofitted with TODD Dynaswirl-LN burners that utilize advanced fuel staging techniques to reduce the formation of NO_x. This retrofit decreased emissions of NOx to approximately 37 ppmvd at three percent oxygen (0.044 lb/MMbtu). Thus, the installation of the low NO_x burners helped bring down the system-wide emission rate to meet the requirements of the ATAECP. S-6 will be retrofitted with these same low NO_x burners in early 2001. Mirant proposes to install SCR (selective Catalytic Reduction) at S-5 and S-6 to further reduce NO_x emmissions in order to comply with the future ATAECP requirements. The installation of SCR is expected to reduce NO_X emissions to 10 ppm at three percent oxygen (0.012 lb/MMbtu) when firing natural gas.

The proposed modifications will not increase the rated capacity of the boilers and is expected to comply with District Regulation 9-11-310 for CO emissions. Furthermore, these two boilers will no longer be configured to fire oil ane will be fired exclusively on natural gas. Emissions of other criteria pollutants as well as the toxic emissions, with exception of ammonia, are expected to remain unchanged or be decreased. This permit application covers the retrofit of the following two boilers at the Pittsburg Power Plant with the following description:

S-5 Boiler No. 5 – Electric Generation, Babcock and Wilcox, 3300 MMbtu/hr maximum heat input; to be retrofitted with A-5 Selective Catalytic Reduction (SCR).

S-6 Boiler No. 6 – Electric Generation, Babcock and Wilcox, 3300 MMbtu/hr maximum heat input; to be retrofitted with A-6 Selective Catalytic Reduction (SCR).

The Title V Permit for this facility (#A0012) will be amended to include A-5 and A-6 SCR systems. The installation of the SCR units is expected to result in a significant decrease in emissions of NOx while emissions of other combustion byproducts such as CO, SO2, PM10, POC, and toxic compounds are expected to remain unchanged. Therefore, the installation of A-5 and A-6 is considered a minor Title V permit revision pursuant to Regulation 2-6-215.
Emissions calculations

I. NO_X RACT Reduction

The combustion modifications proposed are expected to reduce NOx emissions at this facility. NOx emissions reduction estimates are calculated based on a reduction from the baseline (after low NO_x burner retrofit) of 37 ppmvd (3% O_2) to the post SCR-retrofit level of 10 ppmvd (3% O_2) resulting in a reduction factor of 27 ppmvd (3% O_2) or approximately 0.0321 lb/MMbtu. Fuel usage is based on actual historical fuel use data (averaged from 1996 to 1998).

Source Number	Actual Fuel Usage MMBTU/year	Reduction Factor lb NOx/MMBTU	NOx Reduction ton NOx/year
5	6,832,598	0.0321	109.66
6	8,396,621	0.0321	134.77

II. CO Emissions

Regulation 9, Rule 11 requires CO limits to prevent any tradeoff of NO_x for CO since some NO_x control technologies have the potential to increase CO emissions while reducing NO_x. This regulation requires a CO concentration of no more than 400 ppmvd during steady state operation for source testing. During normal operating conditions, these boilers are subject to load swings, which may increase CO concentrations above 400 ppmvd and thus limited by the Regulation to 1000 ppmvd (I hour clock average). It is expected that there will be no increase, nor reduction in CO emissions from retrofitting the boilers with SCR systems.

III. Ammonia Emissions

Ammonia Slip

Ammonia emissions are estimated based on the required maximum "ammonia slip" of 10 ppmvd (3% O_2).

(10 ppmvd/10^6)(21/21-3)((8600 sdcf/MMBtu □386.9 sdcf/lb mol)(17.03 lbNH_3/lb mol) = 0.0044 lb NH_3/MMBtu

NH_3 = (3300 MMBtu/hr)(0.0044 lb NH_3/MMBtu)(8760 hr/yr) = 127,195 lb/yr (per boiler)

Ammonia Storage Tank Emissions

Aqueous ammonia will be stored in three horizontal steel storage tanks. Although these tanks are sealed and pressurized, ammonia emissions from these tanks are conservatively estimated using fixed roof tank formula from AP-42 as follows:

Breathing losses:

$$L_B = 2.26E\text{-}2\ M_V\ (P/P_{a-P})^{0.68}\ D^{1.7} H^{0.51} dT^{0.50} F_p C K_c$$

where:

M_V = vapor molecular wt. = 17 lb/lb-mol

P_A = atmospheric pressure = 14.7 psia

P = liquid TVP @ 61F, 13.86 psia *from Chemical Engineering Handbook, Table 3-24, 80 F, 30% molal concentration*

D = tank diameter = 11 ft

H = average vapor height = 5.5 ft

dT = avg diurnal temp change, 30F

F_p = paint factor = 1

C = small diameter adjustment = 1
K_C = product factor = 1

Using a programmed spreadsheet (attached),

L_b = 2486 lb/year

Working losses:

$L_W = 2.40E\text{-}5\ M_V\ P\ V\ N\ K_n\ K_C$

where:

M_V = vapor molecular wt., 17 lb/lb-mole
P = liquid TVP @ 61F, 13.86 psia
V = tank capacity, 30,000 gallons
N = turnovers/year, 365,000/30,000 = 12
K_n = turnover factor = 1
K_C = product factor = 1

L_W = 2035 lb/year

$L_b + L_W$ = 2436 + 2036 = 4,472 lb/yr (per tank)

Plant cumulative emissions

Not Applicable

BACT

Not Applicable

Offsets

Not Applicable

Toxics risk screening analysis

A risk screen was performed by the Toxics Section for emissions of ammonia from the boiler stacks. The hazard index was found to be less than one for the closest residential receptor. The risk screen passed and no further analysis is required.

Ammonia emissions from the storage tanks do not trigger a risk screen.

CEQA

This project is exempt from CEQA under District Regulations 2-1-312.2 (installation of abatement equipment) and 2-1-312.3 (compliance with newly adopted District Regulation). These regulations categorically exempt this project subject to permit review by the District from CEQA review.

The District Board of Directors adopted (on February 14, 1994) and amended (on May 17, 2000) Regulation 9, Rule 11 to establish Best Available Retrofit Control Technology emissions limit for NO_X from utility boilers. This NO_X reduction project is proposed in response to the requirements of this Regulation. A CEQA Initial Study prepared for Regulation 9, Rule 11 indicates that no significant

environmental effects will result in implementation of the requirements. This project therefore is exempt from CEQA review pursuant to District Regulations 2-1-312.2 and 2-1-312.3.

Furthermore, the applicant's Environmental Information Form (Appendix H) indicates that the proposed project will have "no possibility of any significant environmental effect in connection with any environmental media or resources other than air quality (Regulation 2-1-312.11).

The District Toxic Section performed a risk screen for operating ammonia emissions (ammonia slip and tank emissions) and concluded that the risk is not significant.

Statement of Compliance

The boiler modifications are expected to be in compliance with all applicable federal, state, and District rules and regulations. Regulation 9, Rule 11 requirements for NOx and CO control will be met.

Per Regulation 1, Section 115, these sources are not subject to NSR requirements.

PSD, NSPS, and NESHAPs do not apply.
permit conditions

Boilers S-5 and S-6 and other boilers in the Mirant system are subject to the requirements of District Regulation 9, Rule 11. No additional permit are required for under this permit application.

Recommendations

It is recommended that an Authority to Construct be issued to Mirant for:

S-5 Boiler No. 5 – Electric Generation, Babcock and Wilcox, 3300 MMBtu/hr maximum heat input; to be retrofitted with A-5 Selective Catalytic Reduction (SCR).

S-6 Boiler No. 6 – Electric Generation, Babcock and Wilcox, 3300 MMBtu/hr maximum heat input; to be retrofitted with A-6 Selective Catalytic Reduction (SCR).

Exemptions

The following ammonia tanks are exempt per Regulation 2-1-123.2 for tanks storing and dispensing aqueous solutions, which contain less than 1% organic compounds.

Aqueous Ammonia Storage Tank #1, Horizontal Aboveground, 20000 gallon capacity.
Aqueous Ammonia Storage Tank #2, Horizontal Aboveground, 20000 gallon capacity.
Aqueous Ammonia Storage Tank #3, Horizontal Aboveground, 20000 gallon capacity.

by: _____ Date: _____
Weyman Lee
Air Quality Engineer II